

FIRE LIFE AND SAFETY RISK ASSESSMENT

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PROJECT / LOCATION:	DATE:	DATE OF NEXT ASSESSMENT
	00-00-2024	00-00-2025

TASK / ACTIVITY
Fire, Life, and Safety MEP Work

No	Hazard	Risks	Consequence	Existing Risk Control Measures	Risk Level			Additional Risk Control Measures	Residual Risk			Action by:
					P R	S	E/H/ M/L/ N		PR	S	E/H/ M/L/ N	
1.	Fire hazards due to electrical faults	Fire outbreak, burns, property damage	- Severe burns or fatalities to occupants and workers. - Destruction of equipment, facilities, and property. - Loss of business continuity and significant financial losses. - Legal liabilities and potential regulatory penalties.	- Regular inspection of electrical systems - Ensure all cables and equipment are ADOSH/IOSH/OSHA-compliant - Fire extinguishers and alarms in place	3	5	H	- Installation of smoke and heat detectors integrated into a fire alarm system. - Thermal imaging inspections to identify hot spots in wiring. - Regular testing of electrical insulation to prevent short circuits. - Limit flammable materials stored near electrical panels. - Emergency shut-off switches for isolating power in case of fire.	1	5	L	Project Engineer/Project Supervisor/Safety Officer
2.	Inadequate fire suppression systems	Failure to control fire	- Escalation of fire leading to widespread destruction. - Increased risk of fatalities or severe injuries to emergency responders and workers. - Environmental damage due to release of harmful substances during the fire. - Major disruptions to operations and potential business closure.	- Regular maintenance of sprinklers, alarms, extinguishers - Test systems as per ADOSH/IOSH/OSHA standards	3	5	H	- Integration of automated fault detection and alarm systems that notify of malfunctions. - Use of temporary portable fire extinguishers in high-risk areas during system maintenance. - Enhancing system redundancy with dual-feed water supplies or backup power sources. - Regular drills and simulations for manual fire suppression in case of system failure. - Installing additional fire suppression in critical areas (e.g., electrical rooms, server rooms).	1	5	L	Project Engineer/Project Supervisor/Safety Officer

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3.	Life safety system malfunction	Risk to occupants and workers	• Serious injuries or fatalities due to lack of protection from hazards. • Long-term health issues such as respiratory or musculoskeletal problems. • Mental trauma due to exposure to life-threatening situations. • Increased medical expenses and compensation claims.	• Ensure fire alarm, smoke detectors, and emergency lighting function correctly • Scheduled ADOSH/IOSH/OSHA standards-compliant system tests	3	5	H	• Install real-time system monitoring tools for early detection of malfunctions. • Increase frequency of functional testing during peak work periods. • Integration of voice-evacuation systems to guide personnel in emergencies. • Implement digital fault logs with alerts for key staff. • Design life safety systems with multiple redundancies to prevent total failure.	1	5	L	Project Engineer/Project Supervisor/Safety Officer
4.	Manual handling of fire protection equipment	Strains, sprains, back injuries	• Temporary or permanent physical disabilities. • Loss of productivity due to inability to work. • Increased workers' compensation claims and medical costs. • Potential for prolonged absence or workforce shortages.	• Provide training on safe manual handling • Use lifting aids where necessary	3	5	H	• Use of ergonomic lifting devices designed specifically for fire equipment. • Assign teams for handling bulky items (e.g., fire extinguishers, hose reels). • Provide personnel with PPE like gloves and back braces during handling. • Implement safe load limits and marking heavy equipment with clear weight labels. • Schedule regular physical fitness assessments for employees handling heavy equipment.	1	5	L	Project Engineer/Project Supervisor/Safety Officer
5.	Exposure to live electrical parts	Electric shock, electrocution	• Immediate fatalities or severe injuries such as burns, nerve damage, or cardiac arrest. • Permanent disability or loss of function in affected body parts. • Legal action and fines for non-compliance with electrical safety standards. • Damage to equipment and facility shutdown.	• Use lockout/tagout procedures • Ensure all electrical work complies with ADOSH/IOSH/OSHA standards regulations • Proper PPE	3	5	H	• Implementation of arc flash protection programs, including risk assessments and PPE suited for arc flash hazards. • Install remote operating switches to eliminate direct exposure. • Continuous monitoring of electrical systems with remote sensors to identify live parts. • Develop job-specific electrical safety training programs. • Conduct a zero-energy verification before the start of any work involving electrical systems.	1	5	L	Project Engineer/Project Supervisor/Safety Officer

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6.	Working at heights for MEP installations	Falls, injuries	- Broken bones, head injuries, or spinal cord damage. - Permanent disability, paralysis, or death. - Loss of productivity due to worker absence and injury recovery. - Increased insurance premiums and financial costs due to medical care.	- Use fall arrest systems - Follow ADOSH/IOSH/OSHA standards guidelines for scaffolding and ladders	2	5	M	- Perform pre-work risk assessments specific to working at heights. - Increase supervision and ensure spotters are used during height work. - Implement a buddy system to monitor workers at heights. - Use mechanical lifts or mobile elevated work platforms (MEWPs) where feasible. - Mandate regular refresher training on fall protection for workers engaged in MEP work at heights.	1	5	L	Project Engineer/Project Supervisor/Safety Officer
7.	Confined space entry for MEP work	Asphyxiation, toxic exposure	- Fatal respiratory failure or long-term lung damage. - Chronic illnesses such as cancer or neurological disorders. - Contamination of the environment and workplace requiring costly clean-up. - Legal liabilities due to non-compliance with health and safety regulations.	- Ensure proper ventilation - Implement confined space permit-to-work system as per ADOSH/IOSH/OSHA standards/guidelines	2	5	M	- Real-time remote monitoring of air quality inside confined spaces. - Implement a buddy system and require constant communication with a safety observer outside. - Install entry and exit alarms for confined spaces to monitor safe entry/exit. - Develop specific escape routes and clearly marked emergency exits for confined spaces. - Invest in confined space rescue equipment such as tripod systems and retrieval devices.	1	5	L	Project Engineer/Project Supervisor/Safety Officer

Standards & Requirements:

ADOSH CoP 26.0 - Fire Safety: Minimum fire safety standards required for all fire-related MEP work.

ADOSH CoP 53.0 - Safe Electrical Work: Ensure safe handling and operation of electrical systems.

ADOSH CoP 47.0 - Confined Spaces: Regulations governing work within confined spaces.

NFPA (National Fire Protection Association) Codes: Additional standards for fire alarm systems, sprinkler systems, and suppression equipment.

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Risk Assessment Guidelines

SEVERITY								<u>Consequences:</u>	
LI K E L I H O O D			Insignificant	Minor	Moderate	Serious	Major	Catastrophic	6 – Catastrophic – Multiple fatalities
	1		1	2	3	4	5	6	5 – Major - Single Fatality
	2		2	4	6	8	10	12	4 – Serious – Permanent disability
	3		3	6	9	12	15	18	3 – Moderate – Lost Time Injury
	4		4	8	12	16	20	24	2 – Minor – Medical Treatment
	5		5	10	15	20	25	30	1 – Insignificant – First Aid Case
	6		6	12	18	24	30	36	
	24 - 36	Extreme	Immediate action required, Activity should not to proceed in current form						
	15 - 20	High	Prompt action required, including interim actions. Activity should be modified to include remedial action and planning.						

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8 - 12	Medium	Schedule action including any interim countermeasures e.g. implement safe work procedures, signage, instructions
4 - 6	Low	Activity can operate subject to management and or modification,
1 - 3	Very Low/ Negligible	Risk almost certainly acceptable, no action required unless escalation of risk is possible

Likely Frequency:

Likelihood (of adverse event occurring)			
	Description	Health & safety	Environmental
6	Almost certain or imminent	Occurs all the time	Continuous or will happen frequently
5	Highly likely	Common occurrence, Occurs multiple times in a year	Happens 5 – 10 times per year
4	Likely or could occur	Know to occur in the last 12 months	1 – 5 times per Year
3	Not likely, but possible	Has occurred in an industry worldwide	Once every 5 years
2	Unlikely	Has not occurred in over 10 years of the same activity	Not happened in over 10 years
1	Rare	Theoretically possible, but not expected to occur	theoretically possible, but not expected to occur

Prepared by: HSE Engineer		Reviewed by: Project Engineer		Approved by: Project Manager	
Sign:	Date:	Sign:	Date:	Sign:	Date: