

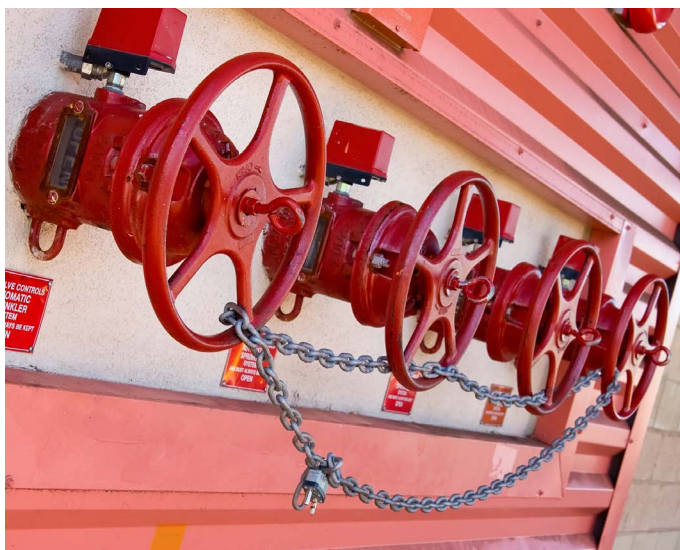
FIRE PROTECTION IMPAIRMENT MANAGEMENT

ALLIANZ RISK CONSULTING

INTRODUCTION

An impairment occurs when a fire protection or detection system, fire alarm system or other system designed to maintain the fire resistance of the building element or structure is taken out of service, either wholly or in part, planned or unplanned.

Fire protection or detection equipment subject to impairment management includes automatic sprinkler systems, fire protection water supplies, fire pumps, fire mains, gas extinguishing systems, foam systems, fire detection systems, water mist systems, powder systems, explosion suppression systems, etc. Other fire safety systems may include fire doors (including sliding fire doors,) their associated warning systems and self-closing mechanisms; fire walls and their associated service penetrations and other openings, fire curtains, etc.



A Fire Protection Impairment Management Program is used to:

- Supervise the safe shutdown of fire protection systems
- Control potential fire hazards during the impairment
- Minimize the duration of the impairment by reinstating the fire protection system as soon as possible

Properly trained personnel should be assigned the following responsibilities:

Impairment Supervisor

- Is a supervisory-level company employee (not a contractor)
- Has overall responsibility for implementation of the Fire Protection Impairment Management Program
- Ideally schedules only one impairment at a time. For large locations where this is not practical, the number of simultaneous impairments should be limited as much as possible.
- Notifies staff in the area of the impairment that the protection is out of service
- Notifies Allianz Risk Consulting of impairments expected to exceed 10 continuous hours in duration
- Issues the [Fire Protection System Impairment Notification & Restoration Form](#)

Fire Watch

- Works with the Impairment Supervisor to ensure safe conditions are maintained during the impairment
- Reports unsafe conditions to the Impairment Supervisor
- Has temporary fire protection available, (e.g. fire extinguisher(s), fire hose(s) etc.) and is trained in their use
- Is familiar with the facility and the procedures for sounding an alarm

Important:

The procedures in this document are aimed at managing the two impairment types mentioned below. In so doing, the risk of a "hidden" impairment, or a protection system that is out of service, but is not known to site officials, should be reduced.

IMPAIRMENT TYPES

There are two types of impairment:

1. Emergency Impairment

Where a fire protection system is out of service due to an unexpected occurrence, such as a pipe failure or interruption in the fire protection water supply.

2. Planned Impairment

Where a fire protection system is out of service due to work having been planned in advance.

IMPAIRMENT PROCEDURE

1. For impairments expected to exceed 10 continuous hours in duration, the Impairment Supervisor should notify Allianz Risk Consulting 48 hours in advance of a planned impairment and as soon as possible for an emergency impairment. The local fire service and fire alarm company may also need to be notified.

Allianz Risk Consulting can be informed by completing Part A of the Fire Protection System Impairment Notification & Restoration Form and emailing the form to impairments@allianz.com. Be sure to complete all information, including contact details, impairment details and precautions taken during the impairment.

2. Prior to commencement of the impairment, the Impairment Supervisor verifies all applicable precautions listed on the impairment form have been taken. Precautions may include the suspension of hazardous activities (e.g. hot work, flammable liquid use, etc.) during the period of impairment. All workers, tools and equipment needed should be ready to complete the work prior to the impairment commencing.
3. Assign a Fire Watch for the area of impairment. This can consist of a person conducting continuous tours of the area, or trained employees continuously working in the affected area.
4. It is good practice to attach the completed impairment form to the impaired equipment (e.g. sprinkler valve,

system control panel, etc.). Record the number of turns if shutting a sprinkler control valve.

5. The Impairment Supervisor retains a copy of the impairment form as a reminder of the work being done.
6. Work without interruption until completed. Do not leave protection systems impaired for longer than is necessary. Where the impairment is scheduled to last in excess of one shift, formal handover procedures should be in place. The new Impairment Supervisor should be made fully conversant with all impairments and precautions in place.
7. When the work is complete, the Impairment Supervisor should verify that the protection system has been fully restored to service.
8. For sprinkler system impairments, verify that the number of turns to shut the valve equals the number of turns to open the valve. After opening the valve, conduct and record a main drain test to verify that an adequate water supply has been re-established.
9. Notify Allianz Risk Consulting after the system has been returned to service by completing Part B of the Fire Protection System Impairment Notification Restoration Form and emailing the form to impairments@allianz.com. Also notify the local fire service and fire alarm company, if applicable.
10. Completed impairment forms should be retained on file for at least one year for review by Allianz Risk Consulting.



**Appendix:
Impairments – Illustrative Losses**

**Lesson:
An inappropriate scheduling of hot work
activity during an impairment**

Workers had shut down one of several sprinkler systems in the plant to remove branch lines to facilitate removal of a conveyor. While workers were cutting bolts from the conveyor with welding equipment, some of the sparks passed through cracks in the floor and landed in sawdust accumulations below. By the time the fire department arrived, it was too late to save the building. Destruction caused a total loss of \$1.25 million.

**Lesson:
Inadequate impairment control can be costly**

During a 10-year loss study, 64 shut-valve fire losses were noted, with an estimated gross loss of \$334 million. Shut-valve fire losses historically have averaged \$2.9 million, as contrasted with an average loss of \$486,000 for fires in adequately sprinkler protected facilities.

A 20-year loss study showed 23 fire losses with a fire pump impairment, having a total estimated gross loss of \$159 million.

