Assessment Carried out by: Dr Kevin Jones Date of Assessment: 29/03/2022 Date of Next Review: 29/03/2023

Risk Assessment: Storage of Flammable Solvents in External Store

Hazards	Who Might be Harmed and How?	Existing Control Measures	Further Actions Required	Responsible Person	Date
Fire The external solvent storage area contains large volumes of highly and extremely flammable solvents.	*Researchers, academic, technical and estates staff accessing the solvent storage area.* *Contractors, visitors and members of the public if close to solvent store in an emergency situation.* If a fire were to develop in the solvent store, the resulting fire would be extremely serious owing to the total volume of the solvent (~3,000 litres of flammable solvent). The lower explosive limit of various solvents may be reached and lead to an explosion. A worker who is unable to evacuate may suffer burns, smoke inhalation that may lead to hospitalisation. The worst-case scenario would lead to loss of life. If a fire were to develop, members of public could suffer burns and smoke inhalation. In the event on an explosion, members of the public may be struck with debris.	Swipe-card access is used to prevent unauthorised access to the solvent store, helping to minimise the risk of arson. The store is equipped with mechanical ventilation that operates continuously to prevent the build-up of an explosive atmosphere. The store is equipped with 4 x Monicon flammable gas sensors calibrated to alarm at 20% of the LEL of methane. The sensors are linked to emergency beacons housed within the storage area to alert staff if a flammable atmosphere has developed. The sensors are also linked to the mechanical ventilation system, which increases the extraction frequency in an emergency situation to prevent an explosive atmosphere developing. The extraction frequency can be manually increased by pressing the “emergency boost” button (see below).	Flammable material and no smoking signage should be added to the entrance doors. Examine the possibility of adding “bunding” (or suitable trays) under shelving units to contain spillages. Install a spill kit to allow accidental spillages to be absorbed. GexCon (external contractor) will complete a DSEAR risk assessment for the storage area in June 2022.	Kevin Jones Kevin Jones Kevin Jones Kevin Jones	30/03/2022 30/03/2022 30/03/2022 30/03/2022

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Hazards	Who Might be Harmed and How?	Existing Control Measures	Further Actions Required	Responsible Person	Date
Fire The external solvent storage area contains large volumes of highly and extremely flammable solvents.	See Above	Solvents are contained in individual bottles (either 2.5 and 5 litres) so the risk of a major release of solvent and development of an explosive atmosphere is minimised. Unused solvents are kept in the original boxes / packing material to prevent accidental breakage and release of contents. No ignition sources are used within the storage area and the wiring used is mineral-insulated copper-clad cable (“pyro”). This wiring is approved by electrical codes for use in areas with hazardous concentrations of flammable gas in air. Solvents are not processed / decanted in the storage area such that the release of potentially flammable vapours are minimised. Solvents are transported from the external solvent store to an internal store using a pallet truck or trolley to prevent manual handling and minimise the risk of accidental spillages.	See Above	See Above	See Above

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Fire The external solvent storage area contains large volumes of highly and extremely flammable solvents.	See Above	Dry powder and CO_2 fire extinguishers are installed in the storage area providing an option to extinguish a fire in the ignition phase. The storage area is equipped with two emergency exits to ensure a means of escape is always maintained.	See Above	See Above	See Above

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Hazards	Who Might be Harmed and How?	Existing Control Measures	Further Actions Required	Responsible Person	Date
Exposure to Organic Solvents and Research Chemicals	*Researchers, technical / operational staff and contractors*. If a solvent bottle were broken / spilled the solvent vapour could be inhaled or the liquid could make direct contact with the skin and eyes. Common organic solvents may irritate eyes and skin, may cause dizziness/drowsiness if inhaled. Inhalation or contact with toxic materials may lead to injury or hospitalisation.	Bottles are kept in original packaging whenever possible to prevent damage to containers and absorb any spillages.	Install a spill kit to allow accidental spillages to be absorbed.	Kevin Jones	30/03/2022
Cuts and Impact Injuries	*Technical and research staff moving boxes / bottles of solvents* If a bottle were to fall, it could lead to an impact injury and if a glass container breaks, this could lead to cuts.	Solvents are transported from the external solvent store to an internal store using a pallet truck or trolley to prevent manual handling and minimise the risk of accidents.	Not Applicable	Not Applicable	Not Applicable

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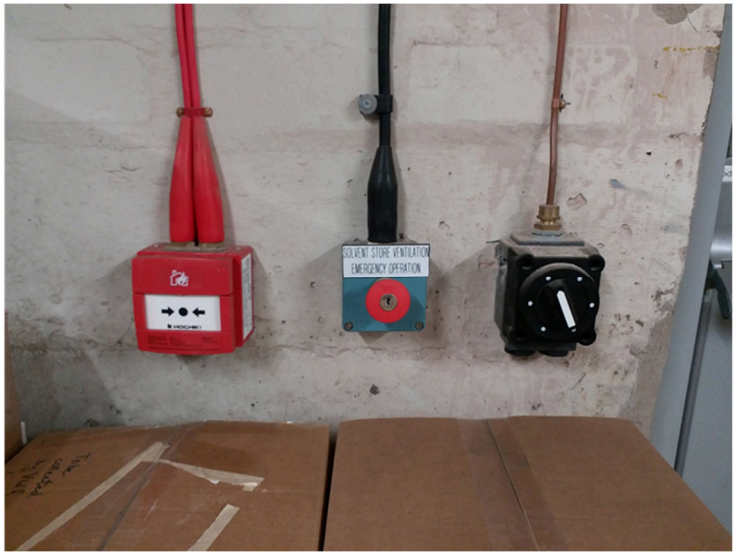
Pictures of light switches, manual “extraction boost” buttons and fire call points



Pictures of the Monicon CGS500 sensors used to detect combustible gases and solvents and trigger extraction system.

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Emergency Extraction System

Signage for Emergency Exit