IMPAIRMENTS TO FIRE PROTECTION SYSTEMS

INTRODUCTION

A protection impairment occurs when a fire (or explosion) prevention, protection, alarm or supervisory system is shut off, impaired or otherwise taken out of service completely or in part. The protective, alarm or supervisory function then cannot be met. Fire protection systems include sprinkler, water spray, carbon dioxide and clean agent systems. Two examples of protection impairments are: a valve supervisory device that is jammed and cannot function, and a sprinkler system that has been shut off in order to replace a sprinkler head. While process monitoring, control, safety and security-entry systems also serve protective functions, their impairment is not considered a protection impairment as defined herein.

While planned protection impairments may be necessary during maintenance, renovation and new construction, it must be understood that when any protection impairment occurs, the facility is in jeopardy. Many large losses might have remained small if the protection impairments had been properly managed. When an impairment is planned or occurs accidentally, precautionary measures are necessary to minimize the risk. These may include arranging temporary protection, reducing hazards and ensuring continual and speedy progress on restoration efforts.

At this moment, somewhere fire or explosion protective systems are impaired. Throughout industry, tens of thousands of impairments occur each year. In fact, a number of them may occur at any one facility.

Protection might be impaired for one of many reasons, such as maintenance, renovation, new construction, equipment failure, vandalism or malicious mischief. Regardless of the reason, a facility is in jeopardy from fire that may start in an area covered by the impaired system.

There are three types of impairments: emergency; planned; and hidden.

The likelihood of fire or explosion occurring while protection is impaired increases with the duration of the impairment. Thus, proper procedures must be followed to minimize the duration and scope of the planned and emergency impairments and to reduce the possibility of a hidden impairment.

POSITION

Implement an impairment management program such as AXA XL Risk Consulting RSVP (Restore Shut Valves Promptly) Program with these basic steps:

1. Assign responsibilities for impairment supervision;
2. Adopt a detailed system for supervision;

3. Educate appropriate personnel as to the importance of impairment handling and the facility's procedures.

The responsibilities may be assigned to one person such as the Emergency Coordinator or the Fire Brigade Chief (see PRC.1.7.0). They may also be assigned to several people, as would be the case where the Maintenance Manager handles Planned Impairments and the Emergency Coordinator handles Emergency Impairments.

DISCUSSION

An Emergency Impairment occurs when an unforeseen event partially or totally impairs the effectiveness of a fire or explosion protective system. A sudden break in sprinkler system piping is an example.

A Planned Impairment occurs when it is necessary to shut down a fire or explosion protective system for maintenance or modification. Shutting down a sprinkler system to add sprinklers is an example. While this may seem to be a straightforward operation, previous loss experience has shown that improperly handled planned impairments greatly increase the extent of a loss that occurs while the system is impaired.

A Hidden Impairment is not known to exist and is therefore the most serious type; e.g., a system shut down and inadvertently left out of service upon completion of work, a system shut down without proper notification, or a system maliciously shut down. Proper impairment notification and handling procedures can reduce the chance of experiencing this type of impairment. A good inspection program can reveal the hidden impairment, allowing prompt restoration of vital protective equipment.

AXA XL Risk Consulting recommended impairment supervision program is the RSVP (Restore Shut Valves Promptly) Program. See PRC.1.1.0.A. It provides all the basic elements necessary for the proper handling of impairments.

Appropriate personnel should be educated in properly implementing RSVP procedures. This will help ensure that management will be aware of system impairments and will reduce the likelihood of a hidden impairment.

Appropriate personnel, in conjunction with AXA XL Risk Consulting, should take every practical step to:

- Limit the frequency, extent and duration of all impairments;
- Work continuously on impaired equipment until it is restored to service;
- Reduce the possibility of fire or explosion during the impairment by shutting down hazardous processes;
- Enhance surveillance and firefighting capability during the impairment;
- Restore all fire protection systems promptly after the impairment;
- Verify by appropriate test that all fire protection systems have been restored.

Specific procedures for handling emergency, planned, and hidden impairments include the following.

The Emergency Impairment

Immediately notify management and AXA XL Risk Consulting and initiate repairs promptly. Provide temporary protection, if possible. Work without interruption until the system is restored.

Good pre-emergency planning includes having the telephone numbers of contractors who are equipped for, and willing to provide, emergency repairs on a continuous, round-the-clock basis. See PRC.1.7.0.

Personnel designated by management should:

- Notify the AXA XL Risk Consulting Impairment Center. (Notification can be made by phone, fax, or e-mail.)

- Fill out the RSVP Red Tag and hang the Shut-Off Tag portion on each closed valve or other piece of impaired equipment. Keep the RSVP Office Reminder portion in a visible place in the office of the representative responsible for supervising the impairment.
- Inform department heads in the buildings or areas where protection is out of service. They should tour areas to identify and correct unsatisfactory housekeeping, storage or special hazard conditions.
- Shut down hazardous processes or maintenance operations such as cutting, welding and other hot work until protection is restored.
- Prohibit smoking throughout the affected area.
- Notify the Central Station or other agency supervising the fire alarm system.
- Notify the Fire Brigade Chief or Shift Captain.
- Notify the public fire department that protection is shut off so that they may act effectively if a fire occurs.
- Use emergency measures, such as temporary connections to hydrants or adjoining sprinkler systems, to keep as many sprinklers in service as possible.
- Station someone at the shut valve, if it is an excessive distance from the work area. This person should be ready to open the valve upon instruction from the person supervising the impairment.
- Expedite completion of the work. Work continuously from shift to shift until protection is restored.
- Make a continuous fire patrol throughout the affected area.
- Supplement manual firefighting facilities by the temporary addition of extra fire extinguishers and charged hose lines.
- If the scope of the impairment must be increased, immediately discuss the changes with AXA XL Risk Consulting.

When work on the protective system is completed, reopen and seal all valves that have been shut or otherwise restore the protective system to service in accordance with procedures described in the RSVP booklet.

The Planned Impairment

In addition to handling the items listed for the emergency impairment, it is necessary to carefully plan each impairment when modifying or conducting maintenance on a fire protection system. Additions or alterations to fire protection systems must be reviewed through the Management of Change System, see PRC.1.0.2, and reviewed by AXA XL Risk Consulting.

Management should not allow outside contractors to impair protection equipment by themselves because contractors are not responsible for safeguarding plant operations, minimizing impairment duration, and expediting work progress. Outside contractors cannot institute the type of extra precautions that management can authorize, nor do they have the same interest in the property as the owner. Therefore, outside contractors must be effectively supervised by appropriate personnel using the facility's Management of Change Program.

Schedule work so that the impairment is of minimum duration. Be sure that all equipment and personnel are ready and that preparatory work **is complete before the impairment begins**. In the case of sprinkler system extension, install everything up to the point of final connection to the existing system. Then, close the sprinkler valve, make the new connection as quickly as possible, and restore the shut valve promptly. **Schedule only one impairment at a time**!

Planned Impairment procedures include:

- Notify the AXA XL Risk Consulting Impairment Center at least 48 hours in advance of the impairment. (Notification can be made by phone, fax, or e-mail.)
- Keeping as much protection in service as practical for as long as possible.

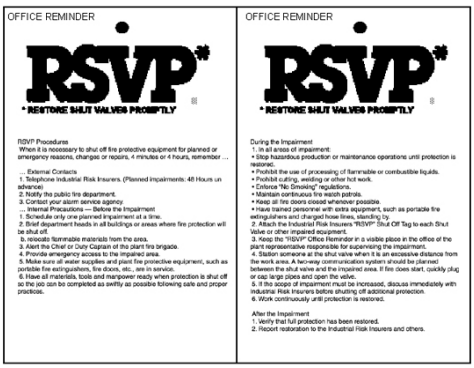
- Laying out work and arranging in advance to have all workers, materials and tools ready when protection is shut off so that the job can be pushed vigorously to completion. In the case of major building renovations, restore the system to service at the end of each day's work.
- Using sectional valves where possible, rather than main valves, to reduce the number of shut-off sprinklers to a minimum and to take all possible advantage of multiple water supplies.
- Confirming, prior to starting the impairment, that the procedures listed under "The Emergency Impairment" will be followed.

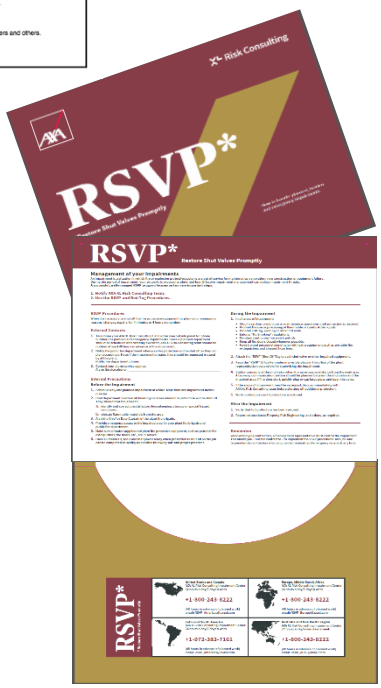
When work on the fire protection system is completed, reopen and seal all valves that have been shut or otherwise restore the protective system to service in accordance with the procedures described in the RSVP booklet.

The Hidden Impairment

If personnel discover a hidden impairment during a fire protection or loss prevention inspection or at some other time, they should:

- Confirm that protection should be on.
- Restore protection immediately.
- Report the discovery to their supervisor.
- Attempt to learn the reason for the occurrence.
- Notify AXA XL Risk Consulting of the discovery.





ELEMENTS OF RSVP (RESTORE SHUT VALVES PROMPTLY) PROGRAM

The RSVP (Restore Shut Valves Promptly) Program is an important part of basic loss prevention planning. More specifically, it is a program designed to help AXA XL Risk Consulting's clients manage their impairments safely.

The RSVP package, available from AXA XL Risk Consulting includes:

Booklet The booklet defines impairments and tells how the RSVP Program can help manage planned, emergency and hidden impairments.

Riser Labels These labels provide a constant alert at every point of shutoff. They contain the AXA XL Risk Consulting's toll-free telephone number for impairment notification, and include areas to record valve number, system number, and protected area.

Shut-Off Tags These tags present step-by-step procedures for safe impairment handling. They are printed on bright red card stock, and are punched, wired and perforated for ready use. The Shut-Off portion should be placed on impaired equipment and the Office Reminder portion posted in the office of the management representative supervising the impairment.

File Folder Prominently displayed, the folder becomes a daily reminder of impairment procedures. It lists the toll-free number for reporting an impairment at any time. A pocket holds the red Shut-Off tags meant to be used on impaired equipment.