

Risk Assessment: Delivery of Practical Fire Extinguisher Training

Hazard	Who Might be Harmed and How?	Existing Control Measures	Further Actions Required	Responsible Person	Date Completed
<p>Manual Handling / Use of Load Handling Equipment</p> <p>Musculoskeletal injuries sustained when lifting and transporting fire extinguishers / propane cylinders / buckets of water used to prepare fire simulation equipment and training area.</p>	<p>Staff Preparing Training Area: Repetitive lifting of fire extinguishers, propane cylinders and buckets of water (up to 11kg in weight) may result in musculoskeletal injuries as a result of poor handling techniques (e.g. stooping or twisting motions when lifting / lowering equipment)</p> <p>Carrying these weights over long distances may also lead to musculoskeletal injuries</p> <p>The trolley used to transport extinguishers and propane cylinders has the potential to cause injury if it rolls over a person's foot or accidentally strikes them.</p>	<p>Load handling equipment (trolley) will be used to move fire extinguishers to / from the training location.</p> <p>All staff involved in setting up the training area must have completed the EssentialSkillz manual handling course to ensure they understand good manual-handling techniques.</p> <p>Employees should not lift, carry or move any object that is beyond their capabilities and should ask for assistance in these occurrences.</p> <p>Care will be taken not to overload the trolley and it will only be moved at a slow speed to minimise the risk of a crush / impact injury.</p>	<p>No further actions required</p>	<p>NA</p>	<p>NA</p>

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<p>Fire or Explosion</p> <p>Flame used to simulate uncontrolled fire for training purposes and development of explosive atmosphere</p>	<p>University Staff Undertaking Training (“trainees”): Training requires staff / students to approach a controlled flame to gain experience of extinguishing a fire. If the trainee makes contact with the flame, they may suffer severe burns.</p> <p>Staff Delivering Training (“trainers”): Staff delivering the training use equipment designed to (i) ignite propane vapours and (ii) contain a simulated fire. Accidental contact with hot surfaces or direct contact with a flame may lead to severe burns.</p> <p>Contractors, Visitors and Members of the Public: Fire extinguisher training will be conducted outside and could be accessed by a member of the public if not managed properly. If a member of the public were to get too close to the flame, they may suffer severe burns.</p>	<p>Trainees will be instructed how to safely approach / extinguish the fire. Trainees will be constantly supervised throughout the training process.</p> <p>Fire simulation equipment will be operated by two trainers, such that the gas supply can be stopped rapidly if a problem arises.</p> <p>The training area will be located away from public walkways to reduce the likelihood of encountering members of the public. Signs will be displayed, stating that training is in progress and they should not enter the training area.</p> <p>Personal Protective Equipment (thermal gloves, flame-retardant boiler suits, safety glasses) will be worn by trainers using fire simulation equipment.</p>	<p>No further actions required</p>	<p>NA</p>	<p>NA</p>

	<p>If an uncontrolled fire were to start through improper use of the fire simulation equipment or unsafe storage of the propane cylinders, this would have the potential to cause injury through smoke inhalation and burns</p> <p>Improper storage of the propane cylinders may lead to the development of an explosive atmosphere that could injure students, staff and members of the public.</p> <p>Note on Adverse Weather Conditions: Strong winds may cause the flames from the fire-simulation equipment to move unpredictably. If a trainer / trainee is close to the equipment when the direction of the flame changes, this may result in a burn.</p>	<p>Safety glasses will be made available to trainees.</p> <p>Trainees will be asked to tie any long hair back when completing practical training.</p> <p>A first-aid kit with burn dressings will be on hand in case of an accident.</p> <p>A fire blanket will be on hand in case a person's clothing ignites and needs to be extinguished.</p> <p>Multiple fire extinguishers will be available to help extinguish any uncontrolled fires that develop.</p> <p>When not in use, propane cylinders will be stored in a locked, external cage with high levels of natural ventilation to prevent unauthorised access and development of an explosive atmosphere.</p>			
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<p>Freeze Burns</p> <p>Direct contact with low temperature diffuser horn on CO₂ fire extinguishers</p>	<p>Trainees and Trainers handling CO₂ extinguishers: When discharged, the diffuser horn on the CO₂ extinguisher can become very cold and may lead to a freeze burn if in contact with skin</p>	<p>Trainees will be informed of the dangers of touching / holding the diffuser and how to avoid this.</p> <p>Trainers, who may need to accept a CO₂ extinguisher from a trainee, will wear protective thermal gloves.</p>	<p>No further actions required</p>	<p>Not Applicable</p>	<p>Not Applicable</p>

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<p>Chemical Hazards</p> <p>Exposure to propane gas and by-products from combustion / incomplete combustion of propane gas</p>	<p>Trainers: staff changing propane gas cylinders as part of training delivery</p> <p>Trainers and Trainees: Inhalation of gases from complete / incomplete combustion of propane gas</p> <p>Inhalation of high levels of toxic gases such as carbon monoxide formed by incomplete combustion of propane may lead to poisoning, disorientation and, in extreme cases, death</p>	<p>Care will be taken when changing propane cylinders to prevent accidental contact / release of propane gas.</p> <p>Gloves will be worn by trainers to protect against accidental contact with skin</p> <p>Training will only be carried out in a well-ventilated space such that potential exposure to toxic / harmful chemicals is minimised.</p>	<p>No further actions required</p>	<p>Not Applicable</p>	<p>Not Applicable</p>

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<p>Slips, Trips and Falls</p>	<p>Trainers and Trainees: Staff may trip over hosing connected to fire simulation equipment or lose their footing due to uneven ground. This could lead to broken bones, sprains or related injuries.</p> <p>If the person trips / falls when moving towards a simulated fire, this could lead to severe burn injuries.</p> <p>Fire-simulation equipment and fire extinguishers may fall if not supported correctly or placed on uneven ground. If the falling equipment strikes a person this could lead to impact and/or burn injuries.</p>	<p>Fire simulation equipment will be placed behind the main training area so cables are distanced from learners. The fire simulation equipment will be assessed routinely during the training to make sure it is stable and secure.</p> <p>The ground will be inspected before training begins to ensure no obvious slip / trip hazards are present.</p> <p>Staff will be informed that they must wear comfortable, flat shoes for training to prevent falls.</p>	<p>No further actions required</p>	<p>Not Applicable</p>	<p>Not Applicable</p>

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<p>Adverse Weather Conditions:</p>	<p>Trainers or Trainees: Strong winds may cause the flames from the fire-simulation equipment to move unpredictably. If a trainer / trainee is close to the equipment when the direction of the flame changes, this may result in a burn.</p> <p>If the ground is wet or muddy due to rain fall, this may cause trainers / trainees to slip or fall when completing training.</p> <p>If training is conducted in direct sunlight for extended periods, staff conducting the training may suffer sun burns</p>	<p>Training will not be carried out in adverse weather conditions.</p> <p>Conditions underfoot will be considered before training commences.</p> <p>In the event of strong sunshine, protective hats and sunscreen will be worn.</p>	<p>No further actions required</p>	<p>Not Applicable</p>	<p>Not Applicable</p>

Training Requirements:

Training sessions will only be delivered by trained staff.

Specialised Emergency Response (if required):

In the event of a trainee / trainer receiving a burn, the injury will be cooled with water before the person is taken for further First Aid treatment.

In the event of a leak of flammable gas, the area will be evacuated and allowed to dissipate.

Version Control

Version Number	Purpose or Changes	Document Status	Author of Changes, Role and School/ Unit	Date
1.0	Original Document	Published	Kevin Jones, Chemistry	07/01/2024
1.1	Emergency actions section added	Published	Kevin Jones, Chemistry	17/04/2026