



The Institute of Healthcare Engineering and Estate Management

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No 1. FIRE COMPARTMENTATION

FIRE SAFETY TECHNICAL PLATFORM (FSTP)- LIBRARY OF TECHNICAL GUIDANCE

Introduction

The FSTP has at its' core, to act as the focus for technical matters concerning Fire Safety, creating relevant IHEEM policies, advising on relevant issues to the Technology Platform Committee and managing the Institute's relevant technical responses and activities. The main work activities include creating technical guidance documents on fire safety matters with an emphasis on maintenance. This document covers Fire Compartmentation.

Effective fire compartmentation (also known as passive fire protection) is intended to preserve life and property, paramount in healthcare premises due to the dependent nature of some of the occupants. Effective fire-stopping in fire resisting separating elements (walls, floors etc.) plays a critical role in containing a fire at its source, thereby reducing its effect on the primary building structure.

The rate of spread is controlled by creating fire-resisting compartments which subdivide the building. It is therefore essential that all openings and gaps in these compartments are fire-stopped to restrict lateral and vertical fire spread and to achieve the required degree of containment. Failure to do so may allow fire and/or smoke to spread uninhibited in cavities and penetrations in a building.

An Estates and Facilities Alert was issued by the Department of Health in October 2014 entitled "Reminder for the testing of fire & smoke dampers and ensuring the integrity of fire stopping" (appendix 1).

Scope

This document contains guidance on matters to be considered when producing a risk based maintenance program which meets the requirements of Article 17 of the Regulatory Reform (Fire Safety) Order 2005 (the Order) in a healthcare environment, "a suitable system of maintenance, maintained in an efficient state, in efficient working order and good repair". It should not to be quoted as if it is a specification.

Fire compartmentation is referred to generically and includes (but is not limited to):

- Main compartments including compartment floors; often 60-minute fire rated
- Sub-compartments; the division of main compartments into smaller sub-compartments usually 30-minute fire rated.
- Hazard rooms; a room or other area which, because of its function and/or contents, presents a greater hazard of fire occurring and developing than elsewhere, usually separated by 30 minutes fire resistance
- Cavity barriers; sub-dividing large voids including under floor or above ceiling
- Protected routes; often including dead end corridors.

- Protected shafts; spaces that connect compartments including staircases and those used for the distribution of services,
- Re-entrant angle protection- external angles of a building which are less than 180° such as light wells or courtyards.
- Tower and podium, protection to a tower block from the podium or flat roof below.
- Protected areas, areas which may be protected because of their value or importance to service delivery and business continuity.

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ALARP

A key concept in fire safety is defined in the Communities and Local Government Guides to fire risk assessment "a concept where risks should continue to be reduced until you reach a point where the cost and effort to reduce the risk further would be grossly disproportionate to the benefit achieved.

General

Guidance on the frequency of inspecting of fire compartmentation and fire stopping can be found in HTM 05-03 part K:

"Annual tests and checks

5.147 All structural fire protection and elements of fire compartmentation should be inspected and any remedial action carried out."

The practicality of inspecting all fire compartments in a large hospital each year make this task very difficult to achieve and beyond the remit of ALARP. The E&F Alert indicates that there should be provided a permit to work system for any works that may impinge on the integrity of fire stopping. If this is coupled with a risk-based approach to inspecting fire-compartments, this should give a satisfactory level of confidence in compliance with legislative requirements in the Order.

Initial Assurance

Provision of accurate plans indicating the full inventory of fire compartmentation

It should be ensured that there is in place a full set of plans showing the location of all fire compartmentation, and the rating of that compartmentation. This inventory, along with specifications should be in line with guidance on fire safety protocols in HTM 05-01 appendix E.

<https://www.gov.uk/government/publications/managing-healthcare-fire-safety> "Fire stopping".

Continuing Assurance

It is important that a system of controlling contractors and others during construction, installation or maintenance who may have need to penetrate fire compartments is enforced in line with paragraph 10 of the E&F alert (appendix 1).

The requirements for any contractor or person working on a fire compartment.

It is suggested that the following may meet the requirements:

A local operating procedure (lop) is to be developed to provide an effective measure of control over staff or contractors working on or adjacent to a fire compartment (appendix 2). This lop is to be followed in every case. This includes the provision of risk assessments and method statements by any persons carrying out such work. This should form part of the protocol.

Annual Verification of fire compartmentation.

A complete annual survey of all fire compartmentation is very resource intensive and treats all parts of the hospital as if the risk is the same. The risk increases as the dependency of the patient increases. The verification of fire compartmentation can be more critical in very high dependent areas and least critical in independent patient areas or areas not used by patients/visitors. There are a myriad of other factors which have some relevance such as the safe evacuation of occupants. These should also be incorporated and considered by the competent person when assessing risk

HTM 05-01 (glossary of terms) classifies patients as independent, dependent or very high dependent.

In line with the risk profile in this classification the following annual verification may be utilised:

- Wards or departments accommodating very high dependent patients, 100% of fire compartmentation.
- Wards or departments accommodating dependent patients, 100% of escape routes (main corridors/hospital streets). 20% (or such a percentage as decided by the risk management group in consultation with the competent person) of all other fire compartments (risk rooms, sub compartments) to be rotated so all areas are included every five years. This may be in the form of one ward or department in five checked annually or one fifth of each ward or department checked annually.
- Wards or departments accommodating independent patients, areas not used for patients, 20% (or such a percentage as decided by the risk management group in consultation with the competent person) of all fire compartments to be rotated so all areas are included every five years.
- Where anything other than minor breaches are found during the verification, it is to be extended to adjacent areas until there is a reasonable assurance of compliance.

N.B. Isolation facilities for infectious patients should be considered on their merits, assessing the specific risk of each facility.



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In addition to the patient dependency other considerations include:

- High value areas or areas which are essential to service delivery and business continuity e.g. pathology
- Areas where there is a higher likelihood of fire occurring such as mental health wards.
- Areas essential for the evacuation of persons

Where access is denied to an area due to the risk to patients or for other reasons, where possible, the verification should be made from the side where there is not a risk to patients (corridor). If this is not possible, a record should be kept of any such instance including the reason for denial of access and by whom.

The verification should be completed by suitably trained/instructed local staff or by utilising specialist contractors. If the former, it is important to keep records of the training/instruction provided to local staff. Training should be in line with industry guidance.

It is a requirement that a Fire Risk Assessment is completed for each area and that this is reviewed regularly. This risk assessment may incorporate some checks of fire compartmentation or may give an indication of the extent of the annual verification of fire compartmentation.

Estates and Facilities Alert

INFORMATION

Ref: DH/2014/003

Issued: 21/10/2014

Notice

Reminder for the testing of fire & smoke dampers and ensuring the integrity of fire stopping

Information

There have been recent reports in the national media regarding:

- the lack of suitable access to fire and smoke dampers, and their actuating mechanisms, to enable inspection, maintenance and testing to be completed in a safe and competent manner.
- inadequate inspection, recording and documentation of fire stopping.

It has been highlighted that in certain circumstances, due to incorrect design and installation, maintenance personnel cannot gain safe access to facilitate the necessary statutory inspection of the fire and smoke dampers and their actuating mechanisms. In addition there has been a failure to record the full details of where fire stopping has been installed, hence causing difficulties in ensuring its integrity is maintained.

This results in the organisation responsible for the building potentially being in contravention of Article 17 of the Regulatory Reform (Fire Safety) Order 2005 and thereby putting patients, visitors and staff at risk in the event of a fire.

Action required

1. All healthcare organisations should review the guidance on fire and smoke dampers and fire stopping contained within*:
 - Regulatory Reform (Fire Safety) Order 2005
 - Building Regulations – Approved Document B
 - Health Technical Memorandum 05 series: Firecode – Fire safety in the NHS
 - Health Technical Memorandum 03-01: specialised ventilation for healthcare premises (Parts A and B)
 - HBN 04-01: Isolation facilities for infectious patients in acute settings

*Note: this list is not exhaustive.

Fire and Smoke Dampers

1. All healthcare organisations should review their existing risk assessments and inspection/maintenance regimes relating to the inspection, maintenance and testing of fire and smoke dampers and their associated actuating mechanisms and control systems.

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3. All healthcare organisations should ensure that they have a full inventory of all installed fire and smoke dampers within their premises.
4. All installed fire and smoke dampers, and their associated actuating mechanisms and control systems, should be included in a formal maintenance programme to ensure that they are inspected and tested in order to confirm they:
 - meet the guidance cited above and are fit for the purpose they are intended.
 - are in good working order and have not been damaged, disconnected or wedged open.
5. Where a lack of safe access to a fire or smoke damper, and its associated actuating mechanism, is identified this should be brought to the immediate attention of the Director of Estates & Facilities and the Trust Fire Safety Manager / Fire Advisor.
6. Where problems are identified, a programme to repair or replace damaged fire and smoke dampers, and associated actuator mechanisms, should be put in place.
7. Once any repair or replacement programme has been completed, the fire risk assessment for the premises should be updated, and key findings brought to the attention of all staff that might be affected.

Fire stopping

8. All healthcare organisations should review their existing risk assessments and inspection regimes relating to the inspection of fire stopping.
9. All healthcare organisations should ensure that they have a full inventory of fire stopping within their premises ([see HTM 05-01 Appendix E – Developing fire safety protocols](#) for advice on the information that should be collated).
10. If not already in place, systems should be implemented to ensure the integrity of fire stopping can be confirmed within the organisation's premises. This should incorporate permit-to-work systems that ensure fire stopping is re-instated during, and following, works (e.g. construction, installation or maintenance) that may impinge on the integrity of the installed fire stopping.

Suggested Onward Distribution

Those responsible at Board Level for Fire Safety/Protection
Directors of Estates & Facilities
Risk Managers
Health & Safety Managers
Fire Safety Officers/advisers

References

Regulatory Reform (Fire Safety) Order 2005
<http://www.legislation.gov.uk/ukxi/2005/1541/contents/made>

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Building Regulations – Approved Document B
<http://www.planningportal.gov.uk/buildingregulations/approveddocuments/partb/>

Firecode:

Health Technical Memoranda 05-01 Managing Fire Healthcare safety
<https://www.gov.uk/government/publications/managing-healthcare-fire-safety> Health

Technical Memoranda 05-02

<https://www.gov.uk/government/publications/guidance-in-support-of-functionalprovisions-for-healthcare-premises>

Health Technical Memoranda 05-03 <https://www.gov.uk/government/publications/suiteof-guidance-on-fire-safety-throughout-healthcare-premises-parts-a-to-m>

Health Technical Memorandum 03-01: specialised ventilation for healthcare premises (Parts A and B) <https://www.gov.uk/government/publications/guidance-on-specialisedventilation-for-healthcare-premises-parts-a-and-b>

HBN 04-01: Isolation facilities for infectious patients in acute settings
<https://www.gov.uk/government/publications/adult-in-patient-facilities>

Additional information for England

The above sections of this Alert were compiled by Department of Health for circulation in England only.

Action required by this alert should be **underway by: 28/10/2014**

Action required by this alert should be **completed by: 30/04/2015**

Enquiries should quote reference number DH/2014/003 and be addressed to:

Mb-defects&failures@dh.gsi.gov.uk

This Alert can be found on the following website
<https://www.cas.dh.gov.uk>

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Appendix 2

EXAMPLE LOP PROCEDURE

The following Local Operating Procedure regarding Fire Stopping requirements is to be followed when installing, maintaining, refurbishing or any penetrations made in error within the Hospital.

In the event of needing to penetrate **ANY fire** walls, ceilings or floors within the Hospital to run supplies from one area to another the person carrying out the work will be responsible for ensuring that the fire integrity of the wall is not breached or affected in any way.

Fire compartment drawings should be obtained from the Building Manager before commencing works.

- In the event of penetrating through a wall, ceiling or floor, the penetrations log sheet should be filled in and returned to the Building Manager at the earliest opportunity.
- The Building Manager will arrange for (3rd party accredited fire stopping company) to attend and carry out a repair.
- (3rd party accredited fire stopping company) will use the repair materials as instructed by the manufacturer to ensure the correct fire rating is achieved.
- All repairs to fire compartmentation should be marked with a label adjacent to the repair which contains the following information:

WARNING!
This opening has been sealed with the following product: _____ _____
Fire rating (minutes): _____
By (name): _____
Date: ___/___/___
Job number: _____



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For all penetrations through walls, ceilings or floors the following documents must be completed and returned to the Building Manager: Risk Assessment and Method Statement.

The following information is to be provided by the installer:

- Details of the installer
- Updated fire compartment drawing showing the location of the repair
- A unique identification number;
- Location;
- Details of the fire separating element to which the fire stopping is installed;
- Product name;
- Manufacturer;
- Quantity used;
- Manufactured date;
- Product batch numbers;
- The fire performance achieved (integrity and insulation);
- The date of installation.
- before and after photographic evidence referenced by the location unique identification number