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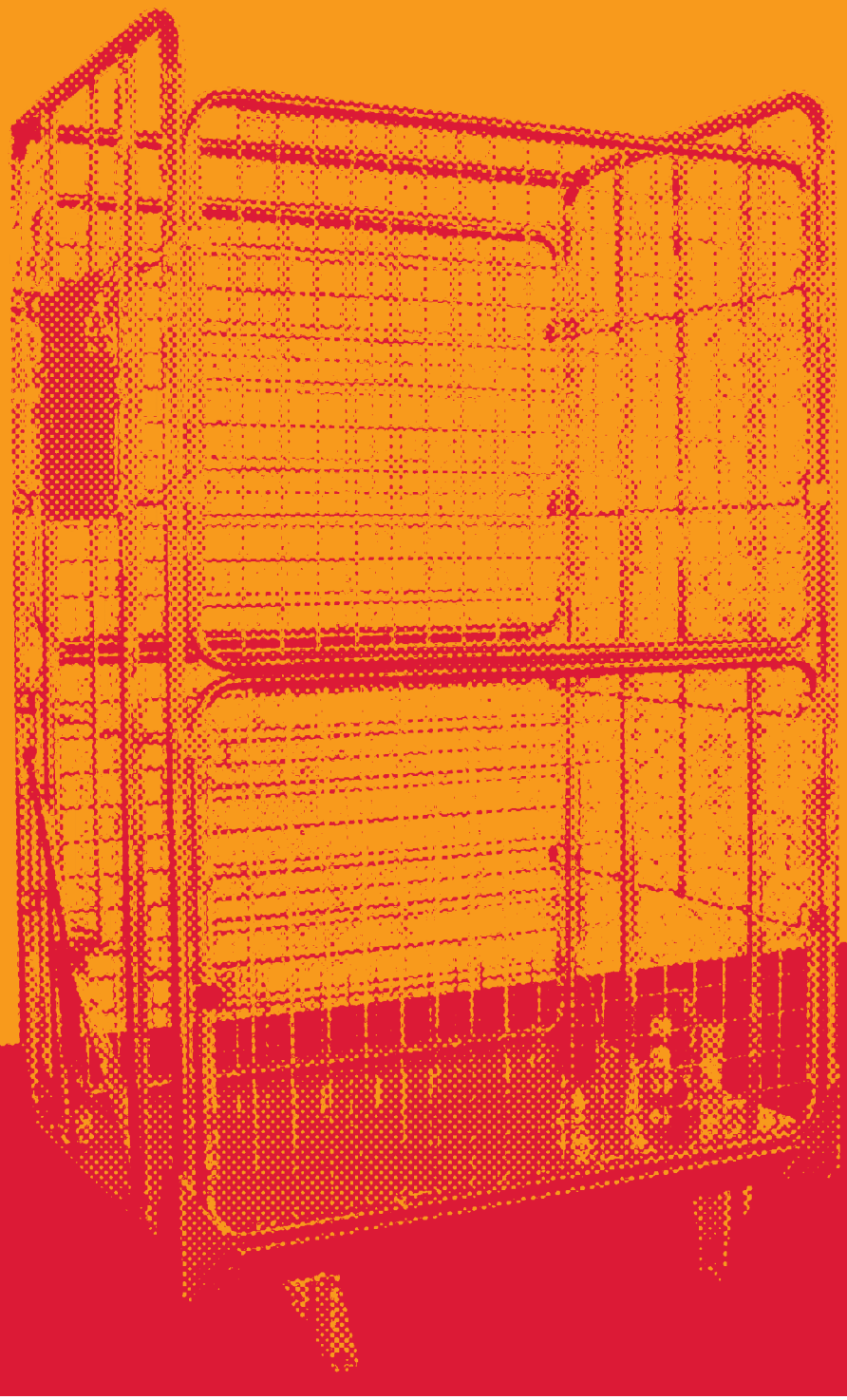
Risk Control

Recommendations for fire safety in laundries



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SCOPE

This document is intended to provide a practical guide to insurers and their clients regarding fire hazards and appropriate control measures associated with industrial and commercial laundries including those that operate in large establishments such as hospitals, hotels, holiday centres and prisons. While the advice is not directed at domestic operations, many of the principles do apply, albeit on a somewhat reduced scale.

These recommendations do not apply to dry cleaners or other operations which involve the recovery and recycling of a non-aqueous cleaning medium.

SYNOPSIS

These recommendations provide advice regarding the fire hazards associated with industrial laundry processes. Most important are the recommendations intended to reduce the likelihood of fires associated with hot laundry stacked after being removed from a drier and those resulting from self heating of items that have been heavily contaminated with grease and fat before entering the process.

DEFINITIONS

Ironer folder

An ironer folder presses large flatwork items such as sheets and duvet covers and then folds the ironed item into quarter panels by means of pivoting arms.

Bins, cages, trolleys

In these recommendations the terms bins cages and trolleys are used interchangeably throughout to describe large wheeled containers of various types used to store and transport laundry.

INTRODUCTION

Although often thought of as a simple wet process with low fire risk, the size, the complexity of the operations and the volume of combustible materials being laundered in commercial laundries introduce significant fire hazards. If a fire occurs, it can result in a large financial loss, as well as a loss of jobs, and even failure of the business.

Fires in laundries have occurred as a result of self-heating, lint clogging ducts and filters and electrical faults. The number of metal cages filled with clean and dirty laundry that have to be moved by the fire service to reach the seat of a fire can delay fire fighting operations and allow the fire to spread and develop before effective fire fighting operations can be employed.

Poor management can lead to electric or gas fuelled equipment not being used in accordance with best practice or the manufacturer's instructions. These factors, together with commercial pressures associated with time constraints, may result in insufficient cooling cycles in tumble driers. The hot laundry is then folded and stacked at a temperature such that significantly longer periods of time are necessary to allow the heat to dissipate from the items.

The number and severity of fire hazards requires careful management of all stages of the process. In large undertakings consultation with the insurance company at the planning stage is recommended.

RECOMMENDATIONS

1. Compliance with fire safety legislation

1.1 A suitable and sufficient fire risk assessment for the premises should be undertaken in compliance with the Regulatory Reform (Fire Safety) Order 2005 (or equivalent legislation in Scotland and Northern Ireland) (refs. 1-5). These measures should include, but not be limited to:

- establishing and maintaining clear and unobstructed fire escape routes with appropriate fire exit signs and emergency escape lighting; the latter being in compliance with BS 5266: **Emergency lighting** (ref. 6);
- physical segregation of the laundry from other operations being carried out on site, whether these are automated or manned;
- suitable fire detection and warning systems in case of fire;
- Consideration of appropriate fixed fire extinguishing systems;
- the provision of appropriate portable fire fighting equipment;
- development of an emergency action plan to protect life and property and ensure the continuing functioning of the business in the case of fire;
- staff training in the actions to take in the event of fire, including the safe shut down of the process and evacuation of the premises.

1.2 An assessment in compliance with the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) (ref. 7) should be undertaken where hazardous materials such as significant quantities of cleaning fluids, flammable liquids, oils, compressed gases or dusts are involved in the process.

2. Business continuity

2.1 A small fire can have a disproportionate effect on a business, even if it occurs in an inexpensive or trivial piece of equipment. If it occurs in a critical piece of equipment it can result in severe disruption, with associated loss of jobs, income and profits. Many items of modern equipment in an industrial laundry are increasingly expensive resulting in pressure for them to be used to the maximum benefit, even including automatic running during the nights or over weekends when no, or very few, staff are present. Careful consideration must be given to all fire and safety implications before such a decision is made and in consultation with the insurance company. Further advice in the case of unattended processes is set out in RC42 **Recommendations for processes involving the production of heat with the potential to be ignition sources for fire, in particular those left unattended for periods of time** (ref. 8).

2.2 All organisations should take steps to ensure the continued smooth running of their business by making a suitable emergency plan. Guidance for this is set out in **Business Resilience: A Guide to protecting Your Business and its People** (ref. 9). The emergency plan should address the implications of a fire, flood or other perceived disaster on all facets of the business model. It should indicate the lines of communication that should be followed and the contact details for specialist assistance, providers of alternative accommodation and suppliers of manufacturing plant.

2.3 When complete, the emergency plan should be tested by means of a table top exercise, with the results being assessed and amendments made to the plan as necessary.

2.4 Consideration may be given to applying commercially available computer programmes, such as the ROBUST software (Resilient Business Software Toolkit) that is available free of charge (ref. 10), or other appropriate product, to develop and check the adequacy of the plan.

3. Management of the process

The laundry process normally involves five stages:

3.1 Retrieval

This part of the process involves the collection and handling of the dirty linen, clothing and other items. Many large laundries use large metal cages or bins to collect the items, which may not be sorted before arriving at the premises. In some large businesses which have their own laundry the items may be conveyed by chute.

3.1.1 Where chutes are in use they should be constructed of non combustible materials and provide at least 30 minutes' fire resistance (insulation and integrity). They should lead as directly as possible to the laundry, with the minimum of bends where small items may get trapped.

3.1.2 The foot of the chute should be fitted with a self closing shutter or flap to maintain the fire resistant integrity of the chute when it is not in use. Similarly, the entry flaps or doors on upper floors should be fitted with self closers, intumescent strips and cold smoke seals. The shutter or flap and any parts of the chute within the laundry should provide at least 60 minutes' fire resistance to maintain the integrity of the laundry compartment (see 4.1).

3.1.3 Electrical wiring and other services should not be run within the laundry chute.

3.1.4 Doors to laundry chutes in hotels and similar establishments should incorporate a locking mechanism only available to appropriate staff to prevent foreign objects, including burning materials, being introduced into the chute.

3.1.5 A non-combustible container should be used to catch and retain the dirty laundry at the foot of the chute.

3.1.6 The number of cages of items inside the laundry should be carefully controlled. Other cages awaiting treatment should not be stored in the same fire compartment as that in which the cleaning process is undertaken. Where cages are stored outside, they should be stored in a secure area at least 10m from the building.

3.1.7 Care should be taken when using high density polyethylene bins to minimise the number in use. Plastic bins should be kept away from potential sources of ignition.

3.2 Sorting

There are particular hazards associated with laundries handling work from hospitals and other health care premises, where biohazards may be present, from organisations engaged in asbestos stripping work and factories producing solvent soaked wipes.

3.2.1 The nature of the solvents involved should be determined before wipes are received for laundering from businesses, and an assessment made in compliance with the DSEAR Regulations (ref. 7) before any work commences.

3.2.2 Where laundry has been, or is suspected of having been, contaminated with certain oils, there is a hazard from spontaneous combustion. It should therefore be segregated from other laundry and processed separately with particular care. The most hazardous oils are:

- Oil of turpentine
- Linseed oil
- Other unsaturated oils such as those used in French polishing

Towels in spas and leisure centres that have been contaminated with massage oils should also be processed separately from other items.

3.3 Washing

Washing, being a wet process, is not associated with many fire hazards. The sorted linen is weighed and introduced according to the washing machine's load limit. Large washing machines are managed by experienced operators. The operator loads and unloads the washer and monitors the chemical levels in the water. Modern tunnel washers, however, monitor their own chemical levels automatically and unload linen directly into the laundry's clean area.

Many industrial laundries have now replaced conventional washers with tunnel washers (also called continuous-batch washers). Since tunnel washers do not have to be stopped for loading and unloading of linen, they provide a continuous flow of clean laundry and with careful management are more economic to operate.

3.3.1 Items that have completed the washing process but still appear to be greasy or oily should be segregated from other laundry and subject to further washing with additional detergent before drying. Contaminated items should not be placed in the driers.

3.3.2 Where flammable liquids and peroxides or other oxidising agents are stored or in use, an assessment should be made in compliance with the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) (ref. 7). These substances should be stored outside the laundry compartment and be stored separately from one another and from other incompatible materials. Stores should be suitably ventilated and signed in accordance with RC20: **Recommendations for fire safety in the storage and use of highly flammable and flammable liquids – Part 1: General principles** (ref. 11) and RC43: **Recommendations for fire safety in the storage and use of oxidising materials** (ref. 12).

3.3.3 Where solvents such as flammable solvents or perchloroethylene are kept for spot cleaning, only small volumes necessary for the work period should be kept in the workplace, larger containers should be kept in secure cupboards designed for this purpose.

3.4 Processing

After washing, the items are dried, ironed and folded. Some items, such as towels and blankets, are dried by hot air driers. These use hot air forced through pores into a spinning cylinder or drum. The hot air and mechanical agitation evaporate the moisture from the linen prior to folding. Other items, such as sheets, are sent directly through heavy steam-heated rollers that dry, press and fold them.

While proprietary ironer-folder machines are in use in large laundries, in some instances there are small hands free ironing machines or conventional hand operated irons in use for ironing small or delicate items.

3.4.1 The air temperature in the driers must be carefully controlled; if it is not hot enough, the linen will not dry thoroughly in the cycle time. If it is too hot, the linen may become too dry, damage the product and create a fire hazard.

3.4.2 The cooling down cycle in the drier must be adequate to reduce the temperature of the items (see also section 7).

3.4.3 All washing, drying and similar equipment in the premises should be used, serviced and maintained in accordance with the manufacturer's instructions. Written records should be kept of the servicing and maintenance.

3.4.4 In recent years, it has become standard practice in prisons for prisoners to deposit personal laundry in mesh bags. The advantage of this system is that the mesh bags keep personal items separate during the wash cycle. The disadvantage is that prisoners can overfill the bags, inhibiting mechanical agitation and preventing water and chemicals from reaching soiled linen. As well as resulting in poorer quality washing, the compacted items can hold more heat when drying and in some circumstances pose a greater threat of self heating.

3.4.5 Where hand operated irons are employed, a time switch should be fitted so that they are not left hot throughout periods when there are no staff on the premises. Alternatively, the irons may incorporate a sensor to turn the appliance off automatically if not moved for a predetermined period of time.

3.4.6 Tunnel driers should be linked to the automatic fire detection and alarm system so as to isolate the source of heat when the system activates, but not to stop the movement of laundry.

3.5 Packaging and distribution

Following the laundry processes, items have to be returned to the customer or the point of use. Unlike dry cleaners, where most items are hung on hangers following the process with a plentiful air supply for cooling, laundries handle large numbers of sheets, duvets, towels and the like, which by their nature have to be folded and stacked, thus increasing the cooling time and in some cases even promoting the hazard of self heating.

3.5.1 Filled cages or bins should be stored away from the compartment in which the laundry process is undertaken and so as to have aisles at least one cage width wide between alternate rows to allow inspection, first aid fire fighting and removal of any cage where overheating may be occurring. This will also provide sufficient space to allow access for fire fighters should it be necessary for the fire and rescue service to be called.

4. Compartmentation

4.1 Laundries, including the clothing and linen currently being processed, should be located in a compartment separate from other processes or stored materials designed to restrict both lateral and vertical spread of fire and smoke for at least 60 minutes.

Figure 1: Trolleys of laundry (source: Wikipedia Industrial_laundry_sorting)

4.2 Trolleys of laundry awaiting processing or collection should be stored in a separate fire compartment also providing at least 60 minutes' fire resistance

4.3 Trolleys and stacks of material awaiting or having completed the laundry process should be located at least 2m from the hot surfaces of process equipment.

4.4 Care must be taken to ensure that all holes around piped services and cables passing through the walls, floor and ceiling of the laundry are suitably fire stopped.

4.5 Trolleys storing dirty and clean laundry, other than those associated with the current work period, should not be stored in the same fire compartment as the process equipment.

4.6 Boilers, steam generators and similar plant should be located in a compartment providing at least 60 minutes fire resistance.

4.7 External oil tanks for boilers should be located as set out in RC57 **Storage and use of highly flammable liquids in external fixed tanks** (ref. 13). Valves controlling the fuel supply from the tanks should cut off the oil supply automatically on actuation of the fire alarm.

5. Extract ducts

Extract ducts are a vital part of a laundry but are a particular hazard as they convey large volumes of humid air that carries numerous small fibres. These fibres may accumulate and significantly restrict the ductwork. They may also inhibit the effective action of dampers installed in the ducts.

The common signs that a laundry exhaust needs cleaning include:

- Clothes taking too long to dry;
- Visible lint buildup at the exit of the duct, causing a fire hazard;
- Drier units turning off automatically because the heat is not exhausting;
- Fire dampers in the ducts may malfunction;
- Higher concentrations of lint in the air within the laundry;
- Rusting of the ducts from holding wet lint for long periods.

5.1 Extract ducts should be designed and installed strictly in accordance with the recommendations of the manufacturers of the laundry equipment.

5.2 Ducts and flues associated with the drying processes should be of fire resistant construction and be routed directly to the outside by as direct a route as possible and without passing through another fire compartment or attic within the building.

5.3 The drier duct should be of metal construction with the minimum of joints and bends. Screws and other internal projections that could readily catch and retain fluff should also be avoided.

5.4 The interior of the ducts should be free of heat recovery diverter valves or similar equipment.

5.5 An adequate number of inspection hatches should be provided in suitable locations so as to provide access to all parts of the ductwork.

5.6 Regular maintenance is needed to remove fibres that have accumulated in the duct. This should be on a risk assessed basis; maintenance is commonly done every three to six months but may need to be as often as monthly. The drier duct should be maintained in good condition with the inspections and cleaning being undertaken by a competent engineer.

5.7 Regular cleaning should be undertaken in all parts of a laundry. Particular care should be taken to remove fluff from electric motors, heating coils, tumbler ducts, roof trusses and other surfaces such as horizontal structural elements, on which fluff may accumulate.

5.8 Cleaning should be undertaken using vacuum cleaners rather than compressed air to avoid disturbed dust and fibre particles creating a potentially explosive atmosphere.

5.9 The minute textile fibres comprising such fluff or lint can be subject to spontaneous ignition when impregnated with some oil, wax or other greasy residues, particularly if adjacent to sources of heat. The areas under calendar beds and around the operating mechanisms of cabinet-style garment-finishing machines are particular problem areas which should be cleaned regularly.

5.10 Where the installation of extract ducts is problematic, consideration should be given to installing condenser tumbler driers which condense the moisture from the damp extract air from the appliance.

5.11 Where large numbers of towels, duvets and similar highly absorbent items are to be cleaned consideration should be given to reducing the volume of water in the final drying process by utilising a hydro extractor between the washing and drying operations.

5.12 Where hydraulic rams are used to squeeze water from laundry or similar equipment is in use, a specific risk assessment should be made of the hazards associated with the potential for atomised leaks of flammable hydraulic fluid from the hoses, or leaks from the reservoir.

6. Self heating

Laundries have a history of suffering serious fire losses from self heating and spontaneous combustion, caused by a build-up of heat at the centre of bulk loads of hot linen through the slow oxidation of the textile fabric within the load. Very little smoke or heat may be produced for some time, perhaps for several hours, but eventually the material can ignite and burst into flame.

The risk of spontaneous combustion is increased when hot laundry is taken straight from a tumble-drier or calendar and tightly packed in trolleys or trucks. The presence of residues of oil, grease, wax, soap, rubber or similar oxidisable material on the fabric will further increase the danger.

With regard to tumble-dried laundry, special attention should be paid to the following operating procedures:

6.1 Laundry should not be over-dried in the tumbler;

6.2 Laundry should not be left in the tumbler after the drying process is finished, but should be unloaded immediately;

6.3 Tumble driers should always be unloaded and left empty overnight;

6.4 Tumble-dried laundry should be separated and folded as soon as possible after removal from the tumbler. If this cannot be done, the laundry should be removed from the tumbler and spread out in such a way that the heat is quickly lost;

6.5 Tumble driers should be equipped with a manual, or preferably automatic, means for cooling the load at the end of the drying cycle.

6.6 Unloaded laundry should be monitored and properly cooled before being left unattended.

7. Fire safety management

7.1 Electrical installations should be designed, installed and periodically tested by a competent electrician in accordance with the current edition of BS 7671 (the Institution of Electrical Engineers Wiring Regulations) (ref. 14). Inspections should be carried out on a risk assessed basis as recommended in the Periodic Inspection Report.

7.2 A suitable number of electrical socket outlets should be provided; the use of electrical extension leads and adaptors should be prohibited in wet process areas.

7.3 The operation of the laundry should take into account the findings of the DSEAR assessment which should identify hazard zones where there may be potential for exposable quantities of flammable liquid vapours or dusts to accumulate. This is important if, for example, wipes that may have been used with flammable liquids are to be laundered. The assessment should also identify hazardous

materials such as detergents, bleach and other chemicals which in some circumstances may be released or react to form a hazardous environment (ref. 7).

7.4 Safety with hazardous materials such as sodium hypochlorite should be addressed in the DSEAR assessment for the site.

7.5 Volumes of flammable liquids in use should be minimised. They should be stored and used as set out in RC20 **Recommendations for fire safety in the storage and use of highly flammable and flammable liquids - Part 1: General principles** (ref. 11).

7.6 Portable electrical equipment should be inspected and tested at least in accordance with HS(G) 107 **Maintaining portable and transportable electrical equipment** (ref. 15) and/or the IEE Code of Practice for In-Service Testing of Electrical Equipment (ref. 16). A risk assessment should determine the actual programme of inspection and testing.

7.7 Where the risk assessment indicates that a hazard from static electricity could develop then appropriate earthing and bonding of the equipment and any extraneous metal parts should be introduced and regular inspections of the arrangements be undertaken and recorded.

7.8 All cardboard boxes, packaging and other extraneous combustible waste materials should be removed from the laundry to a safe location at least 10m from the building at the end of each work period. Further advice is provided in RC48 **The protection of premises from deliberate fire raising** (ref. 17).

7.9 Laundries should have instructions for employees displayed in appropriate positions, on the safe operation of tumble driers and the handling of dried loads to reduce the potential for fire.

7.10 Where laundry workers do not have English as a first language it should be established that fire safety training has been properly understood. Where necessary, interpreters may need to be provided at training events and supporting literature and notices be produced in appropriate languages.

7.11 Laundry equipment should not be allowed to operate unattended outside normal working hours.

7.12 The lint filters on the driers should be cleaned regularly with the cleaning being recorded. Lint and fluff should not be allowed to accumulate in and around appliances.

7.13 Inappropriate fabrics or materials, such as foam rubber (latex foam) and some textiles with a 'waterproof' treatment should not be dried in a tumble drier as they may ignite on heating.

7.14 The possibility of deliberate fire raising from outside the building, by intruders or by staff should not be forgotten. When occupied, the premises should be secure.

7.15 In the case of a large facility, good liaison can often be established by inviting the fire and rescue service to visit the site and be involved in an emergency evacuation of the premises.

7.16 Information should be provided for the fire and rescue service at a prominent location to indicate:

- the layout of the site;
- the location of emergency shut down points for the process;
- the nature of the automatic fire suppression system(s) and the location of any controls;
- the nature and location of any hazardous substances on the premises;
- contact details for specialist staff who may need to be consulted; and
- the location of hydrants, rising mains or other sources of water for fire fighting purposes.

8. Fire protection

Most serious laundry fires occur when staff are not present to raise the alarm. Because of the high capital value of laundry plant and equipment and the importance of the laundry service, the fire risk assessment should be used to assess the need for a suitable automatic fire detection and suppression installations.

The selection and specification of fire detection equipment should take account of the laundry environment and the particular hazards associated with laundry fires. For instance, a large proportion of laundry fires originate in smouldering linen, and in these cases the early detection of smoke by means of smoke detectors is necessary. Provided that the installation is designed to minimise the occurrence of false and unwanted alarm signals, and the system is monitored effectively, this will facilitate the prompt attendance of the fire-and-rescue service and help to reduce the extent of the fire damage.

8.1 The laundry, and particularly the area in which trolleys of finished laundry are stored, should be protected by an automatic fire detection and alarm system designed and installed by an engineer with accreditation by an independent UKAS accredited third party certification body. The installation should be to a recognised category of installation in accordance with BS 5839-1 + A2: **Fire detection and fire alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance** (ref. 18) as determined by a risk assessment and in consultation with the insurer.

8.2 The automatic fire detection and alarm system should be monitored either on-site or by an off-site alarm receiving centre with accreditation by an independent UKAS accredited third party certification body and operating in accordance with BS 5979: **Remote centres receiving signals from fire and security systems. Code of practice** (ref. 19).

8.3 The installation should be periodically serviced and maintained by a competent engineer with accreditation by an independent UKAS accredited third party certification body in accordance with BS 5839-1 (ref. 18).

8.4 Where conveyors are used to transport items between processes these should be linked to the automatic fire detection and alarm system so as to halt the movement of fabrics when the system actuates.

8.5 In large areas or where there is not a significant hazard in the form of flammable liquids or electrical installations, serious consideration should be given to the installation of a water sprinkler installation. Sprinkler systems should

be designed, installed, commissioned and maintained in accordance with the **LPC Sprinkler Rules incorporating BS EN 12845** (ref. 20) by a company having accreditation by an independent UKAS accredited third party certification body as complying with the requirements of LPS 1048 **Requirements for the approval of sprinkler system contractors in the UK and Eire** (refs. 21).

8.6 Any other form of fixed fire suppression systems should also be designed, installed, commissioned and maintained by a company with accreditation by an independent UKAS accredited third party certification body as complying with the requirements of LPS 1204 **Requirements for firms engaged in the design, installation and commissioning of fire fighting systems** (ref. 22).

8.7 Suppression systems should be tested and maintained according to the requirements of the relevant British Standard and/or the installer's recommendations by a competent engineer with accreditation by an independent UKAS accredited third party certification body. Suitable records should be kept.

8.8 In addition to an automatic sprinkler installation or other fixed fire suppression system, a suitable number of appropriate portable fire extinguishers should be available and immediately accessible in the case of a fire. Such portable extinguishers should be approved and certified by an independent, third party certification body and be installed in accordance with BS 5306: Part 8 (ref. 23) and inspected and maintained in compliance with BS 5306: Part 3 (ref. 24).

9. Checklist

		Yes	No	N/A	Action required	Due date	Sign on completion
9.1	**Compliance with fire safey legislation (section 1)**						
9.1.1	Has a suitable and sufficient fire risk assessment for the premises been undertaken in compliance with the Regulatory Reform (Fire Safety) Order 2005 (or equivalent legislation in Scotland and Northern Ireland)? (1.1)						
9.1.2	Has an assessment in compliance with the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) been undertaken where hazardous materials are present? (1.2)						
9.2	**Business continuity (section 2)**						
9.2.1	Has careful consideration and consultation been undertaken with the insurance company to all fire and safety implications before operating the facility with no, or very few, staff present? (2.1)						
9.2.2	Have steps been taken to ensure the continued smooth running of the business by making a suitable emergency plan? (2.2)						
9.2.3	Has the emergency plan been tested by means of a table top exercise, with the results being assessed and amendments made to the plan as necessary? (2.3)						
9.2.4	Has consideration been given to applying commercially available computer programmes, such as the ROBUST software or other appropriate product, to develop and check the adequacy of the plan? (2.4)						
9.3	**Management of the process (section 3)**						
9.3.1	Where chutes are in use are they constructed of non combustible materials and provide at least 30 minutes' fire resistance? (3.1.1)						
9.3.2	Do chutes lead as directly as possible to the laundry, with the minimum of bends where small items may get trapped? (3.1.1)						
9.3.3	Is the foot of the chute fitted with a self closing shutter or flap to maintain the fire resistant integrity of the chute when it is not in use? (3.1.2)						
9.3.4	Is the laundry chute free of electrical wiring and other services? (3.1.3)						
9.3.5	Do the doors to laundry chutes in hotels and similar establishments incorporate a locking mechanism to prevent foreign objects, including burning materials, being introduced into the chute? (3.1.4)						
9.3.6	Are non-combustible containers used to catch and retain the dirty laundry at the foot of the chute? (3.1.5)						

		Yes	No	N/A	Action required	Due date	Sign on completion
9.3.7	Is the number of cages of items inside the laundry carefully controlled, with other cages awaiting treatment stored outside the fire compartment in which the cleaning process is undertaken? (3.1.6)						
9.3.8	Is care taken when using high density polyethylene bins to minimise the number in use? (3.1.7)						
9.3.9	Is the nature of the solvents involved determined before wipes are received for laundering from businesses, and an assessment made in compliance with the DSEAR Regulations before any work commences? (3.2.1)						
9.3.10	Where laundry has been, or is suspected of having been, contaminated with certain oils, is it segregated from other laundry and processed separately with particular care? (3.2.2)						
9.3.11	Are items that have completed the washing process but still appear to be greasy or oily segregated from other laundry and subject to further washing with additional detergent before drying? (3.3.1)						
9.3.12	Are flammable liquids and oxidising agents stored and used safely in accordance with the findings of a DSEAR assessment? (3.3.2)						
9.3.13	Where solvents such as flammable solvents or perchloroethylene are kept for spot cleaning, are only small volumes necessary for the work period kept in the workplace, with larger containers kept in secure cupboards designed for this purpose? (3.3.3)						
9.3.14	Is the air temperature in the driers carefully controlled? (3.4.1)						
9.3.15	Is the cooling down cycle in the drier adequate to reduce the temperature of the items? (3.4.2)						
9.3.16	Is all washing, drying and similar equipment in the premises used, serviced and maintained in accordance with the manufacturer's instructions, with written records kept of the servicing and maintenance? (3.4.3)						
9.3.17	Is the practice of processing personal laundry in mesh bags managed to prevent overfilling of the bags? (3.4.4)						
9.3.18	Where hand operated irons are employed, is a time switch fitted so that they are not left hot throughout periods when there are no staff on the premises? (Alternatively, do the irons incorporate a sensor to turn the appliance off automatically if not moved for a predetermined period of time?) (3.4.5)						

		Yes	No	N/A	Action required	Due date	Sign on completion
9.3.19	Are tunnel driers linked to the automatic fire detection and alarm system so as to isolate the source of heat when the system actuates, but not to stop the movement of laundry? (3.4.6)						
9.3.20	Are filled cages or bins stored away from the compartment in which the laundry process is undertaken and so as to have aisles at least one cage width wide between alternate rows to allow inspection, first aid fire fighting and removal of any cage where overheating may be occurring? (3.5.1)						
9.4	**Compartmentation (section 4)**						
9.4.1	Are laundries located in a compartment separate from other processes or stored materials designed to provide at least 60 minutes' fire resistance? (4.1)						
9.4.2	Are trolleys of laundry awaiting processing or collection stored in a separate fire compartment providing at least 60 minutes' fire resistance? (4.2)						
9.4.3	Are trolleys and stacks of material awaiting or having completed the laundry process located at least 2m from the hot surfaces of process equipment? (4.3)						
9.4.4	Is care taken to ensure that all holes around piped services and cables passing through the walls, floor and ceiling of the laundry are suitably fire stopped? (4.4)						
9.4.5	Are trolleys storing dirty and clean laundry, other than those associated with the current work period, stored away from the fire compartment in which the process equipment is housed? (4.5)						
9.4.6	Are boilers, steam generators and similar plant located in a compartment providing at least 60 minutes' fire resistance? (4.6)						
9.4.7	Are external oil tanks for boilers located as set out in RC57: Storage and use of highly flammable liquids in external fixed tanks, with valves controlling the fuel supply from the tanks cutting off the oil supply automatically on actuation of the fire alarm? (4.7)						
9.5	**Extract ducts (section 5)**						
9.5.1	Are extract ducts designed and installed strictly in accordance with the recommendations of the manufacturers of the laundry equipment? (5.1)						
9.5.2	Are ducts and flues associated with the drying processes of fire resistant construction routed directly to the outside by as direct a route as possible and without passing through another fire compartment or attic within the building? (5.2)						
9.5.3	Are the drier ducts of metal construction with the minimum of joints and bends? (And are screws and other internal projections that could readily catch and retain fluff also avoided?) (5.3)						

		Yes	No	N/A	Action required	Due date	Sign on completion
9.5.4	Is the interior of the ducts free of heat recovery diverter valves or similar equipment? (5.4)						
9.5.5	Is an adequate number of inspection hatches provided in suitable locations so as to provide access to all parts of the ductwork? (5.5)						
9.5.6	Is regular maintenance carried out to remove fibres that have accumulated in the duct with the inspections and cleaning being undertaken by a competent engineer? (5.6)						
9.5.7	Is regular cleaning undertaken in all parts of a laundry with particular care taken to remove fluff from electric motors, heating coils, tumbler ducts and horizontal structural elements on which fluff may accumulate? (5.7)						
9.5.8	Is cleaning undertaken using vacuum cleaners rather than compressed air to avoid disturbed dust and fibre particles creating a potentially explosive atmosphere? (5.8)						
9.5.9	Are problem areas under calendar beds and around the operating mechanisms of cabinet-style garment-finishing machines are cleaned regularly? (5.9)						
9.5.10	Where the installation of extract ducts is problematical, is consideration given to installing condenser tumbler driers which condense the moisture from the damp extract air from the appliance? (5.10)						
9.5.11	Where large numbers of towels, duvets and similar highly absorbent items are to be cleaned is consideration given to reducing the volume of water in the final drying process by utilising a hydro extractor between the washing and drying operations? (5.11)						
9.5.12	Where hydraulic equipment is in use is a specific risk assessment undertaken of the hazards associated with the potential for atomised leaks of flammable hydraulic fluid? (5.12)						
9.6	**Self heating (section 6)**						
9.6.1	Are measures taken to ensure that laundry is not over-dried in the tumble drier? (6.1)						
9.6.2	Is the tumble drier emptied of laundry immediately after the drying process is completed? (6.2)						
9.6.3	Are tumble driers always unloaded and left empty overnight? (6.3)						

		Yes	No	N/A	Action required	Due date	Sign on completion
9.6.4	Is tumble-dried laundry separated and folded as soon as possible after removal from the tumbler? (If this cannot be done, is the laundry removed from the tumbler and spread out in such a way that the heat is quickly lost?) (6.4)						
9.6.5	Are tumble driers equipped with a manual, or preferably automatic, means for cooling the load at the end of the drying cycle? (6.5)						
9.6.6	Is unloaded laundry monitored and properly cooled before being left unattended? (6.6)						
9.7	**Fire safety management (section 7)**						
9.7.1	Are electrical installations designed, installed and periodically tested by a competent electrician in accordance with the current edition of BS 7671? (7.1)						
9.7.2	Is a suitable number of electrical socket outlets provided so as to avoid the use of electrical extension leads and adaptors? (7.2)						
9.7.3	Does the operation of the laundry take into account the findings of the DSEAR assessment which identifies hazard zones where there may be potential for exposable quantities of flammable liquid vapours or dusts to accumulate? (7.3)						
9.7.4	Is safety with hazardous materials such as sodium hypochlorite addressed in the DSEAR assessment for the site? (7.4)						
9.7.5	Are the volumes of flammable liquids in use minimised and are they stored and used as set out in RC20-1? (7.5)						
9.7.6	Is portable electrical equipment inspected and tested at least in accordance with HS(G) 107 and/or the IEE Code of Practice for In-Service Testing of Electrical Equipment? (7.6)						
9.7.7	Where the risk assessment indicates that a hazard from static electricity could develop has appropriate earthing and bonding of the equipment and any extraneous metal parts been introduced and regular inspections of the arrangements undertaken and recorded? (7.7)						
9.7.8	Are all cardboard boxes, packaging and other extraneous combustible waste materials removed from the laundry to a safe location at least 10m from the building at the end of each work period? (7.8)						
9.7.9	Does the laundry have instructions for employees displayed in appropriate positions, on the safe operation of tumble driers and the handling of dried loads to reduce the potential for fire? (7.9)						

		Yes	No	N/A	Action required	Due date	Sign on completion
9.7.10	Where laundry workers do not have English as a first language is it established that fire safety training has been properly understood? (Where necessary, are interpreters provided at training events and is supporting literature produced in appropriate languages?) (7.10)						
9.7.11	Is there a prohibition on laundry equipment being allowed to operate unattended outside normal working hours? (7.11)						
9.7.12	Are the lint filters on the driers cleaned regularly with the cleaning being recorded? (7.12)						
9.7.13	Is care taken to ensure that inappropriate fabrics or materials, such as foam rubber (latex foam) and some textiles with a 'waterproof' treatment are not dried in a tumble drier? (7.13)						
9.7.14	Is the possibility of deliberate fire raising from outside the building, by intruders or by staff remembered, with the premises kept secure out of working hours? (7.14)						
9.7.15	In the case of a large facility, has good liaison been established by inviting the fire and rescue service to visit the site and be involved in an emergency evacuation of the premises? (7.15)						
9.7.16	Is appropriate information provided for the fire and rescue service at a prominent location? (7.16)						
9.8	**Fire protection (section 8)**						
9.8.1	Is the laundry, and the area in which trolleys of finished laundry are stored, protected by an automatic fire detection and alarm system to a recognised category of installation in accordance with BS 5839-1 as determined by a risk assessment and in consultation with the insurer? (8.1)						
9.8.2	Is the automatic fire detection and alarm system monitored either on-site or by an off-site alarm receiving centre? (8.2)						
9.8.3	Is the installation periodically serviced and maintained by a competent engineer? (8.3)						
9.8.4	Where conveyors are used to transport items between processes are these linked to the automatic fire detection and alarm system so as to halt the movement of fabrics when the system actuates? (8.4)						

		Yes	No	N/A	Action required	Due date	Sign on completion
9.8.5	In large areas or where there is not a significant hazard in the form of flammable liquids or electrical installations, has serious consideration been given to the installation of a water sprinkler installation? (If so, has the sprinkler system been designed, installed, commissioned and maintained in accordance with the LPC Sprinler Rules incorporating BS EN 12845 by a company with accreditation by an independent UKAS accredited third party certification body as complying with the requirements of LPS 1048? (8.5)						
9.8.6	If there are other forms of fixed fire suppression systems are they also designed, installed, commissioned and maintained by a company with accreditation by an independent UKAS accredited third party certification body as complying with the requirements of LPS 1204? (8.6)						
9.8.7	Are suppression systems tested and maintained according to the requirements of the relevant British Standard and/or the installer's recommendations by a competent engineer with accreditation by an independent UKAS accredited third party certification body? (8.7)						
9.8.8	In addition to an automatic sprinkler installation or other fixed fire suppression system, are a suitable number of appropriate portable fire extinguishers available and immediately accessible in the case of a fire? (8.8)						

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