



Property Risk Consulting Guidelines

LAUNDRIES

INTRODUCTION

Laundry operations vary considerably in size. The two major types considered in this document are commercial and institutional. Laundries process a variety of different articles, such as bedding, table cloths, rugs, rags, uniforms, hospital gowns, and surgeons' apparel.

Sometimes laundries have to be "certified" to process laundry for specific types of facilities. One type of facility requiring this certification is a hospital. To obtain the certification, hospital authorities provide specific guidelines that the laundries must follow. The certification is based upon separation of soiled linen from clean linen, water temperature, type of detergent used, and degree of cleanliness of the washed linens. The separation involves equipment layout, building interior design, and specific handling methods using conventional equipment. The layout and design include single pass-through equipment and air flow designs to prevent bacteria spread.

Other types are commonly referred to as commercial laundries and these typically are ones that work under contract such as: uniform suppliers, restaurant lines, and hotel bedding. These are typically not certified processes but also must meet various other requirements including discharge and exhaust.

PROCESS AND HAZARDS

Storage

Soiled laundry is normally received in cloth bags conveyed and opened by hand and placed into roller tubs. These tubs can be constructed of rubber, fiberglass reinforced plastic (FRP), polypropylene, or other types of plastic.

Storage of soiled and cleaned linens can be a problem. Normally a commercial laundry has a one day supply of soiled laundry on site. Dirty and clean laundry can spontaneously ignite depending upon the chemicals present in the laundry. Rags have a number of chemicals, grease, and oils, and when left compacted, can react and ignite. In some cases, if laundry personnel know the specific manufacturing process and chemicals involved, they will store the laundry in sealed steel drums outside the building. Short turnaround time is the most practical method of eliminating the spontaneous ignition problem.

Examples of recent losses involving spontaneous ignition include:

- Nonyl phenol ethoxylate spontaneously ignited rags after cleaning.
- A reaction of sodium hypochlorite bleach and urea produced nitrogen trichloride that also spontaneously ignited.

Washing

Large capacity, rotary type washers do most of the washing. Machines can vary up to 900 lb (400 kg) in size, but the average is between 400 and 800 lb (180 and 360 kg). Detergents and fabric softeners can be pumped from a mixing room to the washing machines or added manually at each unit.

Detergents, bleaches, and fabric softeners may be powder or liquid, stored in 5 gal (19 L) containers, 55 gal (208 L) drums, intermediate bulk containers (IBC, excess of 300 gal (1135 L)) or in bulk storage tanks. Plastic drums are frequently used. Some fabric softeners and detergents may be flammable, and some wash chemicals can react with each other when mixed.

Dryers

Most dryers or tumblers are either gas fired or steam heated. Some may use a hot oil system. Average sizes range from 50 to 600 lb (22 to 275 kg). Gas fired dryers are normally equipped with a water spray system tapped from the domestic water activated by a high temperature thermocouple. Most fires occur after drying when linens are left in the units overnight.

Lint Collection Systems

Lint collection systems are normally located on the roof. They vary anywhere from simple wire cages to cyclones or bag filters. Some of the cage type may have a water wash / slurry system to collect the build up. Lint collection systems on newer equipment can be located directly on the dryers. These collection systems are subject to constant maintenance and cleaning schedules. Fires in ductwork and collectors are common, and loss of the collection system may shut down the laundry for an extended period.

Ironers

Ironers have been around for quite some time, and their technology has changed very little over the years. Ironers vary in width and construction. Typically, chest sizes range between 110 and 120 in. (275 and 300 cm) and are constructed of cast iron or steel. Ironers are normally used to iron sheets and various types of linen. Rollers can be solid or have a perforated design involving a vacuum system pulling air through the rollers to an exhaust system. Rollers can be covered with a fire resistive fabric such as Nomex. These fabrics are coated with a wax type substance where a particular type of sheet or mat is run through the unit to make the chest "slick." Uncovered rollers are coated with ironer oils or food grade greases.

Several fires have resulted when paraffin or wax coating was placed on the chest rollers. Specifically, wax residue can build up in the ductwork that draws off these roller systems. Grease and oils can also accumulate in the exhaust systems. Irons are greased quite frequently, and if improper greasing techniques or types are used, considerable oil buildup can occur beneath the units. In addition, sometimes a steel wool pad filled with various wash chemicals is used to clean rollers.

Hand type ironers are also used which is hand loaded by an operator. These are typically steam or electric heated and look like a large ironing board. These have a platform for the garment to be placed on and the operator closes a lid for a defined time and re-opened. Fires can occur when the operator is distracted and the lid is left closed.

Hanging Garment Storage

Commercial laundries normally store a small amount of hanging garments. Depending upon the size of the area and its arrangement, this type of storage can overtax an ordinary hazard sprinkler system. Further details can be found in PRC.10.2.5 concerning Hanging Garments.

Boilers

High pressure boilers are used to produce the required steam pressure to operate the irons. Most boilers are gas, oil, or dual fired, however, smaller units can be electrically heated. At small and medium size laundries, a single boiler is quite common. Some of the boilers can be very small and operate one or two irons, therefore some sites can have many in a single area.

LOSS PREVENTION AND CONTROL

These loss prevention and control guidelines are not all inclusive and are written for an average hazard level. Increased hazard levels require increased protection and additional loss prevention and control features.

Interior Protection

Protect the entire facility with a wet pipe sprinkler system installed in accordance with NFPA 13 and PRC.12.1.1.0 for Ordinary Hazard Group 2 occupancy. Design the sprinkler system over the area where cleaned garments are hung in accordance with PRC.10.2.5. Where rubber, fiberglass reinforced plastic (FRP), polypropylene, or other types of plastic tubs are stored higher than 5 ft (1.5 m), design the sprinkler protection in accordance with NFPA 13 and PRC.12.1.1.0.

Lint Collection Systems

Install lint collectors outdoors. Install automatic sprinkler protection on a non-freeze system for the lint collection systems including the ductwork, regardless if the lint collection systems are cyclones, bag collectors, or lint cage type collectors. Some locations may consider steam snuffing for inside ductwork as this often allows the site to get back up and running quicker. However, there must be steam available at all times, 24 hours/day, 7 days/week and this often limits the use.

Design the ductwork with inspection and clean-out ports. Provide static grounding and bonding on all metal ductwork associated with transferring lint to the collection point. Clean and inspect all ductwork weekly or more frequently if the lint accumulates quickly. Refer to NFPA 91 for additional information.

Ironers

Design the ductwork from the roller systems with inspection and clean-out port. Clean and inspect all ductwork weekly or more frequently if the wax accumulates quickly. Clean under the ironers weekly or more frequently if oil accumulates quickly. Prohibit the use of combustible solvent for cleaning the rollers.

Boilers

Install the boiler in accordance with NFPA 85, ASME Boiler Codes, PRC.4.0.1, and PRC.7.1.0.6. Provide written records and procedures covering feedwater chemical treatment, regular blowdown, internal inspections and testing of safety devices in accordance with PRC.4.0.3 and PRC.7.1.0.5. Contingency plans for using a rental boiler should also be in place.

Flammable and Combustible Liquids Handling

Construct and protect flammable and combustible liquids storage rooms and piping in accordance with NFPA 30. When taking flammable and combustible liquids outside the storage rooms, use listed flammable liquids containers. Provide static grounding and bonding, bung vents, and listed flammable liquid pumps or self-closing valves on all containers and drums.

Dryers

Install all dryers in accordance with NFPA 86 and PRC.4.0.1. Provide all dryers with temperature limit controls. Establish procedures so the laundry is never left in the unit after a shift or for any extended period of time.

Pre-Emergency Planning

Laundries directly associated with another site can have a dramatic effect on the other operations. An example is a hospital. An on site laundry that is completely lost due to an incident will immediately have impact on the rest of the hospital for bedding, surgery garb, uniforms, table cloths, etc. This is also true for a hotel/resort. Although majority of all hotels use an outside linen service, remotely located resorts often have their own operations. The remoteness must be considered for an impact if the laundry operation was lost and what would be needed to lessen operational impact.

As part of any occupancy that is depended upon the laundry, an extensive Pre-Emergency and Business Continuity Plan (P{RC.1.7.0) is needed. This should address other laundries in the area that can handle the additional work as well as remotely located regions and plans to ship as needed. Remotely located areas often have several days of clean laundry on site. The location of stored laundry needs to be considered if in the same area as the machinery and potential exposure to smoke and water damage.