



REPORT

Fire: Environmental Consequences and Risks

Environmental risks of fire



Early environmental input can prevent a straightforward fire claim from becoming a far more complex environmental incident.

Hidden environmental liabilities following a fire

Hidden liabilities can escalate a fire claim. The fire may be extinguished, but this may only be the start of the claim.

Contamination generated during a fire can spread far beyond the original site through fire-fighting water, smoke, ash and debris. Once these contaminants leave the original site, they can pollute rivers, drainage systems, groundwater and neighbouring land, increasing clean-up costs, regulatory involvement, delays to settlement, delaying recovery, significant remediation costs and creating additional environmental liabilities.



Key environmental contaminants following fire

ASBESTOS FIBRES

PFAS (FOREVER CHEMICALS)

DIOXINS & FURANS

PAHs

HYDROCARBONS

HEAVY METALS

PHENOLS

ASH, SOOT & PARTICULATE
MATTER

Environmental incidents can result in water contamination, environmental damage, regulatory action, third party liabilities, and significant remediation costs.

Hidden environmental risks

Fire can create hazardous contaminants

Even relatively small fires can generate hazardous contaminants.

Depending on the materials involved, these may include heavy metals, hydrocarbons, asbestos fibres, PFAS, combustion by-products and other hazardous substances.

Contaminants pathways and consequences

Contaminants can spread through fire water runoff, smoke and airborne particles, surface water drainage, groundwater infiltration, as well as through contaminated soils, ash and debris.

Potential consequences include contamination of drinking water resources, impacts on rivers, streams, ponds, groundwater and ecosystems, damage to neighbouring land properties, third-party environmental liabilities, regulatory enforcement, increased remediation and waste disposal costs, and harm to sensitive habitats and wildlife.

Consideration of environmental issues

Crawford environmental's contaminated land specialists understand how these contaminants behave, their likely migration and when further investigation or remediation may be required. Crawford environmental assess environmental risks and advise on practical containment measures before pollution spreads further.

Environmental costs may outlast the fire

Pollution can trigger regulatory involvement, specialist investigations, remediation, waste disposal requirements and third-party liabilities long after the fire has been extinguished.

Every fire is different

Domestic properties, farms, commercial premises, industrial facilities, waste sites and battery storage systems each present different contaminant profiles and require tailored environmental assessments.

The background of the slide is a photograph of a wildfire. In the upper left, a helicopter is silhouetted against the bright orange and yellow flames. The rest of the image is filled with the intense fire and dark smoke rising from the trees.

When environmental input may be required

Environmental input may be required where any of the following are present:

- Significant volumes of fire-fighting water/foam have been used.
- Surface water drains, rivers, streams, ponds or ditches are located nearby.
- The site overlies a sensitive aquifer or groundwater protection area.
- Fuels, oils, chemicals, waste materials or batteries have been involved in the fire.
- Industrial, manufacturing, waste management or agricultural activities are present.
- Asbestos-containing materials may have been damaged.
- Smoke, ash or debris has affected neighbouring properties or land.
- Regulators, water companies or local authorities have become involved.
- There are concerns regarding pollution, environmental liability or remediation costs.

Early consideration of environmental risks can help identify potential contaminant pathways, inform containment and clean-up measures, and reduce the likelihood of wider environmental impacts.

Regulatory risk assessment following green waste combustion at a farm

CHALLENGE

Following the combustion of approximately 15,000 tonnes of composted green waste, the Environment Agency revoked waste exemptions and questioned whether partially combusted material remained suitable for land spreading without an environmental permit. The client required an evidence-based assessment of potential risks to soils, livestock, controlled waters and human health.

SOLUTION

Crawford environmental undertook a phased, LCRM-compliant contaminated land risk assessment. A preliminary Conceptual Site Model informed targeted sampling of combusted materials, soils and leachate in accordance with WM1/WM3 and WM9 guidance. The findings informed waste classification, land-spreading suitability, remediation options and ongoing regulatory discussions with the Environment Agency.



Confirming safe use of a contaminated (fire damage) residential garden

CHALLENGE

Following a residential workshop fire, elevated lead concentrations were identified in garden soils. The homeowner required confirmation that remediation had been successful and that the garden was safe for future use.

SOLUTION

Crawford environmental completed a Tier 3 Detailed Quantitative Risk Assessment using the CLEA model to establish site-specific remedial targets. The assessment confirmed that the soil removal works were effective, providing robust evidence to satisfy regulators and reassure the homeowner.



Assessing fire water runoff contamination following an industrial fire

CHALLENGE

Following a fire at a neighbouring industrial unit, fire-fighting water containing potentially hazardous chemicals entered the insured commercial property. Concerns were raised regarding potential contamination of soils, risks to human health and controlled waters, and whether further investigation or remediation would be required.

SOLUTION

Crawford environmental undertook a phased environmental investigation comprising a site walkover, targeted soil sampling and laboratory analysis informed by the chemicals known to have been stored at the source property. A detailed risk assessment confirmed that contaminant concentrations did not pose unacceptable risks to human health, property or the environment, providing robust evidence that no further remediation was required and supporting the continued use of the site.



Early involvement helps to:

- Identify hidden contamination risks before they escalate
- Protect neighbouring land, watercourses and groundwater
- Support proportionate investigation and remediation
- Reduce regulatory and third-party liabilities
- Minimise claim delays and unnecessary remediation costs.

Why involve Crawford Environmental Consultants?

Crawford environmental provides specialist environmental science support for fire incidents, helping brokers, insurers and businesses identify contamination risks, assess environmental impacts and develop practical remediation strategies to minimise environmental damage. Crawford environmental contaminated land specialists provide practical, evidence-based advice from first notification through to remediation, helping stakeholders identify environmental risks early, manage liabilities effectively and resolve incidents and claims more efficiently.



For more information, visit crawco.co.uk.

Steven Minnis

Head of Technical Solutions

Specialty Environmental, Construction & Engineering

Steven.minnis@crawco.co.uk

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