
Fire Safety In Healthcare Services Conference
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Understanding Fire Safety - Maintenance of Passive &
Active Fire Safety Systems within Healthcare

Paddy McDonnell

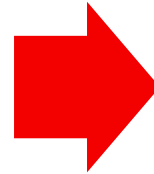
P.I.I.E., H.Dip.SHWW., Grad. IOSH., G.I.Fire.E., MIITD., MNFPA
Technical Director – Phoenix Safety Training Services



Why Plan....

What can go wrong?

- Fire
- Structural Damage
- Gas Leak and more....



How bad can it be?

- Injury or Loss of Life
- Loss of Service
- Loss of Building
- Loss of Business



So what...

- Death or Personal Injury
- Guilt, Fines and/or Prison
- Public relations
- No Job



How often can it happen?

- Anytime we just don't know when or where...
- So we must plan...

Triangle of Evacuation

Staff

- ✓ Real Time Information
- ✓ Clinical Supervision
- ✓ Training
 - Knowledge
 - Skill
 - Experience



Active and Passive Fire Safety Systems = Time

- ✓ Fire Detection and Alarm System (L1)
- ✓ Emergency Lighting
- ✓ Fire Doors and Fire Compartments
- ✓ Fire Extinguishers

Fire Safety Register

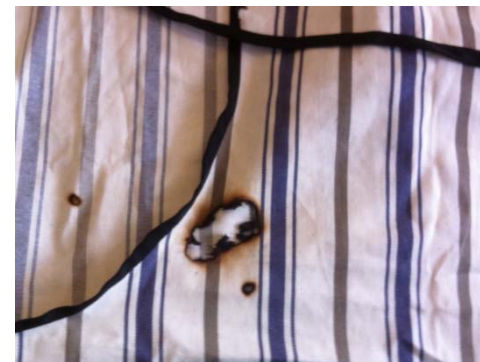
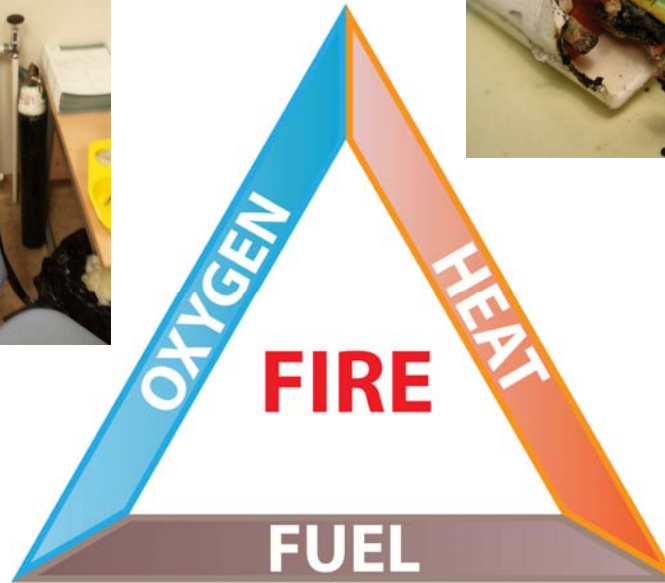
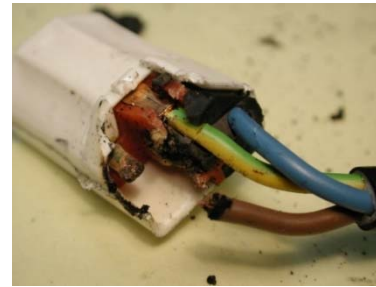
Plan

- ✓ Evacuation what type?
- ✓ Shelter/Defend In-Place

Evacuation Aid

General/Personal Emergency Evacuation Plan

Fire Triangle – Fire Prevention



Spread of Fire

- **Convection** – Conduction – Radiation.





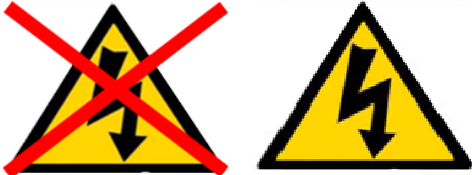


Spread of Fire



Fire Extinguishers and Classes of Fire

All fire extinguishers have a Red Body with a Colour Band

Water Red	Foam Cream	Co 2 Black	Powder Blue	Wet Chemical Yellow
				
A	A & B	B	A, B & C	A & (B) F

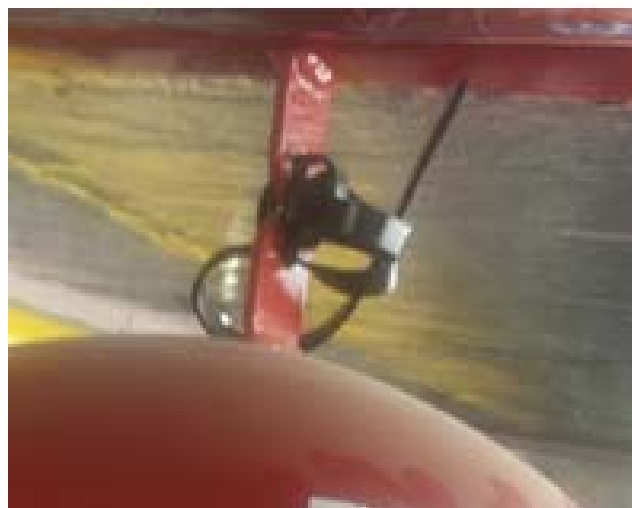


Fire Extinguishers

- Monthly inspection by occupier (risk assessment).
- Annual inspection by competent, trained person, more thorough examination, with test discharge of one third of all fire extinguishers.



Fire Extinguishers



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Fire Blankets

- **Class B & F** – Used to smother fires in small contained vessels such as frying pans.
- Inspection (not service).



Fire Hydrants

- Weekly inspection by the occupier.
- All private fire hydrants annual inspection by competent, trained person.

Hose Reel

- Class A fires only.
- Will slow evacuation and reduce compartmentation.
- Regular checks.
- Annual inspection and service.
- Every 5 years all hoses shall be pressurized to maximum working pressure.



Fire Detection and Alarm Systems

- Sounds 75 dB(A), (HTM's) or 45–55 dB(A), or 5 dB(A) above the notional noise level (Nursing Areas Only) – (risk assessment).

Fire Detection and Alarm Systems Inspection

- Daily inspection by the occupier.
- Weekly test by the occupier.
- Quarterly and annual inspection by competent, trained person.

Fire Detection and Alarm Systems

- Certificate of Design.
- Certificate of Installation.
- Certificate of Commissioning (modification, extension or alterations).
- Certificate of Handover.
- Certificate of Verification.
- Certificate of Servicing/Testing.
 - *Servicing/Testing not to impair the system's ability to provide an adequate audible warning to the occupants of the building in the event of fire.*

Fire Detection and Alarm Systems Layout

- Green Light Normal
- Orange Light??
- Red Light Alarm



Detector Head or Manual Call Point

Control Panel

Repeater Panel

Sounders

Doors will Release

Warning Lighting

Air Handling/Smoke Control

Fire Service

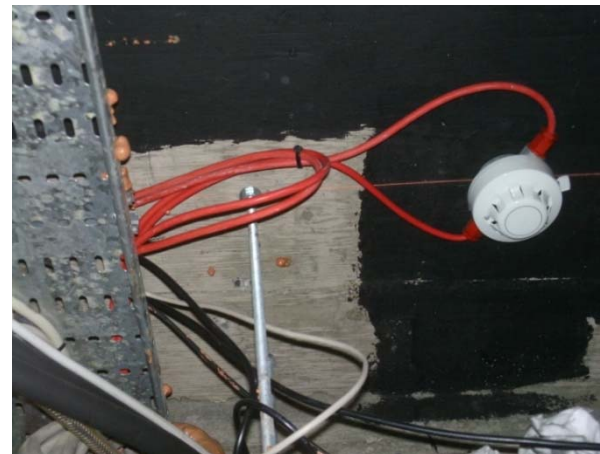
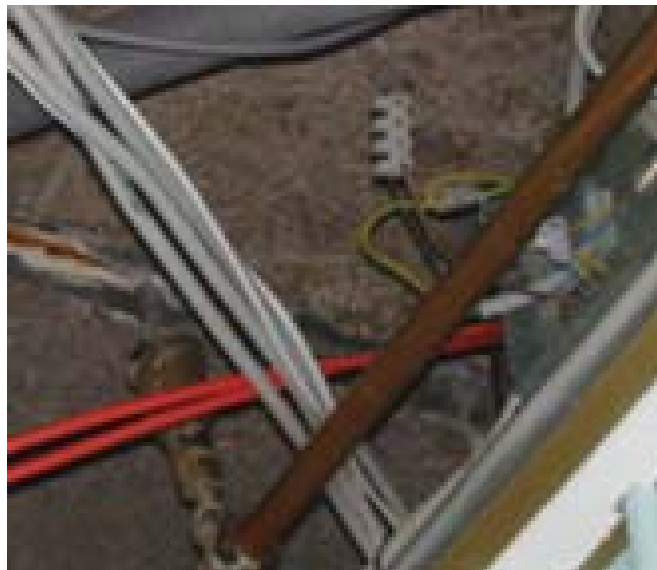


30m



Emergency Door Release

Fire Detection and Alarm Systems



Fire Detection and Alarm Systems



Fire Detection and Alarm Systems



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Emergency Lighting

- When normal lighting fails the emergency lighting should energise automatically for a minimum time of 3 hours.
- Maintained exit signage's used for all escape routes.
- A non-maintained escape lighting.
- Emergency lighting shall be provided in each unit in bedrooms, bathrooms, shower rooms, toilets, communal areas, treatment areas, nursing stations, wheelchair access areas, external assemble points and on all external routes to these points.

Emergency Lighting

- Daily inspection by the occupier.
- Weekly inspection by the occupier 25%.
- Quarterly and annual inspection by competent, trained person.
 - Certificate of Design.
 - Certificate of Installation.
 - Certificate of Commissioning (modification extension or alteration to an existing system).
 - Certificate of Handover.
 - Report of inspection, Testing and Servicing.
 - Certificate of Annual Inspection and Testing.

Emergency Lighting

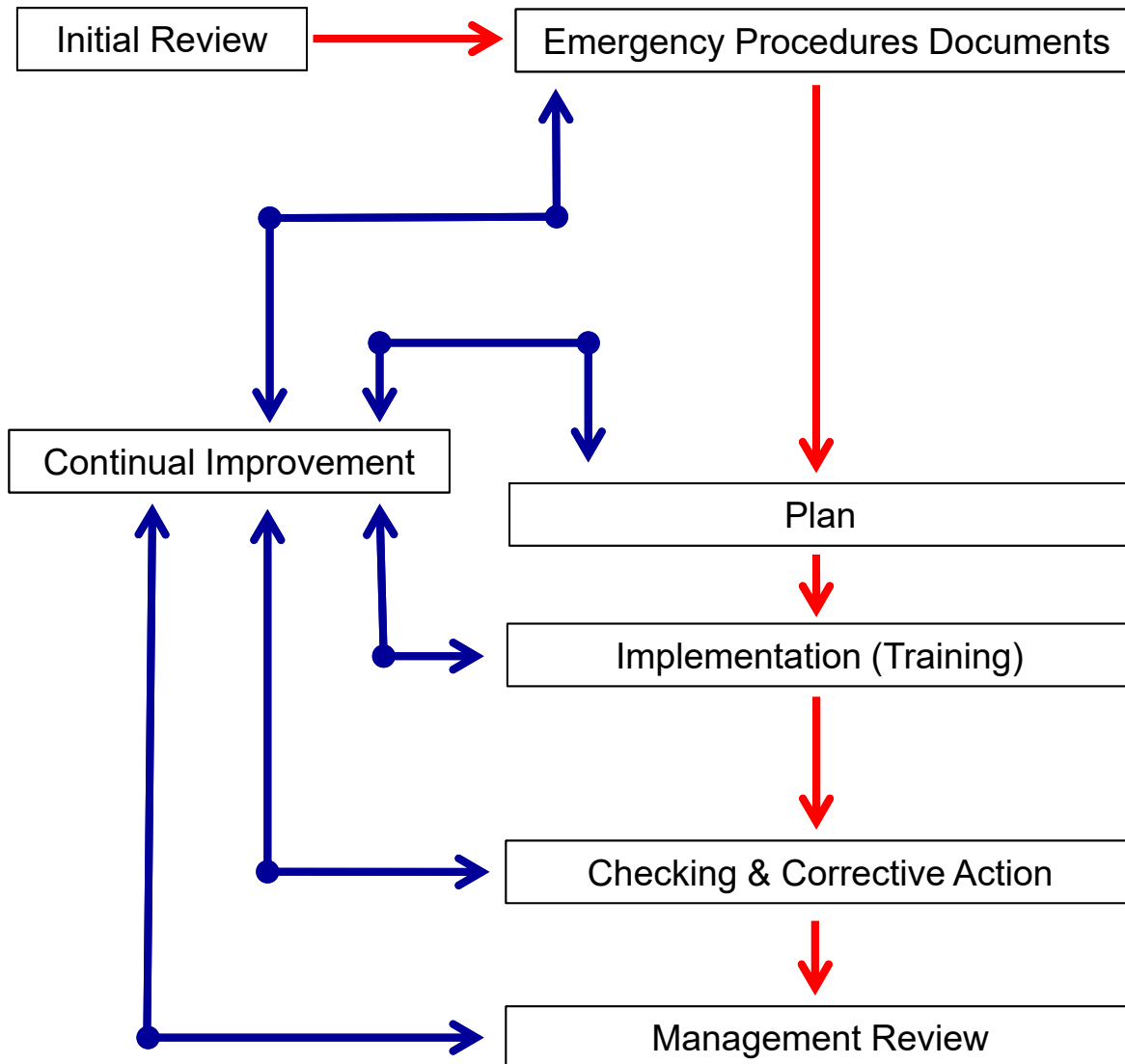


Escape Routes

- Daily inspection by the occupier of escape routes.



Emergency Management System



- ✓ Fire Safety Policy and Strategy.
- ✓ Internal Emergency Response Plan.
- ✓ Unit/Ward Fire Plan and Evacuation Drawings.
- ✓ Fire Action Notice Staff - Visitors.
- ✓ Fire Safety Register.
- ✓ Fire Services Maps.

✓ Develop and Define Action Plan with Resources Needed.

- ✓ Management.
- ✓ All Staff (e learning for who).
- ✓ Evacuation Training.
- ✓ Table Top / Live Fire Drills.

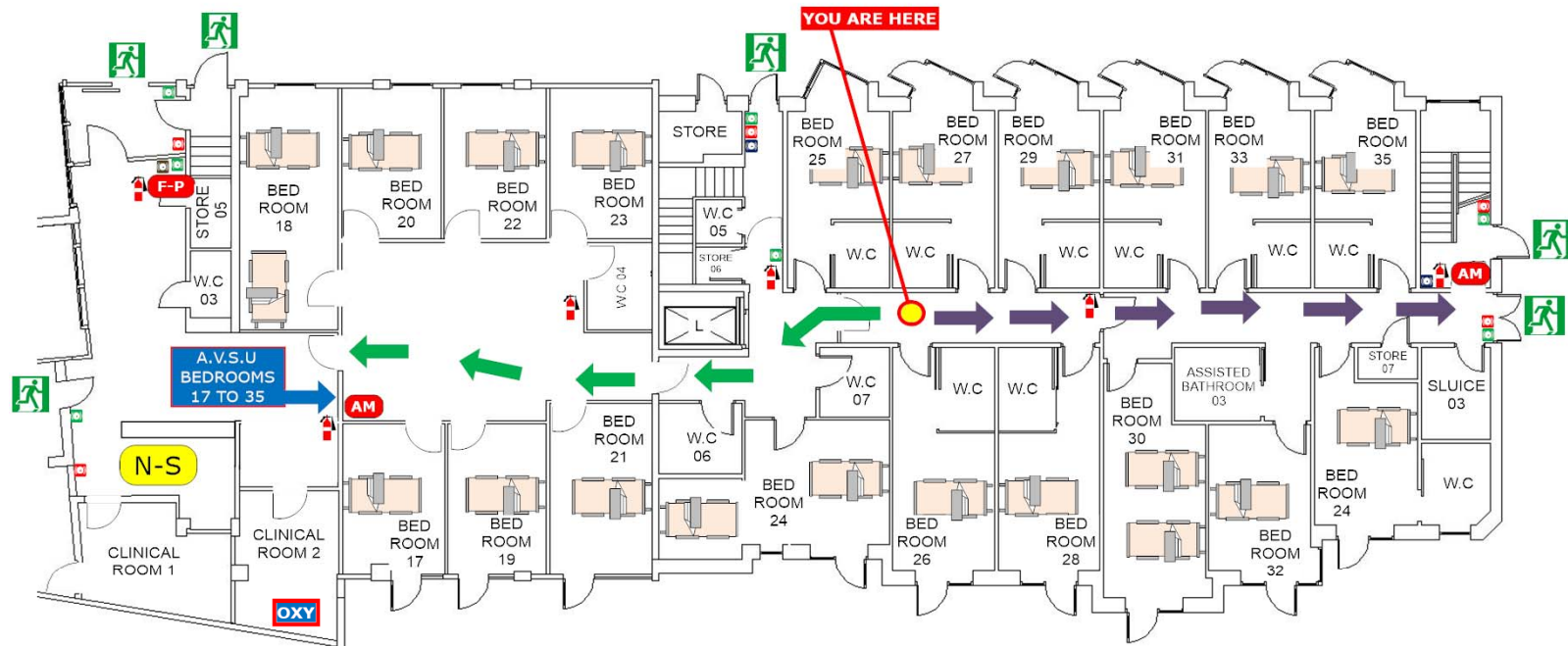
✓ Implement Changes Based on Monitoring.

Emergency Procedures

- The speed of an evacuation is dictated by the condition of the patient/resident;
 - Mobility – full, limited, assisted or immobile.
 - Comprehension, Body Mass etc...
- Location, size of fire and amount of smoke.
- Flammable materials in the area of the fire.
- Actions to control the fire working or not.

If in doubt, evacuate...

Evacuation Plan



ISO 23601-2009 Safety Identification - Escape and Evacuation Plan Signs. May not meet requirements within healthcare.

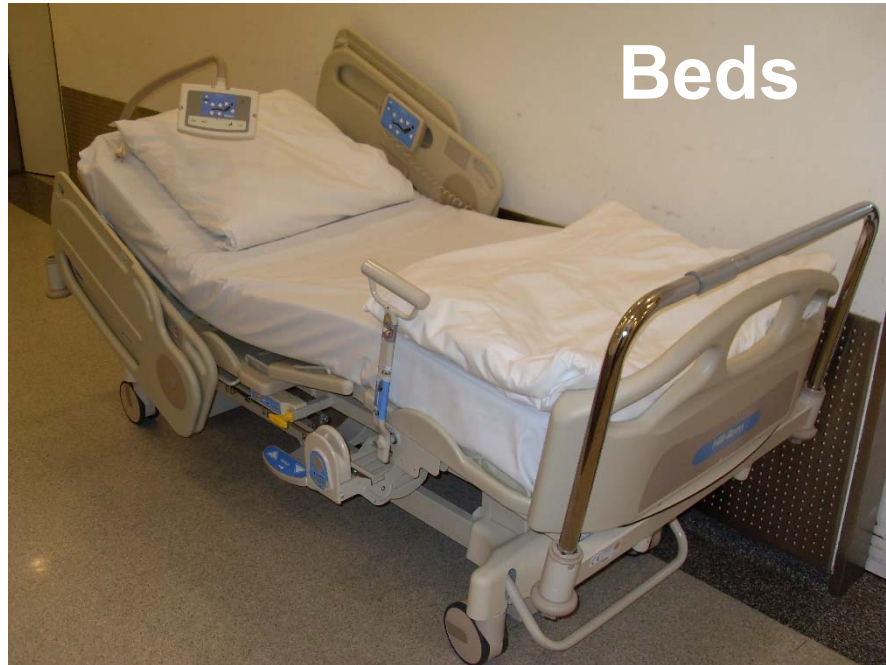
Evacuation Types and Phases

Evacuation Types

- Single stage (*not assisted*).
- Progressive horizontal (*same floor*).
- Vertical (*down stairs*).
- Delayed (*no smoke or danger*).



Evacuation Aids???



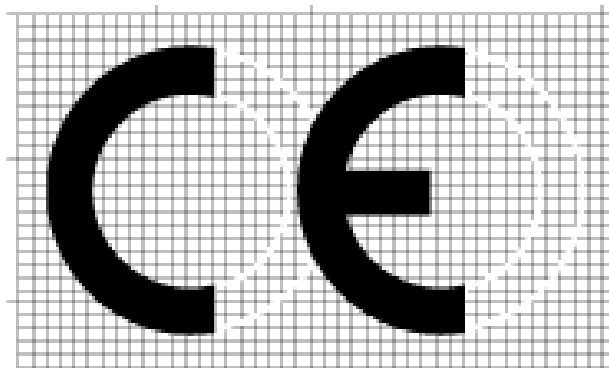
Beds

Wheelchair

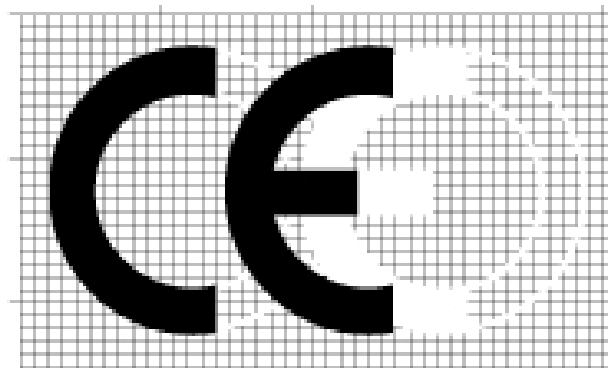


CE Marking

- The CE marking is a key indicator (but not proof) of a product's compliance with European Union (EU) Directive. The CE mark is not a quality mark.



CE Mark



China Export

- There is no single standard for evacuation aids.

Evacuation Aids

- Ski Sheet – E-Pad – Ski Pad;
 - Safe working load with 2 staff 120Kg (staff mass equal or greater than patient/resident).
 - Safe load test 160Kg (staff mass equal or greater than patient/resident).



Evacuation Aids

- Ski Slide Pad – Pad AlbacMat – ResQMat;
 - Safe working load with 2 staff 120Kg (staff mass equal or greater than patient/resident).
 - Safe load test 160Kg (staff mass equal or greater than patient/resident).



Evacuation Aids

- Ski Sled;
 - ❑ Safe working load with 3 staff 160Kg (staff mass equal or greater than patient/resident).
 - ❑ Safe load test 240Kg (staff mass equal or greater than patient/resident).

- Bariatric EvacMat;
 - ❑ Safe working load with 6 to 12 staff 350Kg (staff mass equal or greater than patient/resident).



Evacuation Aids

- Buscot BabEvac Cot;



- TabEvac 1 or 2 Pocket:



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Thank you for your time

Paddy McDonnell
0872380750
paddy@phoenixsts.ie
www.phoenixsts.ie



Fire Extinguishers

- *Fire Services Act 1981 (2003).*
- *Safety, Health and Welfare at Work (General Application) Regulations, 2007.*
- *IS 291:2015 – Selection, commissioning, installation, inspection and maintenance of portable fire extinguishers.*

Fire Blankets

- *Safety, Health and Welfare at Work (General Application) Regulations, 2007.*
- *IS 415:1988*
- *BS 1869:1997*

Fire Hydrants

- *Fire Services Act 1981 (2003).*
- *Safety, Health and Welfare at Work (General Application) Regulations, 2007.*
- *BS 9999:2008 Code of practice for fire safety in the design, management and use of buildings.*
- *BS 9990:2015 Code of practice for non-automatic fire-fighting systems in buildings.*

Hose Reel

- *Fire Services Act 1981 (2003).*
- *Safety, Health and Welfare at Work (General Application) Regulations, 2007.*
- *IS EN 671-3:2009 Fixed firefighting systems: hose systems maintenance of hose reels with semi-rigid hose and hose systems with lay-flat hose.*
- *IS EN 671-1 2012 Fixed Firefighting Systems - Hose Systems - Part 1: Hose Reels With Semi-rigid Hose.*
- *IS EN 671-1 2012 Fixed Firefighting Systems - Hose Systems - Part 2: Hose Systems With Lay-flat Hose.*
- *BS 9999:2008 Code of practice for fire safety in the design, management and use of buildings.*

Fire Detection and Alarm Systems

- *Fire Services Act 1981 (2003).*
- *Safety, Health and Welfare at Work (General Application) Regulations, 2007.*
- *IS 3218:2013 Fire Detection and Alarm Systems for Buildings: System Design, Installation Servicing and Maintenance.*

Emergency Lighting

- *Fire Services Act 1981 (2003).*
- *Safety, Health and Welfare at Work (General Application) Regulations, 2007.*
- *IS 3217:2013 Emergency Lighting.*

Escape Routes and Fire Doors

- *Escape routes.
- Fire doors.
- Half-Yearly inspection by competent, trained person.
 - **Fire Services Act 1981 (2003).*
 - **Safety, Health and Welfare at Work (General Application) Regulations, 2007.*
 - *IS EN 179:2008: Building Hardware – Emergency exit devices operated by lever handle or push pad, for use on escape routes – requirements and test methods.*
 - *BS 9999:2008 Code of practice for fire safety in the design, management and use of buildings.*

Ski Sheet/Ski Sheet (*Modified*)

- *Buckles*
 - *US specification FMVSS 209 (Federal motor vehicle safety standards and regulations)*
- *Nylon*
 - *BSF 127 Fab.7*
- *Webbing*
 - *BS EN ISO 9001*
- *Elastic*
 - *BS EN ISO 7141*
- *MDD 93/42/EEC*

E-Pad

- *Plastic Buckles*
 - *BS EN ISO 12402-7 (Personal flotation devices materials and components)*
- *Foam*
 - *BS EN ISO 845 (Cellular plastics and rubbers)*
 - *BS EN ISO 2439 (Flexible cellular polymeric materials)*
 - *BS EN ISO 3379 (Combustion modified flexible polyurethane)*
- *Webbing*
 - *BS EN ISO 9001*
- *MDD 93/42/EEC*

Ski Pad

- *Buckles*
 - *US specification FMVSS 209 (Federal motor vehicle safety standards and regulations)*
- *BS EN ISO 845 (Cellular plastics and rubbers)*
 - *BS EN ISO 2439 (Flexible cellular polymeric materials)*
 - *BS EN ISO 3379 (Combustion modified flexible polyurethane cellular)*
- *Webbing*
 - *BS EN ISO 9001*

Ski Slide Pad

- *Buckles*
 - *US specification FMVSS 209 (Federal motor vehicle safety standards and regulations)*
- *Foam*
 - *BS EN ISO 845 (Cellular plastics and rubbers)*
- *Webbing*
 - *BS EN ISO 9001*
- *MDD 93/42/EEC*

AlbacMat

- *Australian Standards 2755.2 (Textile fabrics burning behaviour)*
- *Australian Standards 2001.2.3.2 (Methods of test for textiles)*
- *MDD 93/42/EEC*

ResQMat

- *Australian Standards 2001.2.3 (Methods of test for textiles method 2.3.1)*
- *Australian Standards 2001.2.10 (Determination of the tear resistance)*
- *Australian Standards 2001.2.22 (Determination of maximum yarn slippage in woven fabric at a standard stitched seam)*
- *Foam*
 - *BS EN ISO 845 (Cellular plastics and rubbers)*
- *MDD 93/42/EEC*

Ski Sled

- *Buckles*
 - *US specification FMVSS 209 (Federal motor vehicle safety standards and regulations)*
- *Foam*
 - *BS EN ISO 845 (Cellular plastics and rubbers)*
- *Webbing*
 - *BS EN ISO 9001*
- *Hoists for the transfer of disabled persons*
 - *ISO 10535:2006*
- *MDD 93/42/EEC*

BariatricEvacMat

- *Plastic Buckles*
 - *BS EN ISO 9001:2008 (Plastics)*
- *Webbing*
 - *EN ISO 12402-7*
- *Anti Bacterial PVC Sheeting (main body and casing)*
(Norfolk Island)
 - *NF EN ISO 2286-2 (Rubber or Plastics)*
 - *NF EN ISO 1421 (Rubber or Plastics)*
 - *DIN 53363 (Tear resistance of plastic film and sheeting)*
 - *NF EN 1876-2 (Rubber or Plastics)*
 - *NF P 92503/DIN 4102/BS 7837 (Temperature Resistance)*
- *MDD 93/42/EEC*