



Property Risk Consulting Guidelines

XL Risk Consulting

A Publication of AXA XL Risk Consulting

PRC.17.18

NEWSPAPER, MAGAZINE AND BOOK PUBLISHING

INTRODUCTION

Publishing newspapers, magazines and books is a continuous process involving many hazards. Combustible loading throughout the facility requires that the facility be provided with complete sprinkler protection. Storage of printed newspaper is limited because of daily delivery to the public. However, in book and magazine publishing finished goods are usually held in storage until their shipping date.

Production interruptions involving paper storage or flammable liquids could seriously impact operations of a major daily newspaper or magazine. Production loss of only two or three days could be disastrous, especially for a daily newspaper.

This PRC Guideline describes the hazards of the publishing process and outlines the protection required for them. PRC.17.18.1 provides complete process and protection details regarding pressroom operation.

PROCESSES AND HAZARDS

Materials Handling

Raw paper stock consists of rolled paper of varying types and widths, and cartons of sheet paper. Miscellaneous storage heights and the absence of appropriate nesting make rolled paper storage vulnerable to rapid fire spread. Water from broken pipes, sprinkler operation or other sources can damage paper stored in direct contact with the floor.

Flammable and combustible inks, typically stored in flammable liquids storage rooms, are usually pumped to printing presses. Fires involving flammable and combustible liquids could be unusually large. These fires can develop and spread rapidly.

Composing

In the composing area, the text for articles or books is prepared for printing. This includes typesetting and the insertion of graphics. Loss of computerized composing equipment could create an extremely large interruption to operations.

Plate Preparation

After the pages are composed by computer, the layout is forwarded to the plate room where the printing plates containing the page setup, text and graphics are produced. Some older newsprint operations may still use lead type set and heated lead pots for lead typeface reprocessing.

Although most modern layout is done digitally, the remaining text or artwork is photographed to produce a transparency. If the image is a full color reproduction, color separation is required. Various color filters are used with this equipment to separate colored photographs into individual primary colors.

Specialized photographic equipment is used to reproduce the artwork on copy. Materials such as paper, film, and plastic or glass base plates covered with a light-sensitive coating or silver halide photographic emulsion are also used. Negatives are used for letterpress and some lithography. Positives are used for color work, such as gravure, silk-screening and the remaining lithography. See PRC.17.18.1.

Plate preparation rooms may contain ordinary combustibles, films, and flammable and combustible liquids used as plate cleaners. Most chemicals are inorganic and noncombustible. Plate materials could be plastic, rubber or metal.

Image carriers may be manual, mechanical, electrostatic or photomechanical. Some operations, such as silk-screening, use manually prepared image carriers, such as wood, linoleum, copper or steel engraving dies. Mechanical image plates are produced for stock certificates, currency and specialty gravure work. Electrostatic plates are used in some offset work for imaging from paste-ups and for laser plates used in one color newspaper printing.

Most other platemaking operations involve chemical etching using a photomechanical process. This is the most common method of plate making and is capable of reproducing photographs. Some areas of the light sensitive coatings are exposed to light and allowed to dissolve. The coating material is usually one of two types: diazo and photopolymer, which uses UV to initiate the polymerization reaction.

During processing, lithographic plates become ink-receptive in the image area and water-receptive in the nonimage area. Some plates are deep etched. Deep etching removes copper and other heavy metal compounds.

Multicolor printing involves preparing one plate for each primary color and a black screening plate for shading. If additional runs of the same job are to be printed periodically, transparency plates and other associated materials start to accumulate.

Printing

The type of press used depends on the desired effect. The completed printing plate is mounted on the printing press. Paper is fed into the press by either roll or sheet. If rolled paper is used; it is mounted on reels and fed through the press at very high speeds. Several rolls of paper are usually located near the press so they can easily be mounted on the press. Sheet-fed presses operate at much slower speeds.

Improper electrical equipment, electrical faults, mechanical friction, static electricity generation and smoking materials are the most common ignition sources.

Pressrooms present the largest loss exposure for printing operations. Printing presses typically have very high value per unit and are designed to very critical operating tolerances.

Combustible substrates, flammable and combustible inks and cleaning solvents, and dusts (paper and starch) can also be found in the printing operation. The severity of these exposures depends on the type of press being used, its size and speed, and the quality of housekeeping and maintenance.

Slitting And Cutting

The printed paper proceeds to the slitting and cutting room. Here the paper gets slit or cut to the proper size and collated. Newspapers and magazines are then bound and readied for distribution. Book materials are sent to the bindery where they are assembled (into packages known as signatures) and covers are attached.

Although not as hazardous as the printing operation, paper scrap and dust could create a serious loss exposure. Proper housekeeping is essential.

Improper maintenance of the paper processing equipment could result in a fire because of overheated bearings or friction between paper fibers and fast moving metal parts.

Binding

Binding involves stapling, stitching or gluing. Paperback books are put together by applying glue to the book covers and book spines prior to assembly. The glue then dries as the books are conveyed through hot air dryers. The dryers are usually gas-fired. Glue flammability must be determined to ensure proper protection is provided. Typically, the glue is a flammable or combustible liquid. The explosion hazard is similar to that of the air dryers in the pressroom. However, some glues are water soluble and nonflammable.

LOSS PREVENTION AND CONTROL

Management Programs

Institute adequate loss prevention inspection and audit programs and communicate their effectiveness to top management. This management feedback is a key feature of *OVERVIEW* (PRC.1.0.1), AXA XL Risk Consulting's total management program for loss prevention and control. In developing a program, pay particular attention to the following important areas:

Housekeeping

Printing and publishing operations produce a lot of paper and plastic waste as well as a lot of ink residue. Proper housekeeping is imperative to prevent paper and starch dusts from accumulating. If dust generation is excessive, the use of automatic, properly protected dust collection equipment may be required.

Operator Training

Educate all operators in the hazards involved and in functions of the safety control equipment. Forbid deviations from the written procedures.

Pre-Emergency Planning

Develop and maintain a written pre-emergency plan that clearly defines all facets of emergency response and recovery. *OVERVIEW* may be used to develop a customized plan for the facility.

Preventive Maintenance

Heavy attrition on key equipment requires redundancy so that repairs and maintenance can proceed with the plant operating at full capacity. A proper preventive maintenance program with a spare parts program is essential to the continued performance of this equipment.

Inspect and maintain process equipment with proper consideration of design and service conditions. Include all appropriate types of modern nondestructive testing, IR scanning and vibration analysis in the inspection techniques. Establish a detailed record-keeping system that includes equipment retirement forecasts.

Plant Security And Surveillance

Restrict access to the site by fencing with guards at all points of access to the property. Provide recorded watchman service in areas that are not constantly attended.

Other Management Programs

Incorporate these features into the comprehensive management program for loss prevention and control:

- Welding, cutting and other "hot work" permit programs.
- A program of supervision of impairments of fire protection equipment using AXA XL Risk Consulting's "RSVP" program. Do not operate equipment unless all protection systems are in service.

- Smoking regulations.
- Loss Prevention Inspection.

Facility Protection

The loss prevention and control guidelines are not all-inclusive and were written with an “average” hazard level in mind. Increased hazard levels warrant additional loss prevention and control measures.

Skid all bulk paper supplies not in large roll form 4 in. – 6 in. (80 mm – 160 mm) off the floor. Appropriate floor drainage will limit damage to roll paper.

Separate rolled paper storage, flammable liquid storage, and the pressrooms from each other and other occupancies by 3-h rated firewalls with automatic closing fire doors at necessary openings.

Provide sprinkler protection with density design as specified in NFPA 13 and PRC.12.1.1.0 as follows:

- Rolled paper storage. Also use applicable sections of NFPA 1 and PRC.10.1.1.
- Other paper product storage. Also use applicable sections of NFPA 1 and PRC.10.1.1.
- Composing, slitting and cutting areas as an Ordinary Hazard, Group 2.
- In the pressroom as follows:
 - Extra Hazard Group 1 for press areas with inks less than or equal to 100°F (37.8°C) flash point. Where the press area is congested a foam-water sprinkler system would enhance the overall protection.
 - Ordinary Hazard Group 2 for press areas with inks greater than 100°F (37.8°C) flash point.
 - Sprinklers extended to all concealed spaces or press areas shielded from ceiling sprinkler discharge.

Limit in-process paper storage to a one-day’s supply. In the pressroom, store in-process rolls on their sides to limit exfoliation near the presses should a fire develop. Do not stack the rolls in the process area.

Use excess flow valves and fusible element shutoff valves to help limit flammable liquid involvement should a fire occur.

Store blend, dispense, and protect flammable or combustible inks, cleaning solvents, and glues in accordance with NFPA 30 and PRC.8.1.0.

Refer to PRC.17.10 and PRC.17.10.1 for proper protection of computer facilities. Store important backup computer programs and data off site.

Proper combustion controls and temperature limit switches are essential to safe lead pot operation and gas-fired heaters. Protect them in accordance with NFPA 86 and PRC.4.0.1.

Locate dust collectors and cyclones outside the building and provide them with sprinkler protection.