

Sprinkler Impairments

Understanding the Risk

A sprinkler impairment arises when an automatic sprinkler system is shut off or otherwise taken out of service, either completely or in part, such that it can no longer provide the intended fire protection.

Whilst it is recognized that sprinkler impairments are often necessary during maintenance, renovation, new construction etc. or because of equipment failure, it must be understood that an increased risk of fire loss or damage arises, during a sprinkler impairment.

Many avoidable large fire losses have been sustained during periods, when a sprinkler system has been impaired.

In order to minimise the potential effects of a sprinkler impairment it is important to:

- Understand the types of sprinkler impairments that can arise
- Operate an effective system to identify and control sprinkler impairments

Types of Sprinkler Impairment

There are 3 types of sprinkler impairment:-

- Planned
- Emergency
- Hidden

Planned Impairments occur, when it is necessary to shut down all or part of a sprinkler system either for routine maintenance purposes or in connection with the modification / extension of the sprinkler system.

In these situations the sprinkler system can be shut down in a controlled manner and in such a way as to cause the least impairment to the sprinkler protection provided.

Emergency Impairments occur, when an unforeseen incident or accident partially or totally impairs the effectiveness of a sprinkler system, requiring emergency repairs e.g. fork lift truck damage to a sprinkler pipe or the malfunction of a sprinkler pump.

In these situations it is important to have a clearly defined procedure to minimise the extent and duration of the impairment to the sprinkler protection provided.

Hidden Impairments are ones which are not known to exist and are therefore potentially the most serious type, e.g. a sprinkler system shut down and inadvertently left out of service on completion of the work that necessitated a sprinkler system shut down.

In these situations it is important to have a clearly defined procedure to identify potential hidden sprinkler impairments.

Sprinkler Impairment System

The purpose of the sprinkler impairment system is to ensure that effective written procedures are in place for detecting and dealing with sprinkler impairments.

This is best achieved by appointing a responsible person to ensure the effective operation of the sprinkler impairment system preferably a senior member of the management team.

An effective sprinkler impairment system should ensure that:

- The extent and duration of sprinkler impairments are kept to the minimum
- Adequate alternative protections are maintained or put in place, during a sprinkler impairment
- Appropriate actions are taken to minimize the risk of fire during a sprinkler impairment
- The sprinkler system is fully restored on completion of work giving rise to a sprinkler impairment
- The appropriate authorities are advised of a sprinkler impairment e.g. Chartis UK Limited, fire brigade etc
- Adequate procedures are in place for dealing with emergency sprinkler impairments
- Adequate procedures are in place for identifying hidden sprinkler impairments
- Adequate numbers of staff understand the importance of the sprinkler system and how it operates
- The increased fire risks that arise during a sprinkler impairment
- The importance of immediately reporting any sprinkler impairment identified and the action(s) to be taken

Protections & Procedures

Planned Sprinkler Impairments

Before a planned sprinkler impairment takes place it should be ensured that:

- A full fire risk assessment of the proposed work and its impact is undertaken
- The work to be undertaken is planned so as to minimise the duration and impact of the impairment e.g. by avoiding impairing several main sprinkler risers / installations at the same time.

- If the work is to last several days, consideration should be given to planning the work so that the sprinkler system can be put back in to service at night
- Water supplies are only to be impaired, when there is no other solution
- If duplicate water supplies are provided, where possible at least one of them should be maintained in operation
- The management of buildings, where the sprinkler protection is to be impaired are informed to make sure that loss prevention measures will be strictly applied during the sprinkler impairment and to postpone hazardous operations where possible
- Each member of the Plant Emergency Organization, the public fire brigade and the alarm monitoring facility are informed of the sprinkler impairment
- Adequate numbers / types of portable fire extinguishing appliances are provided, including where possible internal fire hose reels
- The area(s) that will be affected by the sprinkler impairment is/are checked to ensure that there are no fires
- An adequate system is in place where possible for quickly reinstating the impaired sprinkler protection, in the event of a fire in the area(s) affected by the sprinkler impairment

During the sprinkler impairment it should be ensured that in the area(s), where the sprinkler protection is impaired:

- Hazardous operations are avoided in particular all hot work, which should be strictly prohibited unless absolutely unavoidable, in which case it is essential that an effective hot work permit system is both operated and fully complied with
- 'No Smoking' regulations are strictly enforced
- Good housekeeping standards are maintained
- A fire watch is established with patrols undertaken at least hourly

After the sprinkler impairment:

- It should be ensured that all sprinkler pumps are fully operational and that all sprinkler control and water supply valves are fully open and securely padlocked
- A test should be conducted at each sprinkler riser by opening fully the 2-inch drain valve
- Pressures should not drop significantly and should quickly go back to their original position, as soon as the valve is closed
- All persons informed of the impairment should be informed of the restoration

Emergency Sprinkler Impairments

In the event of emergency sprinkler impairment:

- Immediate action should be taken to minimize the effects of the impairment and to complete any necessary repairs
- Where applicable, the same protections and procedures should be adopted for the duration of the impairment as for planned sprinkler impairments

Hidden Sprinkler Impairments

The risk of a hidden impairment occurring should be reduced by:

- Locking all sprinkler installation control valves in the correct position, using substantial padlocked chains or straps
- Improved protection can be provided by fitting continuously monitored anti-tamper alarms, on all main sprinkler installation control valves
- Regularly inspecting all sprinkler installation control valves to check that they remain in the correct position and have not been tampered with – this should be undertaken at least weekly
- Conducting weekly drain tests to ensure that all sprinkler water motor alarms and any associated alarms remain fully operational
- Conducting weekly sprinkler pump testing, to confirm that all sprinkler pumps remain fully operational

Ensuring that all staff are aware of the procedure to follow should they identify a hidden sprinkler impairment.

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