

## IOSH Fire Risk Management Group

Back-to-Basics Webinar 2: FRMG Principal 2: Fire Prevention.

1230-1330. 11 October 2021.

Questions received from Zoom participants and suggested answers offered.

No.	Questions and answers
1	<p>Please will you share the link where the webinar be available.</p> <p>A recording of the Webinar will be made available after the session has been completed. Slides and other supporting documents, including relevant guidance and information will be available from the FRMG section of the IOSH website within a short time. This is the link to the fire safety webinar presentations on YouTube. If you do a search on YouTube for IOSH webinar fire you will find them.</p> <p><a href="#">IOSH webinar fire - YouTube</a></p> <p><a href="https://www.youtube.com/results?search_query=iosh+webinar+fire">https://www.youtube.com/results?search_query=iosh+webinar+fire</a></p> <p>This is the link to the FRMG page. You will need to log in to IOSH to access the Microsite page fully.</p> <p><a href="#">Fire Risk Management Group   IOSH</a></p> <p><a href="https://iosh.com/membership/member-benefits/our-membership-network/our-groups/fire-risk-management-group/">https://iosh.com/membership/member-benefits/our-membership-network/our-groups/fire-risk-management-group/</a></p>
2	<p>Please can you provide the link to the 'Big Red Book on fire safety'. Is this a IOSH document and is it available in Adobe Portable Document Format?</p> <p>The ethos of this series of Back-2-Basic Webinars is to give support in this field to new IOSH Members, to those starting-out in their early careers in fire safety and to practitioners who have had new roles and responsibilities in fire safety added to their OSH duties recently. The Big Red Book on Fire Safety is a project the IOSH FRMG is working on to provide support members with distance learning material. When the planned series of Webinars have concluded we intend to make the book available to members.</p>
3	<p>What information should be included within the Fire Strategy document and who should compile this document?</p> <p>The fire safety strategy is normally part of the planning stage for new premises or where there are changes to an existing building etc. Typically the document is put together by <b>fire engineers</b> and <b>architects</b>. The Building Regulations require fire safety information relating to the premises to be provided to the <b>Responsible Person</b>. Often the document is provided with the CDM Regulations Health and Safety file, although this can vary within organisations.</p> <p>You could expect to find the document associated with the Fire Safety (or Fire Risk) Management System and associated with a Fire Safety Policy.</p> <p>The content of the fire strategy can vary and while there was a British Standard, PAS 911, it was withdrawn in August 2007. This document has been replaced by a more comprehensive standard, BS 9999:2017.</p> <p><a href="#">BS 9999:2017 Fire safety in the design, management and use of buildings. Code of practice (bsigroup.com)</a></p> <p>A related standard BS 9991:2015 applies to residential buildings.</p>

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	<p><a href="#">BS 9991:2015 Fire safety in the design, management and use of residential buildings. Code of practice (bsigroup.com)</a></p>
4	<p>Is there a minimum of flammable substances that can be stored before the DSEAR Regulations come into effect?</p> <p>Yes. The volumes which will trigger a need to comply with DSEAR are detailed in the DSEAR Regulations. For example, the requirement to reduce the number of dangerous substances to a minimum are tenets of Regulation 6, supported by ACOP and guidance in paragraphs 180-191 of the ACOP document L138, referenced below. Note in particular Regulations 6(4)-6(6).</p> <p><a href="#">DSEAR Regulations - Fire and explosion (hse.gov.uk)</a></p> <p><a href="#">The Dangerous Substances and Explosive Atmospheres Regulations 2002 - Fire and explosion (hse.gov.uk)</a></p> <p><a href="#">Dangerous Substances and Explosive Atmospheres: Dangerous Substances and Explosive Atmospheres Regulations 2002. Approved Code of Practice and guidance L138 (hse.gov.uk)</a></p> <p>Typically, the <u>recommended maximum</u> volume of EFL or HFL that may be stored in cabinets and bins in a workroom is 50 litres. This volume would include liquids in process AND waste material.</p>
5	<p>Can you clarify the difference between COSHH and DSEAR?</p> <p>Certainly. COSHH is focussed on the effect of the substance on the person as a result of exposure in a work process. The acronym refers to the term 'hazardous to health', whereas DSEAR is more to do with the explosive atmosphere that may be created by the process which could put the building, the infrastructure and the workers at risk from fire and explosion. While DSEAR could be referred to as the 'fire side' of COSHH, and the same substances may occur in both risk assessments (for example the industrial solvent acetone), the <u>levels</u> of exposure and the effects on people or the place where they work will be widely different.</p> <p>For example: a Long-term exposure limit (LTEF) (8-hour TWA) for acetone is 500ppm whereas the Lower Explosive Limit (LEL) for acetone is approximately 2.6% v/v. By the time the atmosphere in the workroom reaches the LEL, at 26000ppm, profoundly serious harm will have been caused to a person through a respiratory hazard unless steps in risk minimisation have been taken. For this reason, just as action levels MUST be established before exposure to health hazards escalate, action levels typically at 10% of LEL must be triggered to prevent the concentration of flammable vapour in air from the dangerous substance reaching dangerous proportions.</p>
6	<p>Are fire extinguishers of limited use, and what are the limitations?</p> <p>This question is open to a hot debate. Fire extinguishers are not entirely of limited use. When sadly fire prevention measures have failed a well provisioned extinguisher is a</p>

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	<p>good 'first aid' measure and to some people good insurance until professional help arrives in the first line of attack on the seat of a fire, with certain proviso. These proviso are:</p> <ul style="list-style-type: none"><li>- The extinguisher has to 'match' the characteristics or class of the expected fire. This will be determined by the FRA.</li><li>- Extinguishers are fundamentally designed for portability and for fighting small fires.</li><li>- The operator should be trained in the use of the extinguisher and how to aim at the fire.</li><li>- Fighting fires should never come before evacuating people from a building.</li></ul> <p>Limitations comprise:</p> <ul style="list-style-type: none"><li>- Fear or anxiety in using a fire extinguisher or fear of using it mistakenly through inappropriate operation.</li><li>- Complacency and timeliness of when the extinguisher is used. If a decision is made to use an extinguisher and you are competent to do so, don't delay. Hit the fire hard.</li><li>- Safety issues. Cold burns from the horn of a CO<sub>2</sub> extinguisher.</li><li>- Health issues in breathing in carbon dioxide or dry powder.</li><li>- Duration of use. Some extinguishers may be spent after a few seconds.</li><li>- Extinguishers must be frequently inspected and maintained at a cost.</li></ul>
7	<p>Depending on the type of vessel and situation, what are the common challenges in fire prevention onboard a vessel?</p> <p>In terms of marine safety afloat fire prevention would focus on the same issues experienced in a shore-based environment:</p> <ul style="list-style-type: none"><li>- Limitation and control of known means of ignition.</li><li>- Minimisation of combustibles.</li><li>- Reduction of flammable materials to an absolute minimum.</li><li>- Minimisation of human involvement with a complementary maximisation of maintenance and servicing of equipment in a timely manner.</li><li>- Training of the crew and their roles and responsibilities in fire safety and</li><li>- Having a well-found fire risk management system.</li></ul> <p>Focus on fire prevention would also be directed towards:</p> <ul style="list-style-type: none"><li>- Issues relating to the function parts of the vessel.</li><li>- Crew day quarters and</li><li>- Crew sleeping accommodation.</li><li>- Engine room.</li><li>- Machinery spaces.</li><li>- Stores and stowage spaces.</li></ul> <p>And the activities undertaken therein including:</p> <ul style="list-style-type: none"><li>- Human involvement, including smoking etc.</li></ul>

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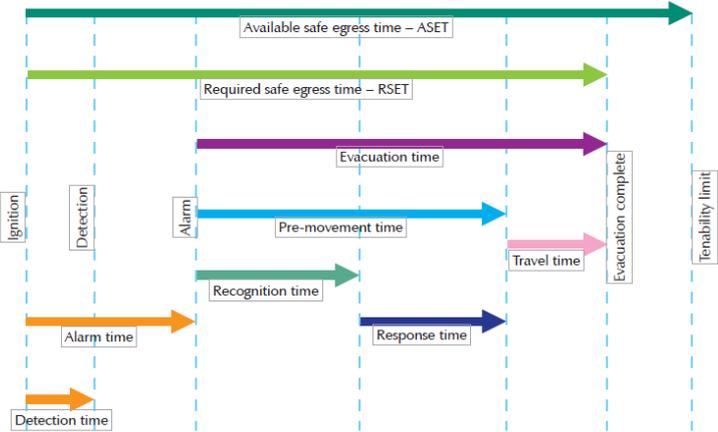
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	<ul style="list-style-type: none"><li>- Monitoring, inspection and supervision including providing a physical fire watch and patrols.</li><li>- Cooking equipment.</li><li>- Ship's machinery.</li><li>- Propulsion systems</li><li>- Fuel systems and bunkering arrangements.</li><li>- Cargo carried and loading and unloading activities.</li></ul> <p>Particular aspects which need to be addressed promptly include:</p> <ul style="list-style-type: none"><li>- Ensuring that hot surfaces are adequately lagged or insulated.</li><li>- Attending to gas and hot exhaust leaks.</li><li>- Vibration of pipework, chafing and fretting of fuel pipes causing wear on surfaces and at joints though ineffective securing of components.</li><li>- Improper tightening of connectors and joints.</li><li>- Management and maintenance of compressors and high energy electrical devices such as transmitters.</li><li>- Waste management arrangements, including keeping oil-soaked cloths and rags in closed bins.</li><li>- Regular inspection of high-pressure fuel pipelines for leaks.</li><li>- Exemplary management of electrical safety.</li><li>- Never leave the galley unattended when it is in operation.</li><li>- Control and preferably elimination of smoking on board.</li><li>- Strict control of process flammables and storage of pyrotechnics including distress signals.</li></ul>
8	<p>When considering evacuation and appreciating that evacuation should be completed as quickly as possible, what is a reasonably acceptable timescale for emergency evacuation and is any time specified in legislation?</p> <p>There are several learned articles regarding <b>guidance</b> on fire evacuation times.</p> <p><a href="https://www.croner-i.co.uk/articles/fire-evacuation-times">Fire evacuation times   Croner-i (croner.co.uk)</a></p> <p><a href="https://www.iosh.co.uk/articles/fire-evacuation-times">Fire Evacuation times (iosh.co.uk)</a></p> <p>although there are <b>no definitive numerical values</b> to detail what <b>performance standards</b> have to be met.</p> <p>Many references share the same philosophical points. Reference is made to the Class of Building, typically A-C etc. However, recent changes to the classification system in England in the Town and Country Planning (Use Classes) (Amendment) (England) Regulations 2020 have not been followed up with changes in expectations on guidance.</p> <p><a href="https://www.planninggeek.co.uk/articles/town-and-country-planning-use-classes-amendment-england-regulations-2020">The Town and Country Planning (Use Classes) (Amendment) (England) Regulations 2020 (planninggeek.co.uk)</a></p> <p>Historical guidance has suggested a time to evacuate a building of somewhere between 2 and 3 minutes. But this has to be taken with circumspection, as there are at least often two circumstances quoted. (1) The time taken to reach a place of relative safety and (2) the time taken to reach a place of ultimate safety, such as in fresh air away from fire risks</p>

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	<p>in a non-smoke-logged place. To achieve these performance figures would probably need people to be disciplined, never complacent, well practiced, in a well designed and provisioned building used to the infrastructure and ‘heavily’ supervised by Fire Marshals. It would be a different story in a Manchester shopping mall on a Saturday afternoon.</p> <p>One fundamental piece of work in this field describes ‘Available Safe Egress Time’ (ASET) and ‘Required Safe Egress Time (RSET) timelines’ (after Mitchell and Charters 2010).</p>  <p>Here the ASET <b>MUST</b> be substantially less than the time offered by the level of fire resistance of the structure.</p>
9	<p>As smoke is a major hazard what precautions should be taken regarding smoke inhalation?</p> <p>Thank you for this important question, which covers three points.</p> <p>Firstly, it is agreed: smoke inhalation in the event of, or immediately after, a fire is a very serious health concern due to respiratory distress; the toxicity and acidity of products of combustion; the irritant and choking nature of smoke; inhalation of particles; and effects on the eyes and being able to see where you are going.</p> <p>Secondly, following the outlined principles of fire prevention in this Webinar are vital. Stop fire from occurring, control or eliminate means of ignition (Mol) and minimise combustible and particularly flammable accelerant fuels.</p> <p>Thirdly, what action to take? In a controlled office or workplace situation, follow the instructions of Fire Marshals. Evacuate at once as directed by a protected route to a final exit. Walk purposefully and do not carry anything that is going to impede progress. If you are caught alone or with your family in a building, such as a hotel room, when the fire or smoke alarm sounds and you suspect fire has broken out, act quickly. Check again the Fire Action Notice and the Evacuation Plan in your room. Feel the surface of any doors before opening to gauge if there is fire outside. Soak a cloth or towel in water and improvise a respirator that covers your mouth and nose. Ensure this basic protection for everyone. All leave the room together holding onto the clothing of the person in front. If</p>

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	<p>the corridor is smoke filled, crouch down and make your way as directed by the plan to the exit. Follow signs to the assembly point. Report to a person in authority.</p> <p>If you have specific requirements for certain areas of the organisation you must follow these. These requirements will have been set in place to assist you in an emergency.</p>
10	<p>As we get back to the new working normal, many workers are still working from home, including designated Fire Marshals. This presents a dilemma in the office as we don't always have the correct coverage, what do you recommend?</p> <p>First check that the fire risk assessment is up-to-date and has been recently reviewed. This may give you the information you need. Generally, the suggested number of Fire Marshals you require to guide people from the building are at least <b>two per floor</b>, if the floor area is small enough for fire exits to be seen from each desk or workstation. For larger, more complex work areas or noisy environments, simply more Fire Marshals will be required. Issues such as gender equality with the provision of First Aiders do not apply although to cover sickness, holidays or people away on courses etc will require duplicates to be available. Often absences are taken-up by the Office Safety Manager or the OHS adviser stepping into the role temporarily. When demographics or work patterns change review who is working in the office, the areas where they are working and the areas which would need to be covered in an emergency situation. From this you should be able to see where you actually need Fire Marshals, where you currently have Fire Marshals and where you have gaps. If more Fire Marshals are needed, and sometimes people do not want to take on the responsibility, encourage management support and consider incentivisation! Update and record changes in the FRA.</p>
11	<p>Should employees be trained in the use of fire extinguishers?</p> <p>If you require employees to use a fire extinguisher you should note this in the Fire Safety Policy and / or Fire Strategy. Employees then should be given basic fire awareness training to implement the fire precautions, including using fire extinguishers properly. Incorrect use can make a situation worse. Your employer's insurer may have a view on whether employees should tackle fires, so it will worth checking with them.</p>
12	<p>Would you recommend that office fire wardens be trained on the use of fire extinguishers?</p> <p>In accordance with the Health and Safety at Work etc. Act 1974 which outlines how to comply with health and safety regulations in the workplace, and since the RRO in 2005, it has been the law that every office needs at least one trained person when it comes to using fire extinguishers, with this usually being an Appointed Person such as a Fire Marshal or Fire Warden.</p>
13	<p>Do lithium-ion battery fires come under DSEAR?</p> <p>Lithium metal batteries are classified in UN CLASS 9A: miscellaneous dangerous substances and articles and environmentally hazardous substances with UN Code V029/Lith 3481, although they may be seen packaged with the following UN Code No. too. They are dangerous goods particularly for road transport.</p>

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	<ul style="list-style-type: none"><li>- 3090 Lithium metal batteries (including lithium alloy batteries)</li><li>- 3091 Lithium metal batteries contained in equipment (including lithium alloy batteries) or</li><li>- 3091 Lithium metal batteries packed with equipment (including lithium alloy batteries)</li><li>- 3480 Lithium-ion batteries (including lithium-ion polymer batteries)</li><li>- 3481 Lithium-ion batteries contained in equipment (including lithium-ion polymer batteries) or</li><li>- 3481 Lithium-ion batteries packed with equipment (including lithium-ion polymer batteries)</li></ul> <div style="text-align: center;"><p>The image shows a diamond-shaped hazard label for UN3481. It features a black diamond with a white border. Inside the diamond, there are several black vertical bars of varying heights, resembling a bar chart. Below the bars, there is a small illustration of a battery with a flame above it, indicating a fire hazard. The number '9' is written in a small circle at the bottom left of the diamond, and 'UN3481' is written in a larger font at the bottom right.</p></div> <p><a href="http://lithiumbatteries.it">UN3481 (lithiumbatteries.it)</a></p> <p>Requirements for safe transport are complicated but see the algorithm in Figures 8-10 below.</p> <p><a href="http://ups.com/pack_ship_batteries.pdf">pack ship batteries.pdf (ups.com)</a></p> <p>Consequently, Lithium metal batteries, Li-ion or LiMH, would be defined as flammable under Regulation 2 of DSEAR, 2002.</p>
14	<p>Is a dedicated fire warning alarm system legally required in a small building or office where there is low population density of typically 5-6 persons?</p> <p>No, not necessarily. Raising the alarm can be a simple matter of shouting to raise the alarm by voice as part of initial emergency response or using a handbell.</p>
15	<p>I work in a school. Is it appropriate to put a transparent plastic box (not locked and easy to open) around the manual fire call point? This is mainly to act as a barrier to prevent children from misusing the system.</p> <p>Yes, certainly. This is a common method for the prevention of accidental or unintentional activation of fire call points and is acceptable. Several fire equipment manufacturers make these devices.</p> <p>Have a look at guidance on page 55 in the HM Government guidance on FRA in Educational Premises <a href="http://publishing.service.gov.uk">untitled (publishing.service.gov.uk)</a> on reducing false alarms.</p>
16	<p>In addition to vertical and horizontal evacuations, are there any other evacuation methods that can be explored?</p>

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	<p>Thank you for an interesting question. Assuming that this question refers to multi storey conventional buildings of 'regular' design, with no oddities such as underground rooms or basement floors, then initial evacuation would be to move people <b>horizontally</b> to an adjoining compartment to where the fire has been discovered. It is possible that people could stay there until the fire is extinguished, and this strategy is used in healthcare and hospitals.</p> <p>But otherwise, in conventional multi storey buildings the lateral or <b>horizontal</b> phase will invariably be followed straightaway by another horizontal move to a stairwell or protected route, where a <b>vertical</b> evacuation from the upper floor is undertaken to the ground floor. Evacuees may then leave the building from an emergency exit straight out into the street etc. Alternatively, with the protected route staircase case reaching the ground floor, there may be another <b>horizontal</b> evacuation along a protected route to reach a final exit from the building. This leads to a place of ultimate safety and an assembly point. Normally, these evacuation plans take a few minutes, literally from 'top-to-bottom'.</p> <p>However, there is a version of these traditional evacuation plans, which is termed <b>phased evacuation</b>. An example cited on a PEEP is for a wheelchair user. Initially, they would be taken to a waiting area by their Supporter to await a ride to the ground floor in a Firefighter controlled passenger lift, or to be taken down the stairs by trained colleagues in 'Carry-Chair'. Another example is cited with hospital patients, and to facilitate these internal refuges within a building may well have enhanced fire protection.</p> <p>Be mindful, with regard to the answer to the question above, that phased evacuation does not mean that delays to full evacuation can be indefinite or indeterminate. You cannot delay beyond the Available Safe Egress Time.</p>
17	<p>Does IOSH have statistic on the common causes of fire in the UK?</p> <p>The best information comes from: <a href="http://www.gov.uk">Fire statistics - GOV.UK (www.gov.uk)</a></p> <p>And also have a look at the RISC authority web site. <a href="http://RISCAuthority">RISCAuthority</a>. This organisation collects insurance data on various fires in different sectors also</p>
18	<p>With the Pandemic and with restrictions imposed on people attending some sites, how is an Organisation expected to conduct, review and update a Fire Risk Assessment?</p> <p>Essentially, by business as usual. Although you have suggested difficulties in updating a FRA, in reality there should be few restraints on undertaking routine reviews of assessments. The Responsible Person should put the necessary review for each site in place and the local person in control of the premises or site should have sufficient experience and fire safety awareness to undertake the review, looking fundamentally for changes and updates since the previous assessment was undertaken. The changes would focus on the key sections of the FRA, as detailed in the RRO, and would also be concerned with people, materials, MOI and fuel loads, waste management arrangements, fire prevention initiatives and current or enhanced fire precautions. If the local person in control of premises needs expert advice on some aspect of the FRA, the RP should make necessary arrangements for external assistance.</p>

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	<p>Where certain controls are required by the Organisation to adhere to any set COVID-19 control measures, these should be communicated to those attending the site and ensured that they are followed.</p>
19	<p>The images embedded in the slides look like excellent sources of information. Will these be shared so the content can be read fully?</p> <p>Yes. These will be available shortly via the Fire Risk Management section of the IOSH website.</p>
20	<p>How do I get evidence to input in my IOSH CPD Portal that I have attended this meeting?</p> <p>You can upload a copy of the presentation to your CPD record, upload a copy of this question and your Webinar invite. All these can show evidence of your attendance. And thank you for joining us.</p>
21	<p>Where may I find a copy of the poster on the Storage and Disposal of Hazardous Substances.</p> <p>The 'poster' is one of a series of A2 size Wallboards that have been designed to address current themes in occupational safety and health. A copy will be available from the Fire Risk Management Section of the IOSH website shortly.</p>
22	<p>We have moved from MSDS to SDS... should avoid use of the MSDS term. Thanks.</p> <p>Thank you for pointing out the use of this traditional terminology. Thankfully people understand that it still means the same thing!</p>
23	<p>Our fire and DSEAR assessment provider told us to remove dry powder extinguishers from within the workshop, and then to replace with carbon dioxide or (AFFF) foam. You stated that dry powder extinguishers are required for chemical fires. Which is correct? (I have spent a lot of time recently assessing or substituting-out chemicals and reading the SDS in detail and the majority of ours (bioscience) advise foam or CO<sub>2</sub> as extinguishing media. I believe that following the BS, dry powder extinguishers should not be used within a room setting, due to the additional hazards they may cause. We only use dry powder in our plant rooms. Everywhere else water, CO<sub>2</sub> or AFFF extinguishers are used).</p> <p>Thank you for this interesting question. There are several parts to this answer. Please read through to the end.</p> <ol style="list-style-type: none"><li>1. If you look at the fire extinguisher selection chart below, which is cross-referenced with types of fires, dry powder extinguishers are highly versatile multi-purpose extinguishers and may be safely used for virtually all types of fires, including low voltage electrical fires <b>BUT excluding</b> Class F deep fat fryers.</li><li>2. There are modified M28 Powder extinguishers for burning metal fires involving aluminium and magnesium BUT excluding lithium. The extinguisher is fitted with a low velocity lance to prevent spreading burning metal powder or swarf around the workshop.</li></ol>

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	<p>3. L2 Class D Powder extinguishers can be safely used on burning lithium and have the same low velocity lance. With this type of chemicals hazard the FRA would detail specific extinguishers, how many should be provided and where they should be located.</p> <p>4. Dry powder extinguishers should not now be used in enclosed spaces due to the respiratory hazard and although they can leave behind a messy debris to clean up, they work well and quickly by cutting-off or suppressing oxygen from reaching the fire. As the dry powder does not cool the seat of the fire there is a small risk of re-ignition so a fire watch must be put into place. Extinguishers are available in a wide range of sizes from 1-9kg, although large volume extinguishers are available in aviation. Typical locations where they are used include:</p> <ul style="list-style-type: none"><li>a. Motor vehicle garage forecourts.</li><li>b. Large commercial boiler rooms.</li><li>c. Fuel tankers and other motor vehicles and <b>large</b> workshops.</li><li>d. It may be that the fire and DSEAR assessors may have declined the use of dry powder extinguishers on the grounds of the size of the workshop and the potential respiratory hazard. You need a bigger workshop!</li></ul> <p>5. Your recommendation to use CO<sub>2</sub> and AFFF is a sound choice for traditional workshop fires, where the hazards are electrical or flammable liquids. Great care must be taken to avoid blowing burning firebrands from Class A fires around with the power of the CO<sub>2</sub> jet and from the cold surface hazards and frosting on the horn when the extinguisher is discharged.</p>

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	<table border="1"> <thead> <tr> <th data-bbox="328 405 496 495">Type of fire</th> <th data-bbox="496 405 671 495">RED Water</th> <th data-bbox="671 405 847 495">CREAM Foam</th> <th data-bbox="847 405 1023 495">BLUE Dry Powder</th> <th data-bbox="1023 405 1198 495">BLACK CO2</th> <th data-bbox="1198 405 1374 495">YELLOW Wet Chemical</th> </tr> </thead> <tbody> <tr> <td data-bbox="328 495 496 618"><b>CLASS A</b> Combustible materials (e.g. paper &amp; wood)</td> <td data-bbox="496 495 671 618">✓</td> <td data-bbox="671 495 847 618">✓</td> <td data-bbox="847 495 1023 618">✓</td> <td data-bbox="1023 495 1198 618">✗</td> <td data-bbox="1198 495 1374 618">✓</td> </tr> <tr> <td data-bbox="328 618 496 741"><b>CLASS B</b> Flammable liquids (e.g. paint &amp; petrol)</td> <td data-bbox="496 618 671 741">✗</td> <td data-bbox="671 618 847 741">✓</td> <td data-bbox="847 618 1023 741">✓</td> <td data-bbox="1023 618 1198 741">✓</td> <td data-bbox="1198 618 1374 741">✗</td> </tr> <tr> <td data-bbox="328 741 496 864"><b>CLASS C</b> Flammable gases (e.g. butane &amp; methane)</td> <td data-bbox="496 741 671 864">✗</td> <td data-bbox="671 741 847 864">✗</td> <td data-bbox="847 741 1023 864">✓</td> <td data-bbox="1023 741 1198 864">✗</td> <td data-bbox="1198 741 1374 864">✗</td> </tr> <tr> <td data-bbox="328 864 496 987"><b>CLASS D</b> Flammable metals (e.g. lithium &amp; potassium)</td> <td data-bbox="496 864 671 987">✗</td> <td data-bbox="671 864 847 987">✗</td> <td data-bbox="847 864 1023 987">✓</td> <td data-bbox="1023 864 1198 987">✗</td> <td data-bbox="1198 864 1374 987">✗</td> </tr> <tr> <td data-bbox="328 987 496 1111"><b>ELECTRICAL</b> Electrical equipment (e.g. computers &amp; heaters)</td> <td data-bbox="496 987 671 1111">✗</td> <td data-bbox="671 987 847 1111">✗</td> <td data-bbox="847 987 1023 1111">✓</td> <td data-bbox="1023 987 1198 1111">✓</td> <td data-bbox="1198 987 1374 1111">✗</td> </tr> <tr> <td data-bbox="328 1111 496 1234"><b>CLASS F</b> Deep fat fryers (e.g. chip pans)</td> <td data-bbox="496 1111 671 1234">✗</td> <td data-bbox="671 1111 847 1234">✗</td> <td data-bbox="847 1111 1023 1234">✗</td> <td data-bbox="1023 1111 1198 1234">✗</td> <td data-bbox="1198 1111 1374 1234">✓</td> </tr> <tr> <td data-bbox="328 1234 496 1346">Additional Information</td> <td data-bbox="496 1234 671 1346">Not for use on liquid or electrical fires</td> <td data-bbox="671 1234 847 1346">Not suited to domestic use</td> <td data-bbox="847 1234 1023 1346">Can be used safely on electrical items up to 1000 volts</td> <td data-bbox="1023 1234 1198 1346">Safe on both high and low electrical voltage</td> <td data-bbox="1198 1234 1374 1346">For use on extremely high temperatures</td> </tr> </tbody> </table>	Type of fire	RED Water	CREAM Foam	BLUE Dry Powder	BLACK CO2	YELLOW Wet Chemical	<b>CLASS A</b> Combustible materials (e.g. paper & wood)	✓	✓	✓	✗	✓	<b>CLASS B</b> Flammable liquids (e.g. paint & petrol)	✗	✓	✓	✓	✗	<b>CLASS C</b> Flammable gases (e.g. butane & methane)	✗	✗	✓	✗	✗	<b>CLASS D</b> Flammable metals (e.g. lithium & potassium)	✗	✗	✓	✗	✗	<b>ELECTRICAL</b> Electrical equipment (e.g. computers & heaters)	✗	✗	✓	✓	✗	<b>CLASS F</b> Deep fat fryers (e.g. chip pans)	✗	✗	✗	✗	✓	Additional Information	Not for use on liquid or electrical fires	Not suited to domestic use	Can be used safely on electrical items up to 1000 volts	Safe on both high and low electrical voltage	For use on extremely high temperatures
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24	<p>What is the difference between NFPS and CFPS?</p> <p>Thanks for the question. I presume you are referring to the National Fire Protection Association and Certified Fire Protection Specialists. The Certified Fire Protection Specialist (CFPS) credential was created in 1971 for the purpose of documenting competency and offering professional recognition for individuals involved in curtailing fire loss, both physical and financial.</p> <p>NFPA is currently transitioning to a new Certification Management System and record keeping database to offer an improved user experience and even greater control over managing personal learning experiences and competency.</p> <p>Currently, only new applications are being processed on this new system. There is a separate interim process for re-test applications, annual renewals, and re-certifications. What ever scheme you follow it is a great idea to keep competencies up-to-date and to follow CPD schemes.</p>																																																
25	<p>What is the requirement for having sprinklers checked by insurance companies?</p>																																																

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	<p>The 'LPC Rules for Automatic Sprinkler Installations 2015, Incorporating BS EN 12845' and in particular 'LPC Technical Bulletin TB203 Care and Maintenance of Automatic Sprinkler Systems' give additional help and information for both the sprinkler system owner / user and the specialist sprinkler maintenance company to ensure the sprinkler system is correctly maintained in accordance with these standards to provide protection against the effects of fire for many years.</p> <p><a href="#">FPA Sprinkler System Service &amp; Maintenance.pdf</a></p> <p>The guidance illustrates that there are routines to be followed from weekly tests through to 25-year routines that address all aspects of sprinkler operation. You are strongly advised to follow this guidance.</p>
26	<p>The LPG should be away from a drain.</p> <p>Thank you for the sharp-eyed comment. Yes. You are correct. The photographer could have cropped the drain from the image but as it is a soak-away from the edge of the carpark to keep rainwater on the footpath from ponding, and not connected to the foul water system, the risks are minimal from ingress of leaking heavier-than-air LPG into the soak-away.</p>
27	<p>How do we effectively control spills in a chemical's storage warehouse?</p> <p>First of all: Spillage prevention is key; secondly have a plan to deal with the situation; and thirdly, know beforehand how you are going to safety package, transport and dispose of waste. If spillage is a possibility it depends on whether you are dealing with liquids or solids. Key issues are separation and segregation, in order that incompatible materials are not going to accidentally come into mutual contact.</p> <p>Liquids will have to be contained in some way, with propriety spillage handling kits including bunding and absorbents needed to soak up liquids easily. Solids, granules, powders and dusts are generally easier to handle and can be handled with light brushing. Only consider vacuum cleaning for totally inert materials and ensure that any tools and equipment used are disposable or can be decontaminated thoroughly after use. The use of effective PPE is vital including eye, skin and respiratory protection.</p> <p>In terms of fire safety, for spillages of flammable liquids, the incident will have to be dealt with quickly. To mitigate the risk to people, consider evacuation of the facility. Factors to be aware of include spillage moving into water drains and sewers, vapours being entrained into air handling and HVAC units and dusts being blown about; flammable vapours reaching process machinery and equipment that may not be IP or Ex protection rated.</p> <p>Finally, decontamination of surfaces must be thorough, and an investigation of causes is necessary to establish causation.</p> <p>Refer to the COSHH MS for specific fire related and spillage handling information. Know what you are handling and dealing with to ensure that clean-up does not create an additional risk.</p>

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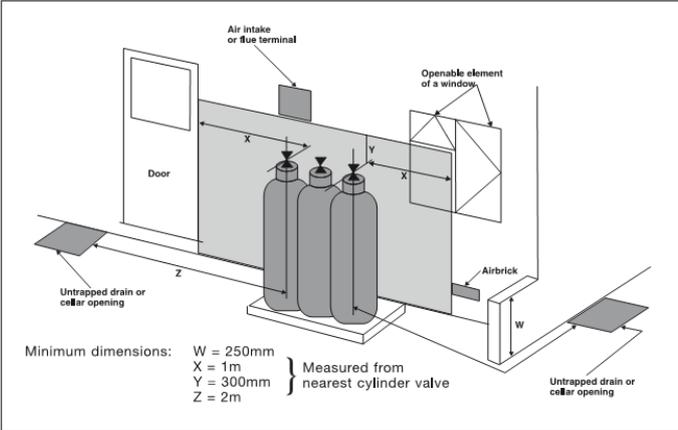
No.	Questions and answers
28	<p>Why should full and empty gas cylinders be stored separately from a fire safety point of view?</p> <p>This is simply good process safety and risk management practice in STUD (storage, transport, use and disposal) in handling dangerous substances. Invariably transportable gas cylinders, which are not manifolded into a semi-permanent piped supply, will have to be moved by a person on a cylinder trolley to a place of work. The fewer movements, the lower the risk of an MHO injury or worse still, damage to the cylinder, particularly a fall which damages or snaps-off the cylinder valve, if a valve guard has not been fitted. Separating full and empty cylinders will also make the work of the gas cylinder distribution and supply company driver easier.</p>
29	<p>How far apart should gas cages be located?</p> <p>There are many sources of advice, and it depends on what application you have in mind.</p> <p><a href="#">Microsoft Word - 104796 v 02.10 Code of Guidance for Storage of Cylinders.... (gascageshop.co.uk)</a></p> <p>The distances are dependent on the mass of material stored and the fire precautions that have been designed into the store. Tables are available for cylinder storage layouts and design and area classifications.</p> <p><a href="#">CALOR - Code of Guidance for the Storage of Cylinders (.pdf)</a></p> <p>Typically, inter-cage distances of 3 metres would be a minimum for mixed flammables and oxidiser gas storage but check the guidance. A safety distance to dry vegetation or combustible materials of 4.,5m would be recommended.</p> <p><a href="#">HSE - Drum and Cylinder Handling Guidelines</a></p> <p><a href="#">BCGA - Compressed Gases Code of Practice</a></p> <p><a href="#">UKLPG - Storage of Full and Empty LPG Cylinders and Cartridges - Code of Practice No. 7 (.pdf)</a></p> <p><a href="#">NERC - Guidance to Safe Storage and Installation of Gas Cylinders (.pdf)</a></p> <p><a href="#">CALOR - How to Safely Store Gas Bottles</a></p> <p><a href="#">CALOR - Cylinder Storage Information (.pdf)</a></p> <p>Guidance is also available in Approved Document J.</p> <p><a href="#">ADJ_LOCKED.pdf (publishing.service.gov.uk)</a></p>

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	<p style="text-align: center;"><b>Diagram 44 Location of LPG cylinders</b></p> 
30	<p>Please can you advise when the slides will be available as I wish to use in a Toolbox Talk. Thank You.</p> <p>The presentations and support documents will normally be available from the FRMG section of the IOSH website within the next 2 to 3 weeks. Please reference the IOSH Fire Risk Management Group if you use the slides as provided. Thank you.</p>
31	<p>One of my company's operating companies has a mixture of compressed and flammable gases stored in a cage within their warehouse. If stored inside the building, does this need to be stored within a purpose-built room? There are security concerns if they were to get an external storage option.</p> <p><a href="#">Microsoft Word - 104796 v 02.10 Code of Guidance for Storage of Cylinders... (calor.co.uk)</a></p> <p>This guidance addresses storage of full and empty LPG cylinders. As a general fire precaution, in consideration with DSEAR and the RRO, you should not <b>store</b> flammable gas cylinders within buildings or workrooms or cylinders of inert gases such as nitrogen or argon. It would be preferable to install supply pipework to the point of use from a manifolded supply which is located in a safe and secure place outside the building.</p> <p>However, safe use of compressed gases in cylinders could be permitted from small transportable cylinders where this is necessary for the process being undertaken. Fire precautions would have to be enhanced and also general dilution ventilation of the workroom.</p> <p>Many organisations can design and install high security gas cylinder storage solutions and the cost incurred would give peace of mind that an ALARP solution had been found.</p>
32	<p>Do all final fire exits from buildings require a fire exit safety sign with 'a running man with the arrow up'? Or is just running man is enough?</p> <p>If your commercial premises are small with a simple layout, you may not need a fire exit sign at all. Fire exit signs are not a requirement if it is 'obvious' where the exit is, for</p>

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	<p>example when there is just one door at the front of a small shop where it is clear that would be the means of escape.</p> <p>For more complex buildings however, fire exit signs are a necessity. What you specifically need comes down to how easily occupants would be able to find their way out of the building in the event of fire, especially if they're not familiar with the layout.</p> <p>In some cases, you may need a series of directional signs leading occupants along the shortest route to escape. These are familiar to us as green exit signs with arrows indicating which way to go.</p> <p>The standard for compliance of fire safety signs is:</p> <p><a href="#">ISO - ISO 7010:2019 - Graphical symbols — Safety colours and safety signs — Registered safety signs</a></p> <p><a href="#">ISO7010_Safetysigns_Guidebook_Europe_English.pdf (d37iyw84027v1q.cloudfront.net)</a></p> <p>All permutations of 'arrows' and 'running men' are addressed by the ISO standard. Where you need to indicate the direction to an exit, use a sign which incorporates an arrow (a 'wayfinding sign'). When a person can clearly see the final exit or emergency exit from the room or building, you can a 'Fire Exit' sign.</p> <div style="text-align: center;"></div> <p>One great advantage is to use photoluminescent fire safety signs.</p>
33	<p>How would you prevent large dust build up inside a computer as we saw in the slide?</p> <p>By limiting fugitive emissions of dust in the workplace through good housekeeping and cleanliness. The equipment can be vacuumed out (never blown with an airline (!!)) as you can damage sensitive electronic components as well as creating a respiratory hazard by moving the muck onto someone else's workstation) by a competent IT department. Modern computers can be fitted with easily cleanable dust filters over inlets and inlet fan grilles, where fitted. If dust is a real problem, consider a laptop computer that is 'ruggedised' with an IP or dust ingress rating.</p>
34	<p>What is the requirement for fire wardens being trained? If they have been trained with a formal course are the HSE recommending refreshing training every 3 years as best</p>

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	<p>practice? Does this mean they should resit a formal course again or is any other kind of training suitable?</p> <p>A Fire Warden Training (full course) every 3 years and then annual Fire Awareness training or a refresher would be best practice. Some organisations include for everyone an update on the organisational procedures and processes but if you are requiring Fire Wardens or employees to use fire extinguishers then a formal fire extinguisher refresher training would be needed also.</p>
35	<p>I have a question about wedging-open external fire doors. My local gym in the UK is an area of rising Covid-19 infections. It features two main rooms: one is smaller than the other. In the smaller room the external fire door is regularly wedged open, presumably for ventilation. However, the larger room, where more people congregate, has little mechanical ventilation and no windows, and the external fire doors are kept closed. What is the correct way to proceed when there is clearly a need for ventilation?</p> <p>Thank you for the interesting and topical question, which carries several strands.</p> <p>The 'external fire door' you have referred to is almost certainly a final exit door from the building. <b>'Fire doors'</b> separate compartments within the building to limit the spread of fire in a building. So, a <b>final exit door</b> plays no part in compartmentalisation and in limiting the spread of fire and could, in theory be left open without penalty. In terms of Covid-19 protection, this is a good measure if the personal security aspects for members, of an open external door, can be managed.</p> <p>As a fire safety measure the building owner must NOT wedge open internal fire doors and a Covid-19 protection measure, it would be recommended to install decent quality air conditioning equipment, but NOT air circulation fans.</p>
36	<p>Could you point me in the direction of the particular regulation that stipulates the requirement of where to fit smoke alarms and where to fit fire alarm call points?</p> <p>The revised standard BS 5839, on manual call points, allows simple covers to alarm call points compliant with Type A single action call points. There is also a Type B cover that is protective and requires a double action.</p> <p><a href="#">Fire British Standard BS 5839-6:2019   Aico</a></p> <p><a href="#">BS 5839-6 Fire detection and fire alarm systems for buildings   BSI (bsigroup.com)</a></p> <p><a href="#">BS 5839-6:2019+A1:2020 Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises. (bsigroup.com)</a></p>
37	<p>On Fire drills, I am aware of the minimum requirement for annual drills in a workplace. However, I remember being told that where the business has visitors to site, drills should be 6 monthly, with one of those drills including visitors. Is this correct?</p> <p>Your site Fire Risk Assessment will stipulate the frequency of fire drills based on the risk. You would need to have a system in place to help visitors escape from the building but is</p>

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	<p><b>NOT</b> a requirement to include the public in the drill. In many instances, this may only cause confusion and anxiety unnecessarily.</p>
38	<p>What are the thoughts / requirements in relation to carrying out your own Business fire risk assessment i.e., is this frowned upon as potential self regulation?</p> <p>When you say 'your own business FRA' I presume you mean (a) doing the work yourself, as opposed to (b) contracting a fire safe consultant or contractor or (c) a specialist fire engineering company.</p> <p>Leaving point (a) to last ...</p> <p>Bringing in a contractor, option (b) is the traditional route these days. There are recommended contractors / consultants and the IOSH FRMG has written guidance to outline what is required and the characteristics of the person or company who you would want to do the work. Using a fire engineering company - Option (c) - is an excellent idea. It is an extension of Option (b) BUT has the advantage that if remedial measures need to be undertaken the engineers would most probably have seen the issues before and have done something similar. They would be familiar with costs and timescales etc.</p> <p>So, Option (a): doing the work yourself. This is not self-regulation, but you would have to have the competencies in terms of KATE: knowledge; approach or aptitude; skills; and experience to undertake the work, and if you do not have these the job may cost you dearly in the end to put issues right.</p> <p>There is also a project management issue here. If you went for Options (b) or (c) then you can instruct your contractors to deliver outcomes in a timely manner. If you do the work yourself you may be distracted by other project work and slippage and fatigue may creep in, to such a point that you may be disorientated. You would also need to keep records to a high legal and quality standard. So the recommendation is to use the services of a professional assessor, after reading the requirements in the IOSH FRMG publications.</p>
39	<p>What an informative overview for Fire Prevention. I have captured several notes to reflect on later. Thanks.</p> <p>Thank you for your kind comments and we look forward to you joining us again at future IOSH FRMG Webinars on the remaining Principles of Fire Safety.</p>
40	<p>My question is in relation to BS 7161 around the testing of fixed wiring installations. I would like to clarify that 100% of distribution boards should be tested every 5 years (or 20% per year) to ensure in a commercial building (less for residential properties, theatres, swimming pools etc which have different times) that they are tested fully and at least 10% of the peripherals. I have found a few businesses recently that are testing 10-25% of a distribution board every 5 years meaning some are taking 20+ years to test a whole installation.</p>

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	<p>The electricians are saying it's a loophole, but I don't feel it is in the spirit of the BS and needs tightening up.</p> <p>Thank you for your comments and for raising an interesting issue. As well as a basic annual safety inspection most organisations undertake fixed wiring testing every 5 years but there is more detail in:</p> <p><a href="#">The IET Shop - Guidance Note 3: Inspection &amp; Testing, 8th Edition</a></p> <p><a href="#">BS 7671 - 18th Edition - IET Wiring Regulations (theiet.org)</a></p> <p><a href="#">The Ultimate Fixed Wire Testing Guide (phscompliance.co.uk)</a></p>
41	<p>The first session and this session have not mentioned the classification of fires which I think goes hand in hand with the fire triangle. Is there any reason for this?</p> <p>This was covered in the 1st session on 14th October. Also see the answer to Question 30 above. These issues are also more fundamental in Fire Precautions and will be covered in Webinar 3. Thanks for watching!</p>
42	<p>What would be acceptable in terms of experience and / or qualifications for somebody to complete a FRA? Do the complexity / size of the premises make a difference?</p> <p>Yes. 100%. With a NEBOSH FRA qualification an assessor should be able to complete a robust RA on a simple building. But with facilities where there is sleeping accommodation or other high-level risks then specialist assistance may be required.</p> <p>The following table is an IOSH FRMG proposal for competencies of fire risk assessors for normal or conventional risk levels and for abnormal or unusual levels of risk in buildings.</p>

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	<p style="text-align: center;"><b>Table 1: Demonstrating competency in Fire Risk Assessment</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" data-bbox="549 427 727 488">DEMONSTRATING COMPETENCY IN FRA</th> <th data-bbox="727 427 847 488">KNOWLEDGE</th> <th data-bbox="847 427 967 488">APPROACH</th> <th data-bbox="967 427 1070 488">TRAINING</th> <th data-bbox="1070 427 1190 488">EXPERIENCE</th> </tr> <tr> <th data-bbox="549 488 619 539">Risk level</th> <th data-bbox="619 488 727 539">Complexity</th> <td></td> <td></td> <td></td> <td></td> </tr> </thead> <tbody> <tr> <td data-bbox="549 539 619 931" rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Risk level commensurate with abnormal fire hazards</td> <td data-bbox="619 539 727 730"><b>LID Level</b> Leadership Innovation Designer.</td> <td data-bbox="727 539 847 730">Leadership level. Centre of Excellence level in many modern FS topics. Supported by CPD.</td> <td data-bbox="847 539 967 730">Acknowledged leader, innovator &amp; designer of workflows, systems and solutions.</td> <td data-bbox="967 539 1070 730">FPQ at Chartered / Corporate Professional level. PIR: Professional Institute Registered.</td> <td data-bbox="1070 539 1190 730">Skills in occ safety, engineering, science and technology WRT fire safety. Managerial / people skills.</td> </tr> <tr> <td data-bbox="619 730 727 931"><b>COMPLEX</b> Fire Engineered Solutions are most probably required.</td> <td data-bbox="727 730 847 931">As below + BS 9999 + Sector best practice in operational safety. Supported by CPD.</td> <td data-bbox="847 730 967 931">Team leader. Supervisory, mentoring &amp; masters skills. Potential Approval Authority.</td> <td data-bbox="967 730 1070 931">Chartered level. CEng, CSci, CPhys, CChem, CMIOSH, IFE, IFSM, IFPO, BAFE SP 205 PIR.</td> <td data-bbox="1070 730 1190 931">Practical Experience in Fire Safety Engineering solutions.</td> </tr> <tr> <td data-bbox="549 931 619 1384" rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Risk level commensurate with conventional fire hazards</td> <td data-bbox="619 931 727 1144"><b>ADVANCED</b> Multi Mol &gt;12 people Industrial / commercial. Multiple occupation, Care Homes, Student Accom.</td> <td data-bbox="727 931 847 1144">Graduate level: As below + HMG, Industry &amp; Sector guidance. Supported by CPD.</td> <td data-bbox="847 931 967 1144">Team player. Works easily under leadership and supervision.</td> <td data-bbox="967 931 1070 1144">Incorporated Engineer. Grad IOSH  PIR: Professional Institute Registered.</td> <td data-bbox="1070 931 1190 1144">Improving fire safety experience + supervision &amp; mentoring.  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43	<p>What the main root causes of fire incidents in cold stores operating at -20°C? Please give examples of a few main root causes.</p> <p>Thank you for an interesting question. With two exceptions, outlined later, the fact that this is a cold store, and it is at -20°C is irrelevant, but nevertheless interesting.</p> <p>In any industrial setting, the principle immediate and systems causes of fires would focus on actions and conditions associated with electrical installations, dangerous substances, including flammable liquids and gases, people and what they get up to, security breaches and malicious activity, maintenance activities and temporary works and vehicles. In a cold store, with the exception of electrical issues and packaging, these would be fire causes which focus on materials etc brought <b>into</b> the store, as opposed to any <b>intrinsic</b> content.</p> <p>The exceptions to this are the use of compressed ammonia as a refrigerant in commercial cold stores and also in the use of Insulated Metal Panels (IMP), with potentially a combustible or flammable core. Although ammonia has toxicity, flammability and materials compatibility issues it is still excellent as an efficient refrigerant gas. With IMP it is possible that the flammable compressed foam core could be exposed after the sheet</p>																																		

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	<p>covering has been damaged, possibly by a vehicle collision. But one would still need to ignite the content reliably although this could possibly occur during some maintenance work to repair the damage.</p> <p>It is most unlikely that a fire would break-out in typically frozen foodstuffs with typically a high ice or water content. The fire has to melt the product and to raise the temperature of packaging, such as polyethylene film or combustible content to at least 50°C to release a flammable vapour (possibly) to burn.</p>
44	<p>Can the importance of a Construction Phase Fire Risk Assessment and / or Fire Strategy be reinforced by the panel, as works in a building may compromise the existing FRA &amp; Fire Strategy.</p> <p>Yes. This is true. A FRA is a 'living' and changing document which has to reflect, along a timeline, the issues as they change with construction and development across the site. Both the FRA and the Fire Strategy need to be brought along together to keep fire protection principles up to date.</p>
45	<p>Just a thought regarding students and their use of probably many electronic products ... are chargers an issue, with overloaded sockets, chargers left on unattended, etc?</p> <p>Do you write guidance / restrictions into policies and procedures to educate them, prevent use etc?</p> <p>Yes, very much so, and at various levels. The fundamental questions are does the organisation, university or college etc insist that all portable electrical apparatus is PAT tested, or do you offer to do this for the students annually or do you have a 'drop-in' centre where they can have an item tested while they wait?</p> <p>Charging units for phones, tablets, computers, watches and other small electronic items are notorious as a MOI. An original charger supplied with the device is most probably reliable <u>IF IT IS UNDAMAGED</u>. But after market extras, replacements and spares from far east manufacture can be problematic.</p> <p>Write public policy and guidance for students.</p> <ul style="list-style-type: none"><li>- Minimise the number of charging units in use.</li><li>- Consider wireless charging devices.</li><li>- Never buy what COULD BE a counterfeit charger. How do you know it is counterfeit? You'll know!! (It will be suspiciously cheap).</li><li>- Do not leave items on charge overnight in sleeping accommodation or when a device is unattended.</li><li>- Only use equipment designed for YOUR device. Don't 'borrow' one!</li><li>- If a cable of charger appears damage dispose of the unit responsibly. Buy another one.</li><li>- Do not overload sockets. Never use Cuboid mains multi-adaptors, nor 'daisy-chain' 4-way distribution boards. Keep use of extension cables to a minimum and fully unwind before use.</li></ul> <p><a href="#">Mobile Phone Chargers Safety   Electrical Safety First</a></p>

No.	Questions and answers									
	<p><a href="#">Dorset &amp; Wiltshire Fire Service   Mobile phone chargers (dwfire.org.uk)</a></p> <p><a href="#">Electrical Chargers Safety   Electrical Safety First</a></p>									
46	<p>Apologies but wasn't the fire triangle changed to a fire tetrahedron to reflect the fourth element (the chemical chain reaction). Thanks.</p> <p>Yes. Thank you for a question that could take up pages to reply to! The triangle has never been changed into a tetrahedron. Both are still in use, and always have been.</p> <div data-bbox="667 667 1054 1048" data-label="Image"> </div> <p>This series of webinars was conceived as a Back-2-Basics approach for IOSH members starting out in their careers. So anything more complex than the triangle may have been a little far in describing the processes of generation and then quenching transient free radicals. Below is a graphic to illustrate to everyone what you are referring to.</p> <div data-bbox="341 1339 1396 1765" data-label="Chemical-Block"> <table style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 33%;">Fuel &amp; Oxygen</th> <th style="width: 33%;">Transient Free-Radicals</th> <th style="width: 33%;">Final Combustion Products</th> </tr> </thead> <tbody> <tr> <td><math>\text{CH}_4 + 2\text{O}_2</math></td> <td><math>\longrightarrow (\text{CH}_3, \text{CH}_2\text{O}, \text{CO}, \text{H}_2)</math></td> <td><math>\longrightarrow 2\text{H}_2\text{O} + \text{CO}_2</math></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> </div> <p>When we still had commonly available BCF extinguishers it was said that BCF was ideal for 'mopping-up free radicals' and thereby extinguishing the fire. Powder based fire extinguishers separate the four parts of the 'fire tetrahedron'. This prevents the chemical reaction between heat, fuel and oxygen and halts the production of fire sustaining 'free-radicals', thus extinguishing the fire. So technically dry powder has primarily taken over that role.</p>	Fuel & Oxygen	Transient Free-Radicals	Final Combustion Products	$\text{CH}_4 + 2\text{O}_2$	$\longrightarrow (\text{CH}_3, \text{CH}_2\text{O}, \text{CO}, \text{H}_2)$	$\longrightarrow 2\text{H}_2\text{O} + \text{CO}_2$			
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	<a href="#">How to choose the correct fire extinguisher - Artisan Fire &amp; Security</a>
47	<p>What do you think of the fire extinguisher that can be used on all types of fires currently on sale within the UK?</p> <p>The Fire Blanket is an excellent type of fire extinguisher that is for sale in the UK which can be used on all types of fire. Every home, office, school or workshop should have at least one. No others as good come to mind.</p> <p>See the relevant answer above.</p>
48	<p>I understand that competency levels for 'Fire Risk Assessors' may become more prescriptive, do you know anything more about that?</p> <p>Yes. See the relevant answer above.</p>
49	<p>This isn't relevant to this webinar, but I was wondering if anyone can point me in the right direction of guidance around HPL Cladding on domestic properties. This type is starting to get some noise especially after the student accommodation fire in 2019 (The Cube at Bolton University) and a housing association fire. I know people are calling this type of cladding 'Grenfell Like cladding' and there are calls for it to be banned just like ACM. Any advice or guidance would be greatly appreciated.</p> <p>We are sorry but we are unable to provide an answer to your question at this time.</p>
50	<p>Sometimes, we set a time delay in the fire alarm control panel to delay the starting of the sirens and alarm in order to evacuate a building. This delay is used to reduce the chance of an unnecessary evacuation and prevent false alarms.</p> <p>My question what is the max time allowed to be included in the programming of the panel? The delay in our Theatre is set to 5 minutes (which was considered the maximum) so the alarm sounds everywhere except the auditorium, giving the theatre manager a chance to investigate before starting a full evacuation.</p> <p>There is no fixed rule about this, but your decision and judgement should be outlined in the Fire Risk Assessment AND RECORDED in the fire policy or fire strategy with reasoned and justified argument.</p> <p>Look again at the answer to the relevant question above. ANY delay, whether by silent delayed alarm or technical programming of the alarm software or complacency must be justified and the available safe egress time (ASET) <b>MUST be substantially less</b> than the time offered by the level of fire resistance of the structure.</p> <p>In the example of the theatre the environment and the mobility of an audience will work against you. Five minutes delay seems too long when you consider the Alarm time already includes the time to detect the outbreak and then for the system to respond to that.</p> <p>The golden rule of <b>Don't delay, get out!</b> always holds true.</p>

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51	<p>No mention of hot work processes</p> <p>Yes. Thank you for your comment. Not yet, is the answer. This is one of the aspects and impacts the Fire Service looks for in terms of policy and controls and has cost a few schools whole buildings!</p>
52	<p>I have several residential homes with external fuel oil tanks or LPG tanks. Is a DSEAR assessment required and who is responsible for doing this? The tanks are owned by the fuel provider.</p> <p>The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) are concerned with preventing or limiting the harmful effects of fires, explosions and similar energy-releasing events and corrosion to metals.</p> <p>Yes, as Responsible Person for the site you would be well advised to undertake an FRA and DSEAR risk assessment. This should be undertaken by a competent contractor. See the relevant answer above.</p>
53	<p>Is there a standard size when providing a fire extinguishers and fire hose reel when constructing a building?</p> <p>It is presumed that your question relates to the construction phase in terms of CDM of the building, as opposed when the building it is being fitted out and commissioned, completed and handed over. For the construction phase the answer is no: but as the situation is elevated risk and the fire risk is ever changing it is usual to have a stillage of all types of extinguishers to address all types of construction related fires. Hose reels are expected to reach each room in range to fight a fire.</p> <p>For the occupied building phase, the FRA would guide you to the size of extinguisher needed. Look at the advice from HM Government for the type of building / sector you are working in.</p> <p><a href="https://www.gov.uk/government/collections/fire-safety-law-and-guidance-documents-for-business">Fire safety law and guidance documents for business - GOV.UK (www.gov.uk)</a></p> <p>As a rule of thumb, go for the largest extinguishers that you can safely handle: 6kg dry powder; 9 litre water; 6 litre foam and 2kg or 5kg CO<sub>2</sub>.</p> <p>I was thinking more about the materials used for the build including fixed equipment, as this information is vital in order for the occupier to carryout a sufficient fire risk assessment.</p> <p>The person in control of the premises / site should be able to contribute that information to the FRA.</p>
54	<p>Referring to the student flat fire, looking at the cupboard adjacent to the hob, maybe not put the cupboard in this location. I know of a fire that was caused due to the cupboard falling off the wall and turned on the hob as it fell on to it. Also consider some type of extraction system above the cooker. And make sure that the red switch is always off when cooker is not in use.</p> <p>Thank you for those valuable points.</p>

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55	<p>Please note that the new Building Safety Bill will affect who is responsible for fire safety and includes the "Golden Thread" of information provided at handover to the Responsible Person. This includes the designed fire strategy, details of the detailed design and materials used, fire certification and quality information. Under the new regulations the Responsible Person will need to certify any maintenance and alteration otherwise high-risk buildings cannot be occupied.</p> <p>Thank you. That is helpful.</p>
56	<p>It was difficult to read some of the slides, will we get a copy to we can zoom in and be able to read them?</p> <p>Copies of slides and supporting documents will be available over the coming weeks on the FRMG IOSH website and also look out for the recording of the session on the IOSH YouTube channel.</p>
57	<p>On the subject of fire stopping, must completed works be 'tagged or labelled' or is this just advisory.</p> <p>Yes. It is certainly best practice to 'certify' the PFP with name of the Inspector, date, time and reference to standards etc.</p>
58	<p>Impressive time response.</p> <p>Thanks.</p>
59	<p>For a large campus site with a transient workforce who homework and are often in and out of site, how would you guarantee staff are out in the event of a fire? Fire wardens would not work and there are many exits and entrances so it's difficult to manage.</p> <p>Yes, this can be a difficult problem to resolve. There are two opposing ways to address the issues. Make it mandatory to have an extremely strict check-in and check-out process or enhance security to such a level that <i>de facto</i> this becomes the norm. Alternatively, the opposite approach is to have very low-grade security and access control. In the event of a fire the Fire Marshals then sweep the buildings, premises and even outside areas to marshal everyone to the assembly points.</p>
60	<p>Does Evacuation time include the time for role call at the Muster point?</p> <p>No. It is the time to evacuate from the workplace and then to reach the place of ultimate safety, which is generally the assembly point.</p>
61	<p>Does the evacuation time include full evacuation and roll call or just full evacuation?</p> <p>Just the time taken for full evacuation.</p>
62	<p>Legislation, such as the Regulatory Reform (Fire Safety) Order 2005 (RRFSO), does not prescribe any evacuation times. Rather, the RRFSO states that "in the event of danger, it must be possible for persons to evacuate the premises as quickly and as safely as possible".</p>

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No.	Questions and answers
	Yes, agreed. See the answer to Question 13.
63	<p>What is the best practise to account for all people evacuated from a building?</p> <p>Fire Marshals 'sweep' the building (assertively if necessary) and direct everyone to the fire exit from a room to the next fire compartment via the protected route and on to the final exit from the building, and then on to the place of ultimate safety, the assembly point.</p>
64	<p>When refurbishing a new part of a building which alters the evacuation procedures, which document would support the other? Does the original FRA support the strategy, or the new strategy alter the FRA?</p> <p>Good point! As with all iterative processes, its lead vs lag and finding the right position in the hierarchy of controls.</p> <p>After the refurbishment has been undertaken you would draw-up a revised FRA. You would then feed up to the Fire Strategy and significant issues from the FRA. These amendments, if any, to the Strategy would then be reflected in changes in the Fire Safety Policy for the organisation. There may be potential changes to:</p> <ul style="list-style-type: none"><li>- the statement of intent or general policy,</li><li>- responsibilities,</li><li>- risk assessments,</li><li>- arrangements,</li><li>- information,</li><li>- safe STUD,</li><li>- plant and equipment,</li><li>- instruction and supervision,</li><li>- competency for tasks and training,</li><li>- reporting of incidents,</li><li>- monitoring performance, and</li><li>- emergency procedures.</li></ul>
65	<p>Do you have a material requirement that can resist a fire in student accommodation? Can this be considered as part of the fire safety?</p> <p>Yes. Fire safety of building materials or materials used in furniture and furnishings are requirements of fire safety. Details of fire-resistance of building materials and elements are addressed in ISO 13.220.50.</p> <p>For furniture and furnishings see the Furniture and Furnishings (Fire Safety) Regulations 1988/1989, 1993 and 2010.</p>
66	<p>Supplementary question with regards to evacuation. How do you see the relevance of roll call, or is Fire Marshal sweeping the building considered to be more effective?</p>

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	<p>Rollcalls still have their place for a small organisation where the manager or supervisor knows everyone at work.</p> <p>For larger organisations, where staff may be transient in the building or arriving and departing at irregular times, the Fire Marshal flushing staff out of the building on the sounding of the fire alarm is more effective.</p>
67	<p>Also consider phased evacuation.</p> <p>OK!</p>
68	<p>Can you please explain how you assess the right number of fire wardens? Some fire risk assessments don't give a number.</p> <p>Please see answers to previous questions above.</p>
69	<p>Previously I often heard that we avoid using elevators during evacuations in buildings. Nowadays, there are 'specialised' elevators used especially in hospitals that are used to evacuate non-ambulatory patients. What are your thoughts?</p> <p><a href="https://www.stannahlifts.co.uk">Evacuation &amp; Fire-Fighting Lifts   Stannah (stannahlifts.co.uk)</a></p> <p>When a fire alarm sounds passenger lifts (elevators) are designed to go directly to a pre-programmed floor, usually the ground floor of the building, from where passengers in the lift can disembark directly to a final exit from the building. The lift then remains stationary, until it is controlled by a Firefighter or some other Responsible Person, under key access control.</p> <p>In hospitals, fire evacuation is usually lateral, through to an adjacent fire compartment on the same floor, and then if circumstances direct, onto the next compartment after that.</p> <p>If evacuation is required vertically then Firefighter controlled passenger lifts would then be used.</p>
70	<p>Doubt should not come into the situation - alarm sounds - get out!</p> <p>Agreed.</p>
71	<p>Is it correct that a fire exit should be within 25 metres?</p> <p>I presume your comment is relating to travel distances to a means of escape. Managing travel distances from a place of work to a place of reasonable safety. For guidance on this check the HMG Guidance for the sector in which you are working. For example, for Offices and Shops:</p> <p><a href="https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/94494/9449_DCLG_Fire_Risk_Offices_and_Shops_Insides.indd">9449 DCLG Fire Risk Offices and Shops Insides.indd (publishing.service.gov.uk)</a></p> <p>When assessing travel distances, you need to consider the distance to be travelled by people when escaping, allowing for walking around furniture or display material etc. (see Figure 24).</p>

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	<p>The distance should be measured from all parts of the premises (e.g., from the most remote part of an office or shop on any floor) to the nearest place of reasonable safety which is:</p> <ul style="list-style-type: none"><li>- a protected stairway enclosure (an exit from that storey of the building).</li><li>- a separate fire compartment from which there is a final exit to a place of total safety; or</li><li>- the nearest available final exit.</li></ul> <p>Suggested travel distances to escape routes are:</p> <p><b>Where <u>more than one</u> escape route is provided:</b></p> <p>25m in higher fire-risk area<sup>1</sup></p> <p>45m in normal fire-risk area</p> <p>60m in lower fire-risk area<sup>2</sup></p> <p><b>Where <u>only a single</u> escape route is provided:</b></p> <p>12m in higher fire-risk area<sup>1</sup></p> <p>18m in normal fire-risk area</p> <p>25m in lower fire-risk area<sup>2</sup></p> <p>Note 1: Where there are small high-risk areas this travel distance should apply. Where the risk assessment indicates that the whole building is elevated risk, take advice from a competent person.</p> <p>Note 2: The travel distance for lower risk premises should only be applied in exceptional cases in the very lowest risk premises where densities are low, occupants are familiar with the premises, excellent visual awareness, and extremely limited combustibles.</p>
72	<p>What is the standard size of letters and figures for 'fire exit' signage?</p> <p>You can get guidance from these BS ISO 3864-4:2011 &amp; BS5499.</p> <p><a href="#">ISO - ISO 3864-4:2011 - Graphical symbols — Safety colours and safety signs — Part 4: Colorimetric and photometric properties of safety sign materials</a></p> <p><a href="#">BS 5499 Safety Signs, Including Fire Safety Signs: Firesafe.org.uk</a></p> <p><a href="#">Escapesigns-gn.pdf (bristol.ac.uk)</a></p> <p>See also The Building Regulations 2019 section 15.13-15.16 - Wayfinding Signage guidance.</p> <p><a href="#">ADB Vol1 Dwellings 2019 edition inc 2020 amendments.pdf (publishing.service.gov.uk).</a></p>
73	<p>Is there a legal requirement to have officially appointed fire wardens within a building/site?</p> <p><a href="#">Regulatory Reform (Fire Safety) Order 2005: guidance notes - GOV.UK (www.gov.uk)</a></p>

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	<p>Although it is NOT explicitly stated as legislation in the RRO it is implicit that the Responsible Person should make arrangements which include Appointed Persons. These include appointing Fire Marshals to support fire safety on site through a defined list of duties.</p> <p>See these duties below.</p> <p><a href="https://www.surreyfire.co.uk">Fire Marshal duties, what are they &amp; why are they important? (surreyfire.co.uk)</a></p>
74	<p>Code of Practice 7: 2004 from the UKLPG addresses storage of full and empty LPG cylinders and cartridges.</p> <p>Thanks for reminding us about this vital guidance.</p> <p><a href="#">Safety — Liquid Gas UK: The trade association for the LPG and biopropane industry in the UK</a></p> <p><a href="#">Microsoft Word - 104796 v 02.10 Code of Guidance for Storage of Cylinders... (calor.co.uk)</a></p>
75	<p>With more people working from home likely to create a shortage of Fire Wardens on site in premises, do you have any advice for premises managers?</p> <p>Please see the relevant answer above.</p>
76	<p>With regards to extinguishers is there a legal requirement depending on building size and the different areas within that building.</p> <p>Yes. These issues are addressed by the requirements to undertake fire risk assessment under the RRO.</p> <p><a href="#">The Regulatory Reform (Fire Safety) Order 2005 (legislation.gov.uk)</a></p>
77	<p>Storing cylinders separately also assists the Fire Brigade whilst fighting any fire so they are aware of what is more explosive.</p> <p>Yes, agreed. Very much so.</p> <p><a href="#">Microsoft Word - Code-of-Guidance-for-Storage-of-Cylinders (constructionsafetysystems.co.uk)</a></p>
78	<p>Just another question in relation to this topic, my company at the moment are behind with fixed wiring inspections due to Covid 19 and staff shortages. If these inspections are overdue, where do we stand from a legal and insurance point of view?</p> <p>Please see the relevant answer above.</p>
79	<p>Where do you to install a fire alarm and where to install smoke / heat alarm?</p> <p>Please see the relevant answer above.</p>
80	<p>Regarding process safety in a high-pressure gas plant flaring system, is it mandatory to install a knock-out drum upstream of the flare stack? According to API it is optional!</p>

## IOSH Fire Risk Management Group

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1230-1330. 11 October 2021.

Questions received from Zoom participants and suggested answers offered.

No.	Questions and answers
	<p>Thank you for an ‘ultimate’ fire prevention question. The flare knock-out drum is an essential safety critical piece of equipment and is installed upstream of a flare stack to remove any free liquids from the flare or vent stream.</p> <p>I have checked the American Petroleum Institute, API 521 standard, seventh edition of 06/01/2020 on pressure-relieving and depressuring systems and there is no reference to a knock-out drum, so I wonder if you are referring to API Standard 510, Pressure Vessel Inspection Code: Maintenance Inspection, Rating, Repair, and Alteration, Tenth Edition, May 2014, with Addendum 1 (2017) and 2 (2018).</p> <p>A knock-out drum is a specific type of pressure vessel in the flare header system used to remove and accumulate any condensed and entrained liquids or liquid droplets from the relief/flare gases. The ultimate purpose of the knock-out drum is simply to avoid slugs of liquid going up the stack and spewing out fire balls of burning hydrocarbon and smoke (usually black) at the flare. Liquid in the vent system is undesirable because of the following safety reasons:</p> <ul style="list-style-type: none"><li>- the liquid causes irregular combustion and smoking.</li><li>- the liquid can extinguish the flame.</li><li>- liquid flaring can generate a burning chemical spray that could reach ground level and cause a safety hazard.</li></ul> <p>This process equipment is also known by many similar names such as the flash drum, knockout pot or knock-out vessel. A knock-out drum is one of the primary components in a pressure-relief arrangement system in process industries. Flare knock-out drums can be arranged in vertical or horizontal configurations.</p> <p>‘Two-phase’ knock-out drums separate gas from the total liquid stream and ‘three-phase’ vessels separate gas, water, and oil phases, separating crude oil and water from the liquid stream. Removing the liquid that may be condensed out in the transfer lines and collection headers also recovers liquid product which increases the efficiency of product recovery.</p> <p>While API may not designate this vital piece of safety critical plant as mandatory in their standards it would be entirely good practice, in fire prevention terms, to specify, design, install and maintain two (duty and standby) knock-out drums in a flare system to mitigate the effects of a blow-out or deluge from the flare stack, which could have catastrophic consequences.</p>
81	<p>IT department would clean the dust from laptops.</p> <p>Yes, agreed. Thank you for the comment.</p>
82	<p>Can I view the previous session slides on the web site please?</p> <p>A recording of the last session is available on the IOSH YouTube channel. Supporting documents are currently being uploaded to the FRMG section of the IOSH website.</p>
83	<p>When completing an inspection of a clients premises you identify a fire hazard, how can you ensure this is actioned and taken seriously?</p>

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	<p>Always write a Visit Report. Discuss the observations, comments and conclusions with the client and forward the written detailed report with a summary of safety critical items to the client before you send your fee note.</p>
84	<p>My employer had a situation on site where a break-in and theft of gas cylinders was a fear. The site management did not want to draw attention to the presence of cylinders on site and thought a cage or lockable store could easily be broken in to. The manager on site laid cylinders on their side in a MEWP basket, raising it in the air. I did not think this was a suitable solution and said that a store should be provided, as this was along the right lines when considering security fears as operatives did not want to keep taking cylinders away from site each night.</p> <p>Thank you for your comment which illustrates what we find so often in striking the right balance between fire safety and security issues. Storing cylinders in the MEWP basket means the person is also exposed to the risks from that equipment and in the manual handling operation of lugging the cylinders on to it. There are also issues with exceeding the mass limit on the basket which COULD be as low as 250kg and the weather factors. It just presents so much more added risk which could be catastrophic if the cylinders accidentally fell from the basket. Our recommendations would be that a secure open-air store should have been provided.</p>
85	<p>Rooms that are at the end of a corridor: what the minimum legal requirements for evacuation and fire prevention? Thank you.</p> <p>Please see the answer to earlier questions above in these 'Frequently Given Answers' to Frequently Asked Questions. The reference below illustrates guidance for offices and shops but is one document in a series that covers most different workplace activities.</p> <p>Section 4.1 addresses <b>general principles of suitability of escape routes</b> in terms of: design; fire resisting construction; number of people using the premises; mobility impairment; widths and capacity of escape routes and stairways; travel distances; inner rooms; alternative exits; escape routes with dead-end conditions; basements; corridors; stairways; doors and exits.</p> <p><a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/422175/94949_DCLG_Fire_Risk_Offices_and_Shops_Insides.indd_(publishing.service.gov.uk)"><u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/422175/94</u></a></p> <p>Where the only way out of an inner room is through another room, an unnoticed fire in the outer room could trap people in the inner room. This means of escape should be avoided where possible. However, where this cannot be achieved then adequate warning of a fire should be provided by any one of the following means:</p> <ul style="list-style-type: none"><li>- a vision panel between the two rooms providing adequate vision to give an indication of the conditions in the outer room and the means of escape.</li><li>- a large enough gap between the dividing wall and the ceiling, e.g., 500mm, so that smoke will be seen; or</li><li>- an automatic smoke detector in the outer room that will sound a warning in the inner room.</li></ul>

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	<p>Additionally, the following points should also be considered:</p> <ul style="list-style-type: none"><li>- Restrict the number of people using an inner room to 60.</li><li>- Access rooms should be under the control of the same person as the inner room.</li><li>- The travel distance from any point in the inner room to the exit from the access room should be restricted to escape in one direction only, unless there are alternative exits from the access room.</li><li>- No one should have to pass through more than one access room while making their escape.</li><li>- The outer room should not be an area of high fire risk.</li></ul> <p>Where alternative exits from a space or room are necessary, they should wherever possible be located at least 45° apart unless the routes to them are separated by fire-resisting construction. Where the initial direction of travel in an open area or within an inner room is in one direction only the travel distance (A–B) should be limited to that for a ‘single escape route’ (Please see the relevant answer above). Any alternative exits should be positioned to ensure a fire will not compromise both exits. The maximum total travel distance recommended in should apply to the nearest exit. However, as you have two exits, your total travel distance should not exceed that for more than one escape route.</p>
86	<p>Do not vacuum, use spray air to clear and vacuum the surrounding area.</p> <p>Using a lightweight vacuum system attachment is totally fine! E spares sell an excellent kit for £7.75.</p> <p><a href="#">Vacuum Cleaner 8 Piece Micro Tool Kit   eSpares</a></p> <p>The main risk is damaging components on the motherboard etc if you are not careful. Small cans of compressed gas (air dusters) are designed for cleaning circuit boards, fans and keyboards but be aware that some of these do not contain air but a flammable HC. Switch off equipment and leave it to cool before use.</p> <p><a href="#">00084417 Hama Compressed Gas Cleaner, 400 ml   hama.co.uk</a></p> <p><a href="#">Dust-Off-Compressed-Gas-Duster-EN-OSHA-WHMIS-NOM-GHS-SDS-3-5-2020-2.pdf (falconsafety.com)</a></p>
87	<p>There are standards on the distances between gas storage such as 6.1m (20ft) or, when separated by a wall of 1.5m (5ft). You need to store empty gas cylinders separately as the used vessel may have some residual vapours. Should these ignite close to full vessels, the impact could be significant. There is less risk when stored apart.</p> <p>Thank you for the comment which is helpful.</p>
88	<p>Is there any requirement for electrical appointment person or supervisor for the site office area?</p> <p>Yes and no! It depends on what you are doing and where. There are requirements for an AP (Electrical) on the staff or as a nominated contractor for PAT and fixed wire installation testing etc. Regarding Fire Prevention, basic electrical safety inspection, such</p>

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	as looking for frayed or damaged cables, hot-running equipment and inappropriate use of extension cables could be taught to an Office Manager or safety supervisor.
89	<p>Excellent presentation, thank you! When should you renew the fire risk assessment for an engineering workshop for example? If nothing has changed in the layout of the building, do you still need to get a new RA done in a certain time period mandated by legislation?</p> <p>Yes. Although the layout may not have changed the people may have come and gone. Materials and processes many also have changed. The FRA should be reviewed and revised annually: when legislation or guidance changes; or when there are significant changes in personnel, processes or equipment.</p>
90	<p>Do fire safety signs need to be photoluminescent or is it a good to have?</p> <p>Photoluminescent fire safety signs are not mandatory, but they are an excellent safety initiative. In terms of cost-benefit analysis they are a worthwhile improvement and reduce complacency and enhance people's confidence when having to evacuate in a real fire situation.</p> <p><a href="http://brady.co.uk">Product Search (brady.co.uk)</a></p>
91	<p>Will the slides be available from this webinar please?</p> <p>Yes, they will be on the FRMG Microsite.</p>
92	<p>Who is a competent fire risk assessor? What qualifications is sufficient to be one?</p> <p>Please see the relevant answer above which includes the following table.</p>

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93	<p>The newer dynamic sign is much better, where computer control can change the direction of exit, or close certain exit paths if there is fire on that route - but not cheap.</p> <p>It is an interesting comment and an innovative idea. But can you reprogramme the display in time? Variable Message Signs are used extensively in road safety.</p> <p><a href="#">Mobile Traffic Signs   Messagemaker Displays</a></p> <p>And this solution could also be considered if on a large site fire assembly points or access and egress routes were changing often as the site developed and expanded. Often access roads and egress routes change by the week.</p>																																		
94	<p>Do you have any updates in respect of the Fire Safety Act and the risk-based guidance mentioned in it?</p> <p>We are holding another webinar on the 30th of November which will cover the current status of the Act. Registration is now open.</p>																																		

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95	<p>Can you please explain electrical arcing in more depth how this occurs and what is the term flash overs mean?</p> <p>Electrical arcing happens when an electric current flows through the air between two conductors, as a result of the electrical breakdown of gas that produces an ongoing electrical discharge. This may be the result of gaps or breaks in the insulation, equipment failure, impurities such as dust, corrosion and normal wear and tear on the surface of the conductor, overloaded sockets or frayed and exposed wires.</p> <p>When this happens, an electric current ceases to travel along its intended path and instead travels through damaged insulation from one conductor to another, or it jumps in an arc to a nearby earthed (grounded) object. The uncontrolled conduction of electrical current and the ionization of the surrounding air causes electrical arcing. The intense heat and light energy at the point of the arc is termed the arc flash.</p> <p>Arcing and arc flash are extremely dangerous and are 'Fatal Risks' causing electrocution, intense heat and fires and (instant) vaporisation of metal. Arc is prevented by installation of over-current protection devices and by exemplary Inspection, Testing, Examination and Maintenance (ITEM) of equipment.</p> <p>Arc flash can be mitigated by specialist PPE.</p> <p><a href="#">Arc Flash Gear Made with Nomex®   DuPont™ Life Protection</a></p> <p>Most injuries occur when equipment is being used. Consequently, the <b>absolutely fundamental</b> advice of de-powering electrical equipment (Turn it Off Dummy!) before disassembly, fault-finding or working on inspection or maintenance is vital to life safety.</p> <p><a href="#">Electric arcs on high voltage overhead catenary [ compilation ] - Bing video</a></p>
96	<p>Is it a legal requirement to have a light above an emergency exit or just best practice?</p> <p>Regulations require that fire exit signs must be legible at all times. If the premises need emergency lighting, then fire exit signs, as opposed to wayfinding signs, must be illuminated too. These exit signs should be backed up by E-lighting too in the event of power failure. Lighting may be external or internal within the unit. Or you could consider the use of photoluminescent fire safety signs.</p>
97	<p>Is there a minimum number of smoke detectors per square metre and best siting of these? A building with partition walls has been changed to open plan.</p> <p>Fundamental to life safety, property protection and business continuity within a facility is the ability to detect in a timely way the outbreak of fire, to warn people about the fire and allow them plenty of time to take appropriate action to evacuate the building. The first step in this process is the fire detector and the second element to this process is to protect people from the unseen effects of toxic carbon monoxide which may occur from an inefficiently burning gas or solid fuel device or from a smouldering fire itself.</p> <p>Smoke alarms are self-contained devices that incorporate a means of detecting a fire (smoke detector) and giving a warning (alarm), usually a very loud beeping sound. They are invariably fitted to the ceiling.</p>

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	<p>Information is provided in the guidance BS 5839: Fire Detection and Fire Alarm Systems for Buildings, Part 1:2017 and Part 6, rev. 2019: Code of Practice for the Design, Installation, Commissioning and Maintenance of Fire Detection and Fire Alarm Systems in Domestic Premises.</p> <p><a href="https://www.apollo-fire.co.uk/pp2328-pocket-guide-to-fire-detection-and-fire-alarm-systems-for-buildings-bs-5839-1-2017-2-nr-310-2.pdf">pp2328-pocket-guide-to-fire-detection-and-fire-alarm-systems-for-buildings-bs-5839-1_2017_2_nr-310-2.pdf</a> (apollo-fire.co.uk)</p> <p>The requirements are divided between property protection systems (P, P1 and P2) and Life Protection Systems (L and L1-L5, M, manually activated alarm). Detection zones (Z1 to Z<sub>n</sub>) should cover no more than 1 storey each where the total floor area is &lt;300m<sup>2</sup>. In your instance open plan areas can be extended to 10000m<sup>2</sup>. Alarm detection zones are defined on each floor of the building. Detectors are designed to have a coverage per unit. For smoke detection devices the radius of cover is 7.5m. For heat detection it is 5.3m per unit and the design of the array should be such that the units overlap and cover 'dead ground' in blind spots and intersections.</p> <p>For a single smoke detector that would give a coverage of 14.5m<sup>2</sup> per detector. Calculating for <u>intersecting coverage</u> from an array of four adjacent devices gives an individual smoke detector a working area of 112m<sup>2</sup> and for heat detectors 56.3m<sup>2</sup>. Rules change where partitions (floor upwards) or ceiling beams (ceiling downwards) are fitted. Removing beams or partitions will have no detrimental effect on smoke or heat detector performance, assuming that the beams or partitions are not load bearing. Where the detectors are cited is important though, so consult the guidance for the rules. Basically there can be no interference from luminaires or other ceiling fixed devices.</p>
98	<p>What is your opinion on the ANSI/ISO sign on the Emergency Assembly Point? I have seen requirements on the size and the colour of an emergency assembly point sign.</p> <p>I presume you refer to the compliant ISO 7010 sign below.</p> <p><a href="#">Fire Assembly Point Sign - Stocksigns</a></p> <p>They are available from various manufacturers at a range of sizes but generally 250x350mm or 450x600mm.</p> <p>The sign has to be large enough and high enough from the ground to be readily seen.</p> <div data-bbox="683 1581 1050 2018" style="text-align: center;"></div>

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99	<p>How will a disabled person be evacuated from a high-rise building?</p> <p>There are essentially three solutions which would be detailed on the Personal Emergency Evacuation Plan (PEEP).</p> <ol style="list-style-type: none"><li>1. The person would be accompanied to a fire refuge to wait with their companion or 'minder' for the arrival of and assistance from a Firefighter who would use the controlled access passenger lift to take the person from an upper floor to the ground floor final exit.</li><li>2. A device such as a carry chair would be used by trained members of staff to assist the person down flights of stairs to the ground floor.</li><li>3. The person would be physically carried or assisted, by crawling, if necessary, down the stairs.</li></ol>
100	<p>In response to the question about evacuation time, ASET (Available safe Egress Time) and RSET (Required Safe Egress Time) would help determine that. ASET takes into consideration building design, material of construction, content, etc.</p> <p>Yes. Thank you for your comment.</p>
101	<p>Thank you for your presentation I have to go back to work. Looking forward to the next webinar.</p> <p>Thanks. It's great that you were able to join us, and we look forward to seeing you (electronically at least) next time.</p>
102	<p>My questions are about Drills. Are there diverse types of drills for large construction sites with up to a thousand workers and different segments within the construction site? Secondly: Is it acceptable to have multiple assembly points on site and hold practice drills for each section on the site?</p> <p>Essentially no. If a fire breaks out, you simply need to get people away from the fire to a place of ultimate safety. On an 'open' construction site (until the building being constructed is built and weatherproof) there is no protected route or compartmentation to decamp to as a place of relative safety. So, probably 'phased evacuation' may not work.</p> <p>Regarding the second question: Yes, as with large office buildings, there are often separate or departmental assembly points. You would need to make sure there was no confusion if different sections of the site had their own fire drill. Different fire alarm signals could work. But everyone may turn-out for the break anyway.</p> <p>Also consider how you communicate between each point or to the lead Fire Marshal/ Point of Contact if you need to confirm that everyone is out safe.</p>
103	<p>It's always best and more effective to avoid endeavouring to account for people in buildings where this is obviously unachievable i.e., large high rise residential buildings, cinemas, theatres etc. Providing well trained fire wardens who act as 'sheepdogs' to escort people to safe exits is best.</p>

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	Yes, agreed.
104	<p>Is it a legal requirement to have EVAC chairs or just best practice?</p> <p>This is an interesting question. No. There is no explicit requirement to provide and use evacuation chairs, although the Responsible Person must make arrangements, supported as necessary by a PEEP, to evacuate everyone safely from a building. And this strategy would be detailed in the fire strategy, fire safety plan and the FRA etc.</p> <p>The next question is : Are they best practice? Yes. They are a solution to a potential problem although people have to be trained and practiced in their use. With transient workforces that may mean training everyone. This provision of 'trained operators' would not readily work in a hotel or conference centre for example although bedrooms and meeting rooms for mobility impaired guests etc are invariably on the ground floor. You would also need to have refuges on the upper floors where people who would need to use the carry-chair can congregate. So it is not a simple answer.</p>
105	<p>What qualifications should you have to carry out a Fire Risk Assessment?</p> <p>Please see the answer to the relevant question above which includes the following table.</p>

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106	<p>Does this webinar carry CPD points? Can I add this in my CPD?</p> <p>You can upload a copy of the presentation to your CPD record, upload a copy of this question and your Webinar invite. All these can show evidence of your attendance. And thank you for joining us.</p>																																		
107	<p>How often should you audit fire risks and record the findings?</p> <p>An annual review and revision of all fire documentation, processes and procedures, including the FRA(s) should be led by the Responsible Person.</p>																																		
108	<p>Can you give the link on the big red book?</p> <p>Information on the Big Red Book will be available shortly on the IOSH FRMG website.</p>																																		
109	<p>I was on a site which was building residential accommodation. I was told by a site manger that materials could be left in corridors leading to fire exit stair as long as there is space to walk pass, and there is nothing in the fire exit stairwell. Is this the case?</p>																																		

## IOSH Fire Risk Management Group

Back-to-Basics Webinar 2: FRMG Principal 2: Fire Prevention.

1230-1330. 11 October 2021.

Questions received from Zoom participants and suggested answers offered.

No.	Questions and answers
110	<p>No. Definitely not. The WIDTH of a fire exit corridor or prescribed route is addressed in guidance and must be 750mm wide. This means that there the floor area has to have at least 750 of width available to walk along. Nothing should be stored on the stairs or the stairwell.</p> <p>I was wondering about your thoughts on personal heaters being used within an office environment as we enter the colder months? I have previously been of the frame of mind that they should just be banned, but a colleague of mine has stated that as long as they are tested and turned off when the person is not present these would be suitable control measures etc.</p> <p>Thank you for the topical question. If your Fire Safety Policy can get past the environmental concerns regarding minimisation of the (unnecessary) consumption of electrical power and heating for the individual, ahead of collective heating in the office for all, then there is nothing that would limit or prohibit the use of electrical heaters for individuals at work stations. A convector heater would be preferred, as there is less power consumption than a fan heater. The device MUST be PAT tested and fines issued if the heater is left on when people have gone home in the evening.</p> <p>An environmentally acceptable and far less expensive alternative would be to issue branded PPE to staff in the form of fleece jackets or pullovers ...</p>
111	<p>I put a question on the Q&amp;A to ask if there is a requirement to carry out fire drills every 6 months when there are visitors that come on site [with one drill including visitors]. I can only find requirement for annual fire drill as standard.</p> <p>Thank you for your new question, which has been answered earlier. There is no hard and fast rule regarding the period of fire drills. Annual drills are the norm but you could have them every 6 months, if you preferred. One consideration which is suggested, and this applies to ALL periodic tests, inspections and examinations etc, is to set the period at 11 or 14 months to introduce seasonal variation in the 'test date' In that way you would experience a fire drill at a time which was not a warm and sunny day.</p>

### References:

[https://www.youtube.com/results?search\\_query=iosh+webinar+fire](https://www.youtube.com/results?search_query=iosh+webinar+fire)

<https://iosh.com/membership/member-benefits/our-membership-network/our-groups/fire-risk-management-group/>

Fraser-Mitchell, J., Charters, D., Evacuation Modelling and Human Behaviour in Fire, BRE. Available from: [www.brebookshop.com](http://www.brebookshop.com)

[Basic principles of fire safety: understanding the science of fire - YouTube](#)