This document is a draft of version 3 of our fire prevention plan guidance. It is still subject to editing and sign-off processes.

Fire prevention plans: environmental permits

What to include in your fire prevention plan and the fire prevention measures you must put in place.

You must follow this guidance if you are storing combustible wastes at sites for which you have a permit.

The fire prevention measures in this guidance have been designed to meet these 3 objectives:

- minimise the likelihood of a fire occurring
- aim for a fire to be extinguished within 4 hours
- minimise the spread of fire within the site and to neighbouring sites

If you submit a plan which includes all of the measures in this guidance, the Environment Agency is likely to approve your plan.

However there are other options you can suggest, in discussion with the Environment Agency. You can propose:

- alternative fire prevention measures – if you can demonstrate they'll still meet the 3 objectives

- that you don't need to extinguish a fire within 4 hours at your site, eg because it isn't close to sensitive receptors, but you will need to achieve the other objectives of this guidance.

You should contact the Environment Agency as soon as possible if you want to pursue either of these options. The Environment Agency will discuss your proposals and the level of technical detail you need to provide.

If you don't implement your fire prevention measures, the Environment Agency may take enforcement action.

This guidance doesn't replace these statutory requirements or other applicable legislation:

- sites controlled under local acts of Parliament
- Regulatory Reform (Fire Safety) Order 2005
- Dangerous Substance and Explosive Atmosphere Regulations 2002 (DSEAR)
- Health and Safety at Work Act 1974

Waste types this guidance applies to

This guidance applies to any amount of combustible waste, including (but not limited to):

- paper or cardboard
- plastics
- rubber (natural or synthetic, including whole tyres, baled tyres, tyre shred, crumb and fibre)
- wood (including planks, boards, sawdust, shavings, logs, firewood or chips, or wood joined to form crates, pallets, casks or barrels)
- fragmentiser waste (from processing end-of-life vehicles (ELVs), plastics and metal wastes from materials recovery facilities)

- rags and textiles
- scrap metals contaminated or mixed with other waste such as oils, plastics
- de-polluted and un-depolluted ELVs
- refuse derived fuel (RDF) and solid recovered fuel (SRF)
- waste electrical and electronic equipment (WEEE) including fridges, computers and televisions containing combustible materials such as plastic (including any batteries within this equipment)
- compost and plant material
- biomass
- mixed waste containing any combustible wastes

What this guidance doesn't apply to

This guidance doesn't apply to landfill sites or to the storage of coal, materials, or wastes that are:

- flammable wastes (flashpoint of 60°C or lower)
- combustible liquids or gases
- hazardous wastes, including hazardous waste batteries accepted as a separate waste stream, covered by Sector Guidance Note 5.06 [insert link]
- dangerous substances stored under the Control of Major Accident Hazards Regulations [Insert link]

This guidance also doesn't cover non-waste materials such as gas cylinders, aerosols and combustible liquids. However, you must still consider these in your fire prevention plan because they have significant potential to cause or increase the impact of fire on a site.

If you aren't sure if this guidance applies to you, please contact the Environment Agency.

For advice about other materials and activities not listed in this guidance, contact the Health and Safety Executive (HSE), your local fire and rescue service or the Environment Agency.

Sectors this guidance applies to

This list specifies which business sectors this guidance does and doesn't apply to. Some sectors need to contact the Environment Agency for more information as the guidance may not apply to some of their activities (marked with *).

Fire prevention plans are needed for:

- biowaste treatment (open windrow and in-vessel composting)*
- waste metals (ELV sites and scrap metal)
- non-hazardous waste
- agriculture (intensive farming only)*
- incineration*
- combustion*
- paper and pulp*
- cement lime and minerals*

*Contact the Environment Agency for more information [provide link to contact info]

Fire prevention plans are not needed for:

- Biowaste treatment (anaerobic digestion)
- Biowaste use
- Hazardous waste only (excluding WEEE)

If you're not sure if you need to do a fire prevention plan, contact the Environment.

Submitting your fire prevention plan

If you are applying for a permit to carry out a waste operation (link to waste guide) involving combustible wastes, you must send your fire prevention plan to the Environment Agency with your application.

For other types of permits, contact the Environment Agency to find out if you need to send them your fire prevention plan.

Using your fire prevention plan

Your fire prevention plan forms part of your management system (link to management system guide). It sets out the fire prevention measures and procedures you will implement on your site.

Your fire prevention plan must be a standalone document within your management system so that you and your staff can easily refer to it.

You must make sure that staff know where you keep your fire prevention plan. They must be able to access it easily at all times, including during an incident.

All staff and contractors working on site must understand the contents of the fire prevention plan so that they know:

- what they must do to prevent a fire occurring
- what they must do during a fire if one breaks out

You must have regular exercises to test how well your plan works and make sure that staff understand what to do.

Contents of your plan

Your fire prevention plan needs to cover the following information.

Activities at your site

Your fire prevention plan must provide details of the activities you carry out at the site.

Site plans and maps

Your fire prevention plan must include a site plan(s) showing:

- layout of buildings

- any areas where hazardous materials are stored on site (location of gas cylinders, process areas, chemicals, piles of combustible wastes, oil and fuel tanks)
- main access routes for fire engines and any alternative access
- access points around the site perimeter to assist fire fighting
- hydrants and water supplies
- areas of natural and unmade ground
- the location of fixed plant or where mobile plant is stored when not in use
- drainage runs, pollution control features such as drain closure valves and fire water containment systems
- storage areas with pile dimensions and fire walls (where applicable) includes wastes stored in a building, bunker, or containers
- the quarantine area(s)

You must have plans showing all sensitive receptors within a 1km radius of your site that could be affected by a fire. Plans should have a compass rose showing north and the prevailing wind direction. Examples of sensitive receptors may include:

- schools, hospitals, nursing and care homes, residential areas, workplaces
- protected habitats, watercourses, groundwater, and boreholes, wells and springs supplying water for human consumption
- roads, railways, bus stations, pylons (on or immediately adjacent to the site only), utilities, airports

Your fire prevention measures

Your fire prevention plan must set out all the measures you'll put in place to reduce the risk of a fire breaking out.

You must identify all the possible causes of a fire at your site. You must then set out the measures you will put in place to address those fire risks. These measures will depend on the waste management activities you're carrying out.

Measures to manage common causes of fire

Here are some examples of common causes of fire and the measures you can take to reduce the risk. There may be others you need to include in your fire prevention plan depending on the activities you carry out on your site.

Arson

You must have security measures in place, eg security fencing, intruder alarms and CCTV. These must include arrangements for outside of working hours.

Plant and equipment

You must have a maintenance and inspection programme for static and mobile plant and equipment. You must fit vehicles with fire extinguishers. You must keep mobile plant that isn't being used away from combustible waste.

Electrical faults including damaged or exposed electrical cables

Electrics on site must be fully certified by a qualified electrician and you must have documented regular maintenance procedures in place.

Discarded smoking materials

You must apply a no smoking policy or have designated smoking areas a safe distance away from combustible wastes to prevent accidental ignition.

Hot works

You must ensure staff and contractors follow safe working practices, eg a permit to work system, when carrying out hot works such as welding and cutting. You should carry out a fire watch for a suitable period after hot works have ended, particularly at the end of a working day.

Industrial heaters

You must have documented procedures for the use and regular maintenance of industrial heaters.

Hot exhausts

You must carry out a fire watch at regular intervals during the working day to detect signs of a fire caused by dust settling on hot exhausts and engine parts. You must also do this at the end of the day. A fire watch can simply be carrying out visual checks.

Source of ignition

You must keep naked flames, space heaters, furnaces, incinerators and other sources of ignition 6m away from combustible and flammable waste.

Batteries in ELVs

Batteries left connected in un-depolluted vehicles can short circuit and cause fires. You must remove batteries from un-depolluted vehicles before they are stockpiled awaiting de-pollution.

Leaks and spillages of oils and fuels

You must prevent fuels and combustible liquids leaking or trailing from site vehicles and ELVs. For example, this includes from vehicles:

- being tracked around the site
- before or after the de-pollution process

Build-up of loose combustible waste, dust and fluff

You must regularly inspect and clean the site to prevent the build-up of loose combustible waste, dust and fluff.

Reactions between wastes

You must have documented procedures for waste acceptance checks to prevent reactions between incompatible or unstable wastes, including lithium batteries. You must use a quarantine area where necessary.

Deposited hot loads

You must have a quarantine area for hot loads.

Self-combustion

Many wastes can self-combust under certain conditions. Self-combustion occurs when a material which can self-heat generates heat at a faster rate than it can be lost to the environment. The temperature continues to rise in the material speeding up the rate of reaction and releasing even more heat. Eventually the material reaches auto-ignition and the material then self-combusts.

You can prevent self-combustion by carefully managing pile volumes, height, storage duration, and the temperature of the wastes.

You must demonstrate that you have a clear method to record and manage the storage of all waste on site.

You must make sure that any combustible wastes are stored for less than 6 months (unless the material is compost and the Environment Agency has agreed that you can exceed this period).

Storing combustible wastes for longer than 6 months could increase the likelihood of a fire. If you propose doing this Environment Agency is unlikely to approve your fire prevention plan.

If you’re storing combustible wastes in the maximum pile sizes (link to table) for longer than 3 months, you must show what extra measures you’ll use to prevent self-combustion. For example, this could include monitoring temperatures in the waste.

At these maximum dimensions, the possibility of self-combustion can increase when combustible wastes are stored for more than 3 months.

If there are seasonal variations in demand or supply for the combustible waste, you must demonstrate how you’ll manage these variations. You must show how you will follow the ‘first in, first out’ principle so that wastes are stored for no longer than 6 months.

To help prevent self-combustion you must also:

- reduce the exposed metal content or proportion of 'fines' within the waste (exposed metals can oxidise which will generate heat, whilst fine particles are more prone to self-combustion)
- allow any heat generated during treatment such as shredding, chipping or producing crumb to be released so that the waste is cool before you form it into piles for storage
- minimise pile sizes (small piles with appropriate separation are safer than one big one)
- use good stock rotation for all stored materials and show how this is monitored and implemented
- store waste materials in their largest form

- monitor sub-surface temperature with a probe or other device that can take representative readings from the centre of a pile - temperature on the surface is unlikely to represent that at the core

- where storing waste in bales, your plan must show what sampling and testing protocol you will use to make sure you assess a representative number of bales (minimum 10%) during monitoring

- where storing waste in bales, you must make sure you obtain representative temperature readings from the centre of the bales and from bales within the centre of a pile

- explain in your plan the triggers you will use in relation to temperature, and actions you will take in response – including ensuring staff are trained to detect and manage hotspots
- routinely turn piles to ensure the waste remains cold and any localised warming is dissipated quickly - bales of waste must also be rotated

- define the maximum storage time of all materials on site and show in your plan how this will be monitored and controlled

- take into account external heating during hot weather and consider shading waste from direct sunlight or using other techniques to enable heat generated within the pile to be released

Your fire prevention plan must show how you'll do all of this.

Managing waste piles

If you manage waste piles carefully, you will:

- help prevent the risk of self-combustion
- limit the scale of a fire if one breaks out

.

Here are measures you must use to manage piles of waste effectively.

Maximum pile sizes

Waste type	Unprocessed or loose and more than 150mm	Processed 30 - 150mm or baled	Processed less than 30mm
Tyres and rubber	450 cubic metres	300 cubic metres	300 cubic metres
Wood	750 cubic metres	450 cubic metres	300 cubic metres
Compost and green waste (excluding during the active composting process)	750 cubic metres	450 cubic metres	450 cubic metres
RDF and SRF	450 cubic metres	450 cubic metres	450 cubic metres
Plastics	750 cubic metres	450 cubic metres	300 cubic metres

Paper and cardboard	750 cubic metres	750 cubic metres	450 cubic metres
Textiles	750 cubic metres	750 cubic metres	400 cubic metres
WEEE containing plastics including fridges, computers and televisions	450 cubic metres	450 cubic metres	450 cubic metres
Metals other than WEEE (including crushed ELVs, which are classed as 'baled' waste for the purpose of this table. For whole ELVs see below)	750 cubic metres	450 cubic metres	450 cubic metres
Fragmentiser fluff	450 cubic metres	N/A	N/A

For all waste piles, the maximum height allowed is 4 metres.

When measuring height, you must use the longest measurement between the base of the pile and the top. This is to allow for any uneven ground beneath the waste.

For all waste piles, the maximum length or width allowed (whichever is the longest) is 20 metres.

If your waste piles contain a mixture of combustible wastes, you should work out the maximum limits based on the type of waste that makes up most of a mixed pile.

You need to consider the design, access and layout of a building when storing waste so a fire can be extinguished easily.

Where maximum pile sizes don't apply

Maximum pile sizes don't apply for these types of waste.

Whole end of life vehicles

You must set out in your fire prevention plan how you will store end of life vehicles. Each vehicle must be accessible from at least one side:

- to allow a fire to be fought
- so unburnt vehicles can be accessed and moved to prevent the fire spreading

These rules will limit any row to a depth of 2 vehicles.

Where you store vehicles one on top of another, or on racking, you must limit this to 3 vehicles high so the stack can remain stable during a fire. You must maintain a separation distance of 6m between rows or blocks of vehicles.

Waste stored in containers

If you store waste in containers that can hold more than 1,100 litres, each one must be accessible so any fire inside it can be put out. Examples of these types of containers include skips, roll-on roll-off skips, or shipping containers.

If you have a fire, you must be able to move containers as soon as is reasonably practicable to prevent the fire spreading. You must set out in your fire prevention plan the procedures you will put in place to allow this to happen.

For all other containers holding waste, the maximum pile sizes (link to table) apply.

Production of compost

For composting activities, the maximum pile sizes don't apply whilst the waste is being actively managed and monitored during the composting process. Waste stored before and after active composting, must follow the maximum pile sizes (link to table).

Preventing fire spread

There are 2 main ways of preventing a fire from spreading.

Separation distances

You must:

- store your combustible waste piles with a separation distance of at least 6m
- have a separation distance of at least 6m between waste piles and the site perimeter, any buildings, or other combustible or flammable materials

These rules don't apply if you are composting the waste through an actively managed process.

Fire walls and bays

You can reduce separation distances by using fire walls and bays. Fire walls and bays must be designed to:

- resist fire (both radiative heat and flaming)
- have a fire resistance period of at least 120 minutes to allow waste to be isolated and to enable a fire to be extinguished within 4 hours

If you store waste in a bay, your fire prevention plan must show how:

- you'll carry out full and frequent stock rotation, ensuring you have a first in, first out policy, and how this will be monitored and recorded
- you'll check the temperatures of all the waste within the bay so that you carry out representative checks on the entire volume of the pile
- the specification and construction of the walls offer a thermal barrier and how any joints will be adequately sealed
- you have taken into account the calculation of flame height and radiation in preventing the spread of fire between piles
- you'll prevent brands or lighted material moving outside the bay walls and igniting other wastes
- you'll keep a 'freeboard' space at the top and sides of the walls clear at all times to prevent fire spreading over the walls

- you'll use the quarantine area
- quickly and effectively you'll remove wastes from bays and isolate it during an incident

Quarantine area

A quarantine area is somewhere you can place burning wastes to extinguish them. You can also move unburnt wastes into the quarantine area to isolate and prevent them catching fire.

The quarantine area must be within the boundary of the site for which you hold a permit.

You must have a quarantine area which is large enough to both:

- hold at least 50% of the volume of the largest pile, row or block of ELVs or containers on your site
- have a separation distance of at least 6m around the quarantined waste

You must set out in your fire prevention plan the location of this area and the volume of waste that it can hold.

For operational reasons you may want to keep the location of the quarantine area flexible. In which case, you must identify on your site plan all the areas you could use.

You must keep at least one specified quarantine area clear at all times – unless it is being used in the event of a fire.

If you use your quarantine area to store material temporarily (eg, non-permitted wastes) you must make sure you remove those wastes as soon as is practicable. In the event of a fire, you must remove it immediately. Your fire prevention plan must include details of the procedure you will use to do this.

You must set out how you will use your quarantine area in the event of a fire. You must be able to move waste to it, as soon as possible, or at most, within 1 hour of a fire starting.

Detecting fires

You must have procedures in place to detect a fire in its early stages so you can reduce its impact.

Your detection system should be proportionate to the nature and scale of waste management activities you carry out and the associated risks.

Appropriate automated systems may include:

- smoke and heat detectors including temperature probes
- CCTV visual flame detection systems
- spark, infrared and ultraviolet detection

The design, installation and maintenance must be covered by an appropriate third party certification scheme.

Suppressing fires

If you store waste in a building, you must install a fire suppression system. This system should be proportionate to the nature and scale of waste management activities you carry out and the associated risks.

Your system needs to enable a fire to be extinguished within 4 hours. When deciding what type of system to install you need to take into account that:

- the fire and rescue service may not be able to enter the building during a fire
- a suppression system may not extinguish a fire, although it may prevent a fire spreading and then allow the fire to be fought effectively by the fire and rescue service

Appropriate fire suppression systems may include:

- sprinklers
- water spray (deluge) systems
- water curtains
- fire blankets

You must make sure the design, installation and maintenance of all your automated suppression equipment is covered by an appropriate third party certification scheme.

Firefighting techniques

You must design your site to allow for active firefighting. This will help allow a fire to be extinguished within 4 hours.

Active fire fighting doesn't mean that you or your staff have to fight the fire. No one should put themselves at risk by trying to fight a fire.

Active fire fighting means having the resources available at all times to tackle a fire – including in the event of a fire. The resources needed include:

- plant
- staff
- available water supply
- finances

A variety of fire fighting techniques are used together or separately to extinguish a fire. These include:

- applying water to cool unburned material and other hazards
- separating unburned material from the fire using heavy plant
- separating burning material from the fire to quench it with hoses or in pools or tanks of water

Fire fighting techniques may also include suffocating the fire using soil, sand, crushed brick or gravel. However, you can only do this if:

- groundwater vulnerability is high
- the Environment Agency has agreed you can do this

- you remove and dispose of contaminated material as soon as it’s safe to do so

All these techniques may be used by staff on site if they are suitably trained and are supervised by the fire and rescue service. However protecting the health and safety of individuals on site must be your priority.

Water supplies

You must have enough water available to allow active fire fighting to take place and to manage a worst case scenario. Depending on your site this could be water in storage tanks or lagoons on site, or access to hydrants or mains water supply.

A worst case scenario would be your largest waste pile catching fire.

Use this estimate to calculate the volume of water you will need:

- a 300 cubic metre pile of combustible material will normally require a water supply of at least 2,000 litres a minute for a minimum of 3 hours

You may be able to reduce water volumes needed if you have a system that will allow the fire and rescue service to use re-circulated fire water. However, you may need to filter this water and the fire and rescue service will also need to be able to connect to your system. It may not always be appropriate or safe to re-circulate the water.

Managing fire water

You must be able to contain fire water to prevent pollution of the environment.

The containment facilities and pollution equipment you need will depend on:

- the size of your site
- the amount of waste you store
- the fire fighting strategy

The CIRIA document 'Containment systems for the prevention of pollution (C736)' may help you identify the facilities and equipment you need for your site.

You must take all the steps that are reasonably practicable to minimise pollution from fire water.

For example, preventing fire water entering:

- surface waters, eg rivers, streams, estuaries, lakes, canals or coastal waters
- into the ground

If you don’t you may be committing an offence.

Secondary and tertiary containment facilities for fire water run-off include:

- impermeable bunds
- storage lagoons
- shut-off valves
- isolation tanks
- modified areas of your site eg a car park

- pollution control equipment such as fire water booms and drain mats to block drains and/or divert fire water

You may also be able to divert fire water to your local sewers. You would need to get agreement in principle from the sewerage company before including this measure in your fire prevention plan.

Your environmental permit may allow you to store combustible wastes on hard standing rather than an impermeable surface with sealed drainage. If so, you must assess the potential impacts of fire water on:

- the local groundwater and surface water bodies
- any well, spring or borehole within 50m used for the supply of water for human consumption, including private water supplies

Your fire prevention plan must set out how you will prevent fire water affecting these receptors, if applicable.

During and after an incident

You must have contingency measures in place for dealing with issues during and after a fire. You must include these in your fire prevention plan.

For example, these could include:

- diverting incoming wastes to alternative sites during a fire
- having a plan for how you will notify those who may be affected by a fire, eg nearby residents and businesses

You also need to set out in your fire prevention plan:

- how you will clear and decontaminate the site
- the steps you must take before the site can become operational again