



# **A Green Paper on Firewater**

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# **FIREWATER**

## **SUMMARY**

Despite being one of the most common pollution incidents that the Environment Agency attend, it's an area which the vast majority of businesses are completely ignorant about. Firewater - this term refers to water and or foam used to fight a fire which requires careful disposal, due to it's potential toxicity. The Firewater run-off from a blaze is a deadly cocktail that should be a paramount Health and Safety concern for virtually all businesses.

## **FIREWATER A DEADLY TOXIC COCKTAIL**

For the vast majority of businesses a fire is one of the biggest risks and the greatest fears, so the sight of the Fire Service arriving to tackle the blaze is a very welcome sight. However, the extinguishing of the fire could be the catalyst for a whole new, and potentially more devastating set of problems ..... Firewater. This term refers to water and or foam used to fight a fire which requires careful disposal, due to it's potential toxicity. Despite being one of the most common pollution incidents that the Environment Agency attend, it's an area which the vast majority of businesses are completely ignorant about.

Firewater contains materials stored in the building, as well as dissolved and particulate materials formed from the combustion process itself, and those generated through the quenching process. Firewater can be particularly polluting when the building or site being extinguished contains materials, ranging from pesticides to detergents. Certain types of premises, including farms and chemical sites pose special risks because of the types of materials present. Although any type of building has the potential to produce toxic materials in the event of a fire, parcel warehouses for example are packed with boxes, the contents of which are unknown to the site owner, who will be ultimately financially liable for any resulting Firewater pollution. The Fire Service estimate that they use approximately 500,000 litres of water per hour to fight an average fire, at the height of the Buncefield disaster 250,000 litres of foam and 25 million litres of water were being used.

Unless the site has adequate containment for the run-off, the threat of pollution to rivers, groundwater and aquatic life from Firewater is often assessed as being so great that In many cases the Fire Service will allow the incident to burn itself out. Thereby sacrificing your business in favour of the environment. In addition to watching helplessly as your business disappears before your eyes, the Environment Agency can prosecute, imposing fines and passing on the full costs involved in returning the local environment back to it's pre-incident conditions, including re-stocking of rivers etc. Before being allowed to commence trading, you will also be required to implement the kind of containment and safeguards that should already have been in place. A recent blaze at a chemical factory in Huddersfield is estimated to have cost the company £6m in damage and loss of business, they have also been hit with a bill for £300k from the Environment Agency and HSE for their incident investigation costs.

One of the most serious incidents of Firewater pollution occurred in 1986 at a chemical factory in Switzerland, in the five hours it took to extinguish the fire an estimated 30 tons of pesticide entered the River Rhine. The contaminated run-off travelled down 900km of the river killing hundreds of thousands of fish and waterfowl. In November this year a blaze at a warehousing and distribution site near Darlington resulted in a cocktail of Firewater and factory products, mainly shampoo, contaminating the River Skerne and killing hundreds of fish. In early January this year a suspected arson attack on an industrial estate in the West Midlands resulted in contaminated Firewater making it's way via the drains to a local wildlife haven. At first the Environment Agency reported that it had contained the Firewater, but two weeks later local residents reported around 500 dead fish at the Nature Reserve. There have also been several high profile fires at tyre depots, which caused Firewater run-off pollution to local rivers and streams, one of these fires burned for seven weeks. In some cases factories and depots have been closed down for more than a year. Sadly, in many cases the sheer weight of the financial fines, remuneration costs and inadequate insurance cover mean that the closures are permanent. Unless companies realise the dangers and their responsibilities, legal and moral, and have permanent auto-monitored drainage containment systems installed, this type of incident will continue to occur.

Any company looking to attain or keep ISO 14001 accreditation must show a cohesive and adequate containment policy for spill control and Firewater. The dangers of Firewater aren't limited to real fires, a false alarm which triggers the sprinkler system can expel between eight and twenty four gallons of water, per sprinkler, per minute. Environmental Innovations Limited have

pioneered several products which can contain spills and Firewater safely within a sites existing drainage. The systems can be easily retro-fitted, and at a fraction of the cost of bunding an entire site. These installed systems can be configured to work in tandem with existing alarm systems to ensure that they monitor and deploy automatically to contain the contaminating substances. Ingeniously using the drainage system itself as a containment vessel, by securely blocking the outlets with lockable non-return valves to prevent pollution of local water supplies. The spill or contaminated Firewater run-off can then be safely extracted, treated and where possible, recycled. The system then returns to it's monitoring stance, allowing normal flow to resume in readiness for a future incident. This system of containing Firewater within the drain is approved and recommended by the Fire Service in their current manuals and in PPG28, and is sophisticated enough to even generate incident warning text or voice-mail messages to alert the emergency services and key staff.

The very nature of an accident means that it cannot occur at a convenient time, and with 362,000 fires in the UK last year the odds are stacked against anyone who hasn't put extensive preventative measures in place. The recent introduction of European Directive ELD 2004/35/EC has tightened regulations and penalties to ensure that the 'polluter pays'. The new legislation can even impose prison sentences on negligent directors, and the size of the fine and cost of the clean-up, bears no relevance to the size of the companies balance sheet. And as many companies have found to their horror, their basic liability insurance more often than not won't cover them for environmental clean-up costs, especially if there are doubts that adequate precautionary measures had been in place.

There is little doubt that ignorance of the dangers of Firewater and related Environmental Legislation is a major factor, however, it's also apparent that a great many companies are simply gambling the costs of doing something to protect their site against the chances of being caught and prosecuted. It might be reprehensibly possible, to keep a spill contained from the authorities, even if it's not contained from polluting the environment, but a fire is something that will be a literal beacon to everyone for miles around that there is a potential environmental disaster taking place.

Ethically and legally it's simply not an option to adopt a "fingers crossed" attitude to containment precautions. Companies have a responsibility of care to their staff, their neighbours, human and aquatic, the environment and their balance sheet.

## **Impact is proportional to dose x sensitivity**

The dose is determined by the concentration of the pollutant, mass flow rate and exposure period. The sensitivity depends on the location of the site and the characteristics of the receptors.

The assessments should include impacts on: human health, the water environment, air pollution and the ground, including deposition from the air.

The key stages in a full risk assessment of an accidental release of contaminants are summarised in a table available on the following link :

<http://publications.environment-agency.gov.uk/pdf/PMHO1005BJIT-e-e.pdf>

## **FURTHER ESSENTIAL READING**

### **PPG28 Controlled Burn**

This guidance will help you decide when and how to use a controlled burn as part of a fire fighting strategy to prevent or reduce damage to the environment. You should consider this guidance on a site by site basis when developing an incident response plan for your site.

Download full Guidance at

["http://publications.environment-agency.gov.uk/pdf/PMHO1005BJIT-e-e.pdf"](http://publications.environment-agency.gov.uk/pdf/PMHO1005BJIT-e-e.pdf)

### **Fire Service Manual**

This Fire and Rescue Manual is the first manual within the Fire Service Operations series dedicated to the protection of the environment. This publication provides information and guidance designed to support firefighters, Fire Brigade Service managers, and trainers in their work at operational incidents, training events, and during day-to-day activities.

Download full manual here

["http://www.communities.gov.uk/publications/fire/environmentprotectvol2"](http://www.communities.gov.uk/publications/fire/environmentprotectvol2)

### **The Full DEFRA Guidance on the New Environmental Civil Sanctions :**

The EA intends to start to use these new powers on 4th January 2011.

“<http://www.defra.gov.uk/environment/policy/enforcement/pdf/defra-wag-guidance.pdf>”

### **PPG7 : Refuelling Facilities :**

Advice on how to protect the environment through the safe delivery, storage and dispensing of fuels.

<http://publications.environment-agency.gov.uk/epages/eapublications.storefront>

### **PPG18 Managing Fire Water and Major Spillages**

These guidance notes have been drawn up to assist in the identification of the equipment and techniques available to prevent and mitigate damage to the water environment caused by fires and major spillages.

Download full Guidance at

“<http://publications.environment-agency.gov.uk/pdf/PMHO600BBUD-e-e.pdf>”

### **PPG21 : Pollution - Incident Response :**

Good practice guidance to produce incident response plans for dealing with accidents, spillages and fires, to help protect the environment.

<http://publications.environment-agency.gov.uk/epages/eapublications.storefront>

### **PPG22 : Incident Response – Dealing with Spills :**

Advice on how to deal with spillages to avoid pollution.

<http://publications.environment-agency.gov.uk/epages/eapublications.storefront>

### **PPG26 : Safe Storage -**

#### **Drums and Intermediate Bulk Containers :**

The regulations apply to: tanks (can be permanent or temporary); drums greater than 200 litres capacity; intermediate bulk containers (IBCs); mobile bowsers.

All above PPGs are available for download at

<http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx>

### **ENVIRONMENTAL LIABILITY DIRECTIVE 2004/35/EC :**

The Directive establishes a strong framework for environmental liability based on the "polluter pays" principle, with a view to preventing and remedying damage to

animals, plants, natural habitats and water resources, and damage affecting the land. Where the polluter is at fault or negligent powers exist to ensure that the costs as well as any fines are allocated, in extreme cases prison sentences can be enforced.

Download full Directive [www.europa.eu](http://www.europa.eu)

## **IS YOUR SITE RIGHT?**

**Use this Environment Agency 10-point checklist to help you make sure**

### ***Storing and handling oils, chemicals and other risky materials***

1. Are storage containers fit for purpose, regularly inspected and maintained?
2. Are storage areas and containers sited away from watercourses, drains and unsurfaced areas?
3. Do storage containers have secondary containment, such as a bund, to contain any leaks or spills?
4. Do you have procedures and training for safe delivery and handling of materials?

### ***Waste management***

5. Is your storage and handling of waste safe and does it comply with the law?
6. Do you know where your waste goes? Are you sure it's disposed of correctly?
7. Are you reducing and recycling your waste? Do it and save money.

## **Site Drainage**

8. Do you have an up to date drainage plan of your site?

9. Is your site drained correctly?

- only clean water, such as roof drainage, to surface water drains.
- all contaminated water, such as sewage and trade effluent, to foul drain.

## **Dealing with pollution emergencies**

10. Do you have a plan, equipment and training to deal with pollution emergencies?

*If you answered 'no' to any question, or are unsure, use the Environment Agency's "Pollution Prevention Pays – getting your site right" guidance available from their website or call us for advice **0800 731 9313***

**If you have any questions about how to  
make your business safer for your staff  
and the environment please call  
**0800 731 9313****

**[www.environmental-innovations.biz](http://www.environmental-innovations.biz)**

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