The printing industry lives and works in a fast-paced world. Companies go to great lengths to win and retain customer contracts. Exacting diligence in preventing loss at all stages in production is essential, from design and prepress, through finishing and fulfillment, including distribution and delivery to your customers and to your customers’ customers, where you manage mailings. The very nature of customer needs and the marketplace means the printing industry cannot afford downtime or loss costs associated with property loss, equipment failure, accidents and injuries, or errors and omissions in producing and delivering products to customers on time. Knowing exactly what customers want and rapid delivery to the marketplace are critical. Accuracy, quality and timeliness are key measures by which customers judge your reliability and decide whether or not to continue to do business with you.

This Guide identifies some risks having potential to contribute to critical downtime and loss in the printing industry and offers guidance to address those risks through safety and loss prevention strategies and programs.

**Property protection and preservation**

The risk of a fire loss is very real in the printing industry. Process operations and the “tools of the trade” help make this particularly true. Everyday hazards include combustible materials (paper, plastic, boxes, packaging materials, artwork, film, and rags) and flammable and/or combustible liquids (solvents, washes, inks, and darkroom chemicals). Faulty electrical wiring, outlets or extension cords, equipment that overheats or generates static electricity (such as paper dryers and presses), can provide ignition sources. Additionally, unprotected metal halide lights can cause fire and injury if the arc tube fails, causing an explosive burst of the tube with hot fragments dispersing on people and property. Flammable fumes, vapours from heated dryers and dust from paper, powder and starch can also cause fire or explosion if ignited. Equipment, raw materials, moulds, dies, patterns and finished products are also vulnerable to smoke and water damage. Many businesses never reopen after a major fire. Even if they do, the downtime alone could mean loss of customers who may never return, particularly if no alternative contingency plans or arrangements are in place.

Fire and explosion hazards should be identified and appropriate controls implemented. Maintenance and inspection procedures are to be utilised to ensure that controls remain effective. A well-designed property management loss prevention program can help you address a number of potential hazards, including, but not limited to:

**Electrical management**

Loss control considerations for electrical management include, but are not limited to the following measures.

- Ensure electrical supply and wiring is appropriate for the installed equipment.
- Do not use temporary wiring.
- Do not overload electrical circuits/outlets. Each piece of equipment should be run on its own circuit.

**QUICK LINKS**

- Property protection
- Health and safety – employees
- Health and safety – employees and the public
- Work-related driving
- Professional liability
- Information/data security
- Business continuity
Do not allow dust to build up on equipment and electrical devices.

Have professionals check electrical systems annually. Heating, ventilation and air conditioning (HVAC) should be maintained in accordance with manufacturers’ instructions.

Properly ground all equipment.

Use only CE marked appliances.

**Equipment**

Commercial printers rely heavily on their machinery and equipment to be fully operational in order to meet daily high production needs and tight deadlines. Equipment inspection and maintenance programs can help companies avoid unscheduled stoppages, which could otherwise result in missed deadlines and potentially significant loss to business income. Loss control considerations include, but are not limited to the following measures.

- Use only qualified machine operators trained to operate, inspect, test and maintain equipment.
- Inspect, clean, test and maintain equipment and components daily, according to manufacturers’ instructions. These daily tasks can help identify failure in mechanisms, including, but not limited to cracks, foreign objects, fatigue and wear. Repair or replace immediately any equipment that sparks, smokes, or overheats.
- Verify all controls and safety devices are installed and tested, such as trips for multiple sheet feed, high motor amperage, high lubricating oil temperature and low lubricating oil pressure, according to the manufacturers’ requirements.
- Install electrical surge protection to prevent damage to electronic components, computers and communications systems.
- Use static eliminators and humidity control.
- Use a dust collection system to help eliminate dust accumulations created by paper, powder, and cornstarch, to reduce the explosion potential.
  > Locate dust collectors outside the building and provide fire dampers where the ducting passes through external walls and consider the use of suppression systems within them.
- Use approved industrial vacuum cleaners to routinely remove dust from equipment collection points and exhaust fans. Never use compressed air as a means to remove dust deposits.
- Inspect and properly maintain boilers and pressure vessels according to legal requirements.

- Operate and maintain boilers and chillers according to manufacturers’ and legal requirements to ensure safe operation, proper temperature and humidity.
- Maintain operating log sheets for printing presses and associated equipment, such as boilers and chillers.
- Have a business continuity plan, including advance arrangements with another printer or facility to run continuous operations. See Business Continuity section of this guide for additional information.

**Flammable and combustible management**

Printing and cleaning operations include the use of flammable and combustible solvents and inks. Many of the substances also produce vapours, which can be explosive. Loss control considerations include, but are not limited to:

- Substitute with less flammable liquids where possible, including water and plant/bio-based inks.
- Store flammable liquids/chemicals/cleaning agents in appropriate flammable liquid storage safety containers and in flammable liquid cabinets or a special storage room separated from the press room by a fire wall.
- Never store combustible materials near heat sources or chemicals.
- Follow manufacturer’s instructions and warnings when handling, dispensing or using the products.
  > Provide employee training on proper handling, storage and disposal of flammables/explosives.
- Store glues and inks in tightly capped containers.
- Provide adequate ventilation around hot melt glue pots, due to flammability of vapours.
- Do not keep more than one day’s supply of cleaning agents or inks outside the storage area (especially in the press room).
- Provide access to safety data sheets (SDSs) for the products and follow flammability/explosive guidance.
- Do not operate overheated machinery or equipment. Solvents, washes and inks should not be applied to overheated presses.
- Provide static electricity controls on all presses and coaters.
- Provide suitable combustion controls for gas or oil fired equipment used in building and process heating and fume incinerators.
- Clean, inspect and maintain hydraulic systems. If possible, use only low-hazard fluids in these systems to reduce the fire hazard potential.
Have emergency shutdown provisions for hydraulic systems in the event of a fluid release.

Provide automatic closing covers or fixed fire protection for dip tanks.

Prohibit smoking in production areas and post “No Smoking” signs.

Fire detection and suppression devices/systems
Due to fire and explosion hazards in the printing industry, it is important to install and maintain the correct fire protection systems. Options include automatic fire suppression/sprinkler systems, heat and/or smoke detectors with alarm functions and internal fire teams. Certified professionals should be considered a resource in these decisions. A responsible person should supervise all matters relating to a fire alarm system. That person should ensure the system is tested and maintained in accordance with applicable standards and that records are kept. Loss control considerations include, but are not limited to the following measures.

- Have a qualified professional routinely inspect, test and service your sprinkler system and fire detection equipment/devices.
- Arrange for your fire detection and alarm devices to be connected to a central station alarm monitoring facility.
- Provide automatic sprinkler protection or a clean agent gaseous suppression system for the computer/server room.
- Provide a sufficient number of readily available Class ABC and possibly D fire extinguishers.
- To protect from flash fires, provide a special extinguishing system, such as carbon dioxide, for printing presses, dryers and laminators using flammable inks or liquids.
- Keep all storage/warehousing a minimum of 1 metre below sprinkler heads.

Good housekeeping
Poor housekeeping, whether from clutter and debris on the floor or equipment and exhaust fans that are not routinely cleaned, can contribute to a fire. Dry products in continuous motion can generate static electricity that can ignite paper or dust. Dust can also be explosive. Loss control considerations include, but are not limited to the following measures.

- Store all roll and sheet paper on wood pallets or platforms off the floor.
- Store large rolls of paper, plastic or fabric horizontally in well-spaced, low height piles to reduce fire spread.
- Store paper rolls 24 inches from the wall. Wet rolls can expand and push out a wall.

- Do not over stack paper rolls, especially on mezzanines, to avoid floor collapse.
- Remove materials, such as unused boxes and remnant paper, throughout the day.
- Store soiled rags in appropriate, fire-resistant containers.
- Use automatic removal systems on machines producing large quantities of waste.
- Clean all process areas once per shift.

Health and safety – employees
From the press, mail and circulation rooms to the distribution centre, loading dock and delivery, the printing industry poses health and safety hazards to employees from a number of sources. Noise from running machines; bending, lifting, lowering, reaching, twisting, turning and repetitive motion; setting up, cleaning and operating machines and equipment with nip points and moving parts; exposures to sharp tools, chemicals, mists, dusts, hot processes and equipment are among the hazards.

Occupational illness data for the printing industry show that employees suffer hearing loss, skin diseases, and respiratory disorders. Occupational injury data show the majority of injuries are related to sprains and strains; slips, trips and falls; cuts, bruises and punctures; chemical and heat burns; struck by and caught in, including amputations; and auto accidents.

Safety management programs
To help reduce the hazards and risks to health and safety, companies should implement, communicate and train on their written safety program. The program should include employee participation and feedback, as well as management commitment and accountability. Loss control considerations include, but are not limited to the following measures.

- Provide induction training to new employees, as well as refresher training, for full-time, part-time and temporary employees. Include general topics, such as emergency evacuation, good housekeeping, personal protective equipment (PPE), and ergonomic principles, among others.
- Train employees on the hazards and safe work practices related to their specific jobs. Training should be interactive and not just “read and sign.”
- Use temporary employees only in the capacity for which they are trained.
- Have a contractor safe work agreement for on-site contracted services, which should include the use of permits to work.
• Conduct hazard communication training and make SDSs readily accessible.

• Have an accident investigation process, including action plans for correction.

**Chemicals and hazard communication**

Printers may use a variety of hazardous chemicals, which could contribute to adverse health, including dermatitis and respiratory disorders. Mixed dust from paper, ink particles and starch also could create respiratory disorders and discomfort. A written safe working procedure should be implemented and include, among other things:

• A chemical inventory that is updated, as needed.

• Carrying out written Control of Substances Hazardous to Health (COSHH) risk assessments.

• Employee training and documentation of training on:
  > Safe chemical handling
  > Reading and adhering to warnings and instructions on chemical container labels
  > Accessing readily available SDSs

• Chemical substitutions of less toxic/non-toxic chemicals to the extent possible. Water and plant/bio-based products, such as soy-based inks, are less toxic than petroleum based.

• Indoor air and occupational exposure monitoring and to reduce exposures that are above permissible levels.

• Local exhaust and forced fresh air ventilation to reduce inhalation of airborne exposures such as dusts and volatile materials in processing areas.

• Appropriate PPE (chemical-resistant gloves/gauntlets, aprons) to employees who work with hazardous chemicals.

**Machine safe guarding (lockout/tag out)**

Conveyors and machines with moving parts and nip points, such as sheet and web-fed presses, plate processors, bindery folders, mail stackers, and pocket carriages can put employees at risk for a number of potential injuries, from cuts and punctures. Some also can cause amputations. Loss control considerations include, but are not limited to the following measures:

• Train employees on, and enforce the use of machine safeguards, including guarding in-running nip points on equipment.

• Properly maintain guards.

• Install an interlocking system on machines to prevent operation if guards are removed.

• Have a lockout tagout program (including tags) for shutting down machines and equipment for cleaning or repairing or in an emergency, such as employees getting caught in nip points or coming in contact with moving parts.

• Train operators on locations of all emergency shut off switches.

• Train employees on proper operation of conveyors.

• Prohibit the wearing of loose clothing, jewelry or untied long hair when operating machines or conveyors.

• Have machines routinely inspected by a qualified technician.

**Ergonomics and manual material handling**

Back injuries are not uncommon in printing operations, including among warehouse and loading dock employees. Sprains and strains occur particularly from improper lifting.

• Train employees on safe lifting techniques, including cases of paper.

• Use team lifting for heavier products, such as skids of paper.

• Change the loads, where possible.
  > Make the load smaller or lighter and easier to lift.
  > Break large consignments into manageable loads.

• Provide appropriate lifting devices, such as lift tables, dollies, pallets and sack trucks.

• Out-of-service devices should be marked, repaired and/or replaced.

• Train employees on the proper and safe use of materials-handling devices, including in warehouse, mailroom, and distribution and loading operations. Operating forklift trucks require special training.

**Ergonomics and other job tasks**

For employees who work in mailrooms, prepress design, set up or administrative functions, good ergonomics is important in helping to reduce discomfort and disorders associated with repetitive motion (bending, twisting, reaching, typing). Employees should be trained on proper techniques that reduce awkward hand, wrist and shoulder twisting and reaching. Workstations, seats and monitors should be adjusted to proper heights to reduce strain and discomfort.

**Occupational noise/hearing conservation**

Operating multiple presses, cutters and other machines at the same time can create a great amount of noise. Typical noise levels can exceed those specified in relevant legislation in terms of levels at which a hearing conservation program is required. Engineering controls
should be implemented, to the extent possible, to reduce the noise level emitted. Typical noise levels in printing facilities can range from 90 to 115 dB (A), which is over acceptable limits. Loss control considerations include, but are not limited to the following measures.

- Conduct audiometric screening on all workers exposed to a daily or weekly personal noise exposure of 85 dB (A) or more.
- Conduct baseline audiometric testing on new employees who will be exposed to a daily or weekly personal noise exposure of 85 dB (A) or more.
- As far as reasonably practicable, eliminate or reduce source noise on equipment and machines, including through use of lubricants and mufflers.
- Consider noise characteristics when making new equipment purchases.
- Issue hearing protection devices to workers exposed to a daily or weekly personal noise exposure of 85 dB (A) or more.
- Give employees frequent breaks if in areas exceeding recommended decibel levels.

**Powered industrial trucks/forklift truck safety**

Each year, employees are injured when forklifts roll over, fall off loading docks or as a result of improper operations and dismounting. Lack of training is the key issue. Powered industrial trucks are of two types: electric/battery powered and combustion engine/fuel powered. Each has a variety of different configurations and attachments. Operators MUST be thoroughly trained in safe operations specifically on each type of industrial truck they will operate. Safety training includes, but is not limited to, driving procedures, loading, parking, dismounting, refueling and inspecting vehicles.

- Do not permit anyone under 18 to operate a forklift.
- Use only trained and certified operators.
- Operators must conduct daily pre-shift inspections before operating equipment. Daily checklists should be available from the truck manufacturer.
- Operators must know when to tag industrial/forklift trucks “out of service.”
- Have a qualified mechanic correct/ service all problems.
- Adhere to the owner’s manual, including load capacity.
- Operate in well-ventilated areas when indoors. Check combustion engines routinely and maintain to reduce fuel emissions.

**Personal Protective Equipment (PPE)**

A number of hazards—from sharp objects to hot processes to dusts, inks, and other chemicals—can put employees at risk of injury and occupational health discomfort, disease and illness, including dermatitis and respiratory disorders. While source reduction, to the extent possible, should always be your first control strategy, the use of personal protective equipment and safe work practices also can help reduce many risks. Loss control considerations include, but are not limited to the following measures.

- Train employees on proper fit and use of PPE, including protective gloves, safety glasses/goggles, face shields, respirators and hearing protection devices.
- Provide eye and face protection to employees who work with or near printing presses that give off spray and mist from inks and chemicals.
- Make eyewash stations readily available near equipment that could release chemical sprays or mists.
- Provide breathing protection, as appropriate, to employees with airborne exposures, including dusts, mists or solvent vapours.
- Provide approved dust masks where paper dust and ink particulates could cause irritation.
- In some cases, respiratory protection may be mandatory to control the inhalation exposure.
- Check PPE routinely for wear, cracks, inefficiencies that could reduce the protective nature of the equipment and replace as appropriate.
- Train employees on safety around hot processes.
- Provide burn first-aid kits in hot process areas (binding, plating, press) and train employees on safe practices and first-aid procedures to control burns.

**Health and safety – employee and public risks**

Some hazards such as slip, trip and fall hazards, poorly lit areas, fire hazards or acts of violence can affect both employees and non-employees on your premises or facility. Loss control strategies include, but are not limited to the following measures.

**Life safety**

- Have a formal, written emergency response plan.
- Communicate the plan to all employees, suppliers and visitors. Conduct drills throughout the year.
- Audit your drills to make sure everyone knows what to do in an emergency, including evacuating, when appropriate. Address shortcomings.
Communicate your emergency plan to all third parties on your premises.

Provide adequate number of exits.

Keep material, inventory and waste away from exits and out of aisles at all times.

Provide adequate lighting and signage at exits.

Have a common meeting place outdoors, at a distance from the building, and take attendance.

**Slips, trips and falls**

Slip, trip and fall injuries on your premises could result in employee or third-party claims in terms of holding you responsible for the injury.

- Maintain walking surfaces in smooth and good condition.
- Replace tiles or carpets that are missing or not firmly in place.
- Keep floors clean and dry and free of water, oil or grease.
- Use “wet floor” signs and mop up spills immediately.
- Keep parking areas free of snow and ice.
- Avoid any uneven transitions in walking surfaces.
- Maintain good housekeeping.
- Keep aisles, paths and walkways free of clutter.
- Keep electrical cords out of aisles, walkways and from the operator’s footpath around equipment.
- Keep stairways clean, adequately lit, equipped with handrails and non-slip treads.
- Keep loading dock surfaces and dock plates in good condition.
- Provide adequate lighting inside and outdoors, including at loading docks and in parking areas.
- Provide safety training on use of ladders.

**Premises security**

A premises security program can help protect both your people and property, including unauthorized access to areas where you keep precious valuables, patterns, prototypes and other customer property. Loss control considerations include, but are not limited to:

- Have a secured entry for employees.
- Have a visitor/customer/vendor sign in procedure, including a visitor escort policy.
- Hold third-party meetings in areas separate from the production area.
- Designate an employee to accompany all visitor tours.
- Provide PPE to visitors if they enter production areas, as appropriate. Otherwise, limit access to production areas to employees only.
- Have an emergency notification and response procedure in the event of a violent act.
- Keep premises around the building, including outside storage areas, well lit.
- Keep landscaping trim and bushes clear of windows and doorways.
- Loading docks and railroad side-tracks should be guarded. Post warning signs, as appropriate.
- Install security cameras.
- Keep facilities locked during off-hours, to reduce theft of computers and other valuable inventory.

**Third-party considerations**

Subcontractors, suppliers of raw materials, hazardous waste operators, Quality Assurance (QA) laboratories, and other third-parties with whom you do business could be a liability for you. Additional loss control considerations include, but are not limited to the following measures.

- Risk transfer programs, including Certificates of Insurance and hold harmless/contractual agreements with appropriate limits of insurance.
  > Third-parties also may include temporary employment agencies, if you use them to place temporary employees in your workplace.
- Contractor safe work agreements for on-site contracted services, including hot work permits.

**Work-related driving**

Many printing operations have sales and delivery staff who operate vehicles in the scope of their work. Injuries from motor vehicle accidents can happen to both your employees and to the general public. In the event of a vehicle accident, there also may be property damage to one or more vehicles. Additionally, employees who drive their own vehicles in the scope of their work can present an added financial risk to your company. Loss control strategies include, but are not limited to:

- Implement a driver selection and hiring procedure for company drivers, including those who use their own cars in the scope of their work. This includes valid driver’s license verification and competency assessment.
• Implement a fleet safety program covering defensive driving/accident avoidance and vehicle inspection and maintenance. Document all driver training.

• Have a routine vehicle inspection program. This includes inspection of non-owned company vehicles used by employees in the scope of work.

• Provide defensive driver training to all new employees before operating a vehicle on company business.

• Train truck drivers on safe practices, including reversing into loading docks.

• Implement safe working procedures in terms of pedestrian traffic in the docking/loading areas, e.g., physical segregation.

• Implement a mobile phone policy, prohibiting the use of mobile phones while vehicles are in motion. Employees should pull over to a safe location to retrieve messages and return calls.

• Have an accident reporting and investigation procedure. Equip glove compartments with an accident form that can be completed “on the spot” to record relevant facts to the accident event.

• Require driver remedial training, up to and including a disciplinary procedure, for drivers who have preventable accidents.

• Require employee drivers of non-owned company vehicles to produce proof of vehicle insurances that includes business use with adequate limits of indemnity.

• If you use for-hire delivery or carrier services, require proof of insurance/certificates of insurance. Consult your broker for appropriate limits.

Professional liability

Printers must not only be “on time,” they also must be accurate and exact in producing the printed word and communication. Any misprint, omission, incorrect colour, poor quality print, or “not on time” delivery could result in financial damage to your customer and you. Errors and omissions can run the gamut from blurry type on a page to misprinted pharmaceutical or product warning labels, tickets, checks, architectural plans, instructional manuals, and advertisements to a page missing in a publication. Missed deadlines on time-sensitive materials, such as advertisements, can be a very serious problem. Customers may refuse to pay for the work and hold you liable as well. Additionally, you must be diligent in the understandings between you and all third parties, including your customers, suppliers, contractors and subcontractors, in business transactions and agreements. Loss control strategies include, but are not limited to:

• Require written specifications from customers, including for changes made during the process.
  > Where customers provide their own design specifications, have written hold harmless agreements.

• Require customers to approve ink colours before the job is run. This is especially important when managing company logos and branding.

• Conduct QA inspections on set up and production runs.

• Conduct QA inspections before releasing proofs for customer approval.
  > Require customer sign off and approval on all proofs, including colour and corrections.
  > Require all approvals to be in documented form, whether in writing or by email.
  > Archive/file all documentation, in accordance with a document retention policy.

• Have a system whereby duplicated job specifications travel with a project or are accessible at every step so everyone knows the requirements.

• Have a recall/reprint policy.

• Have a complaint handling program.

• If production involves other contractors or subcontractors, have a risk transfer program, including requiring Certificates of Insurance.

• Follow best practices of the British Printing Industries Federation (BPIF).

Customer property

Protect customer property and finished products in your care until delivery. This includes moulds, dies, plates they have paid for, as well as logos, prints and patterns. Loss control considerations include, but are not limited to:

• Handle customer’s property (logos, artwork, manuscripts, patterns, prints, moulds and dies) with great care to prevent corruption, damage or breakage.
  > The purchase agreement should identify who owns the moulds and dies.

• Store moulds and dies not being used in a separate room (fire rated, if possible).

• Return patterns and prints to customers after use or store them and other such property off premises in an approved, fire-resistant safe or vault. Some printers require customers to have duplicates.
Information/data security

Many printers share specifications, proofs, approvals and/or transacted business electronically by email or over the Internet through their website. For many, digital assets or files have unique information management and security challenges. Loss considerations include, but are not limited to:

- Protect your computer networks and data, including customer data transfers, with firewalls and virus and spam protection software programs.
- Back up computer data every night and store off site.
- Store valuable documentation off premises in a fire-resistant, approved safe.
- Keep originals that cannot be duplicated in secured repositories and locations.
- Have computers inspected and serviced regularly.
- Mark all computers with identification numbers for tracking purposes in the event of theft.
- Contract with a service that allows you to continue your computer operations in the event of a loss to your data processing equipment.
- A hot site service allows you to move your operation to another location and includes office space, furniture, telephone jacks and computer equipment.
- A cold site service provides office space, but you install all the equipment and software you need to continue operations.

Business continuity/contingency planning

Customers rely on printers to print in a high-quality and timely manner. Timeliness especially is a “must have.” The financial wellness of the printing industry is especially vulnerable to interruptions in normal daily production, including from fire, storms or critical equipment breakdowns, malfunctions or damage. Many presses and critical components are imported from foreign countries. Some replacements could take months for delivery.

Companies cannot afford to be confronted with an out-of-service or damaged machinery or piece of equipment.

Additionally, printers depend on ready access to customers’ artwork, logos, negatives, manuscripts, moulds, plates, dies, patterns, specifications, digital assets and administrative data, to perform accurate and timely work. What if these are damaged, lost or corrupted?

It is critical to have contingencies in place to ensure continuous operations of your business. Loss considerations start with a written business continuity plan and include, but are not limited to:

Equipment contingencies

- Keep critical equipment replacement/spare parts, per manufacturers’ list of recommended spare parts, on hand, as practical, or annually update quotes for replacement parts and equipment with guaranteed delivery timeframes.
- Have a service/repair provider identified or pre-arranged who can provide quick turnaround for repairs or replacement in the event of a breakdown or need for a critical component.
- Have alternate arrangements with another printer or a backup facility in the event of breakdown of critical equipment.

Have advance, written arrangements with another printer or facility with compatible equipment so you can run presses and handle mailings continuously, in the event critical equipment is inoperable. Include a certificate of insurance/risk transfer program.

For more information, visit our website at travelers.co.uk or contact your Risk Control Consultant.