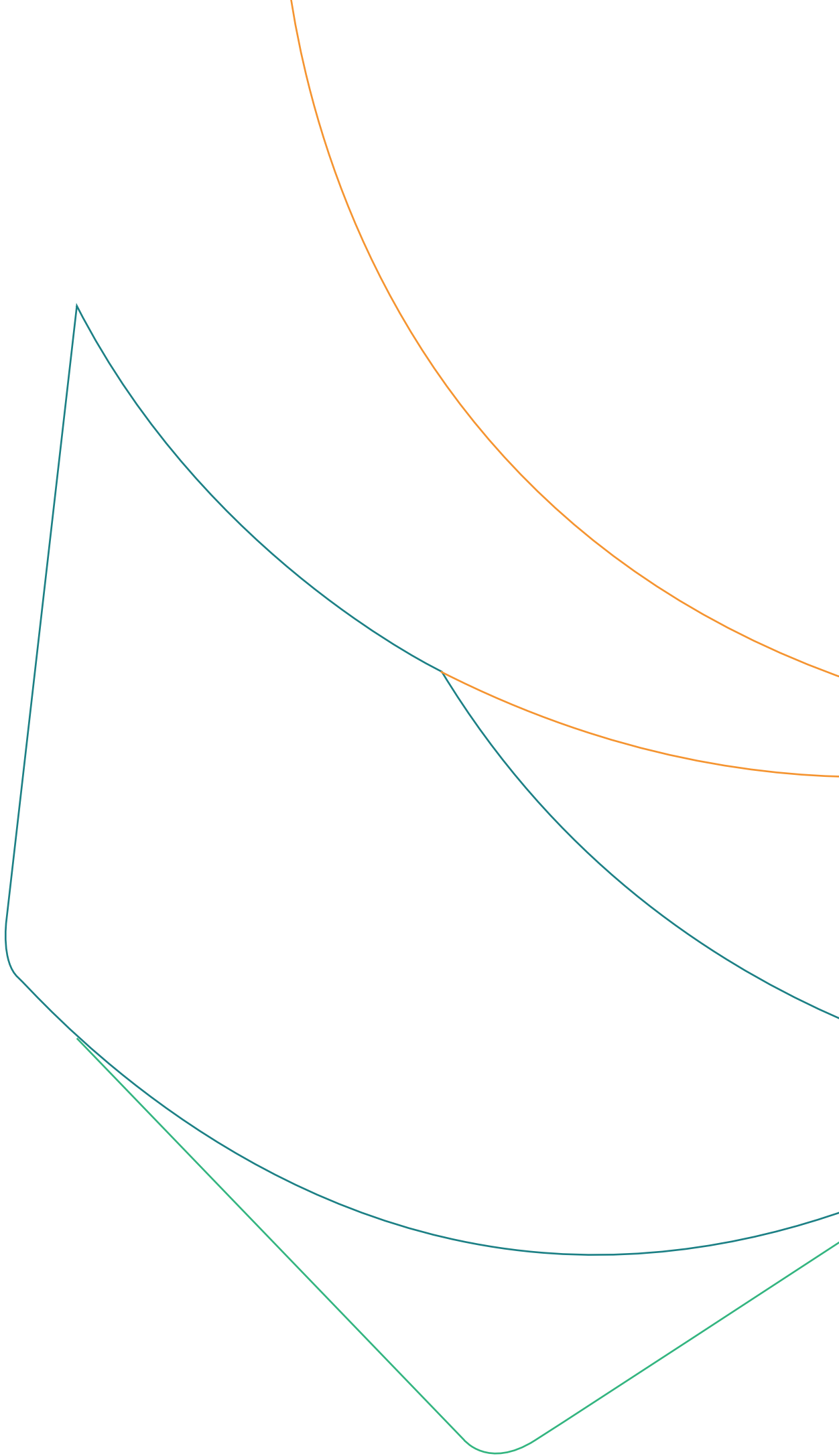




National Council for
Occupational Safety & Health

Guidance Manual Occupational Safety and Health industrial Hazards Guide and How to Address Them

November 2025



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Introduction

Occupational safety and health are fundamental pillars for the success and sustainability of work environments, as they aim to protect workers, property, and the environment from risks that may arise during daily tasks.

With the diversity of work environments and the multiplicity of operational activities, the nature and levels of risks differ from one site to another, necessitating a clear and effective system for identifying, assessing, and controlling these risks.

This guide aims to provide a comprehensive reference for recognizing workplace-related risks and explaining preventive methods, in accordance with modern safety principles and the requirements of relevant local and international regulations and standards.



(Prevention of fall accidents, implementing risk management, promoting a safety culture, safe operation of machines, organizing vehicles on-site, safe handling of materials, ensuring safety around cranes in the workplace, and other related topics as needed)

Activity	Hazard	Existing Control Measures	Additional Control Measures
Valve Maintenance Work			
A - Lifting the valve using the overhead crane	<ul style="list-style-type: none"> Falling of the valve or collision with personnel 	<ul style="list-style-type: none"> Avoid lifting the load above head level as much as possible Ensure the work is carried out by trained and qualified personnel Wear personal protective equipment 	
	<ul style="list-style-type: none"> Rope failure during lifting 	<ul style="list-style-type: none"> Selecting ropes suitable for the load Periodically inspect lifting equipment to determine the maximum load capacity Label each lifting wire with its load capacity and diameter 	
B - Using a heating flame to disassemble equipment parts	<ul style="list-style-type: none"> Burns to any part of the body 	<ul style="list-style-type: none"> Wear personal protective equipment, especially glare-resistant safety goggles and heat-resistant gloves for handling hot surfaces 	
C - Disassembling the internal parts of the equipment for inspection	<ul style="list-style-type: none"> Injury resulting from exposure to petroleum or chemical substances 	<ul style="list-style-type: none"> Wear protective equipment, especially gloves resistant to petroleum and chemical substances Issue and review a handover certificate to ensure the equipment is free from petroleum or chemical materials Use a face shield or specialized masks 	
D - Performing welding works on corroded parts of the equipment	<ul style="list-style-type: none"> Injury to the eyes, hands, or other parts of the body as a result of welding operations 	<ul style="list-style-type: none"> Wear personal protective equipment, especially protective welding goggles Ensure proper ventilation in the welding area and consider the direction of rising fumes 	
E - Using a hammer to loosen equipment parts	<ul style="list-style-type: none"> Injury resulting from the hammer striking the hands or face 	<ul style="list-style-type: none"> Conduct regular inspections of hand tools and discard any damaged ones Wear personal protective equipment 	
F - Cleaning equipment or valves using petroleum materials	<ul style="list-style-type: none"> Fire ignition due to the presence of a flame source 	<ul style="list-style-type: none"> Keep any flame source away from the worksite 	
	<ul style="list-style-type: none"> Injury to any part of the body due to exposure to petroleum materials 	<ul style="list-style-type: none"> Wear personal protective equipment Display the Material Safety Data Sheets (MSDS) for petroleum materials Ensure good ventilation 	

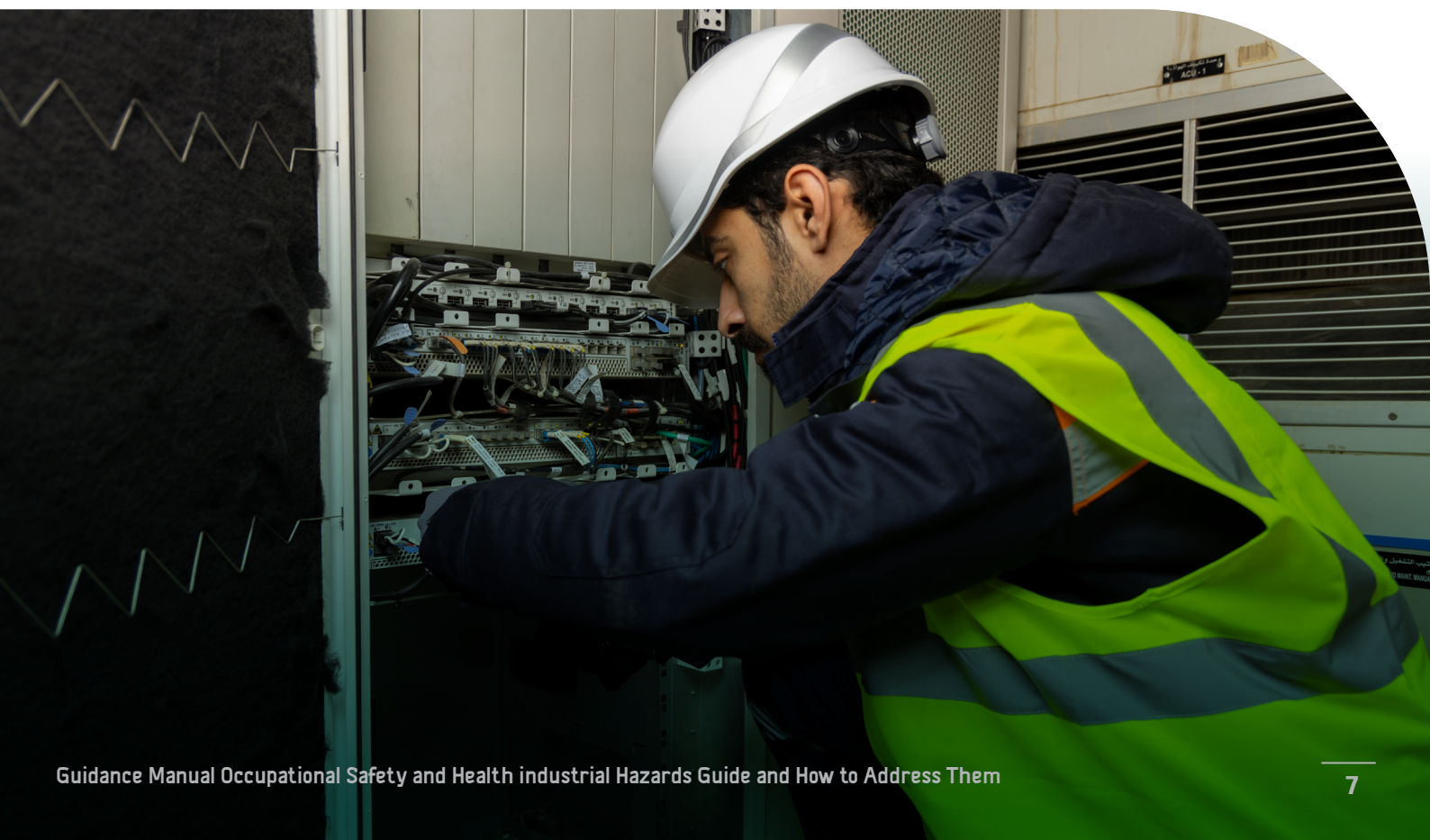


Activity	Hazard	Existing Control Measures	Additional Control Measures
Maintenance works			
Maintenance of overhead (vertical) cranes	• Falling from height	<ul style="list-style-type: none"> • Provide walkways and guardrails to prevent falls along the upper rail path of the overhead crane • Wear a safety harness 	
	• Risk of electric shock	• Work should be carried out only after disconnecting the electrical power and locking the overhead crane's main switch panel	

Activity	Hazard	Existing Control Measures	Additional Control Measures
Metal Cutting Works			
A- Metal cutting works using a saw or an angle grinder	• Injury to a body part or hands due to contact with the moving parts of the cutting tool	<ul style="list-style-type: none"> • Work must be carried out by trained and qualified personnel • Wear personal protective equipment (PPE) • Place warning signs next to the equipment used for cutting 	
	• Eye injury caused by sparks or flying fragments from the grinding wheel or the work piece	• Use personal protective equipment, especially eye protection gear	
	• Risk of electric shock	<ul style="list-style-type: none"> • All electrical connections must be intact and properly insulated • Electrical cables should be laid away from the movement paths of personnel and equipment 	• Install a grounding circuit on the electrical connections used
B- Turning, drilling, and milling works	• Parts of work clothing getting caught between the rotating parts of the machine	• Wear work clothing with tight sleeves specially designed for this purpose	• Clearly label the emergency stop switches for all equipment, lathes, machines, and tools
	• Flying metal chips toward the face and eyes	• Wear protective safety goggles for the eyes	
	• Presence of moving parts without protective guards, especially in older equipment that lacks this type of safety feature	• Design and install protective guards for the equipment	
	• A piece falling on the feet or the lifted object striking one of the workers	<ul style="list-style-type: none"> • Wear personal protective equipment (safety shoes with steel toes and cut-resistant gloves) • Ensure that no personnel are present in the path of the vertical hoist 	
	• Contamination of floors and wooden work platforms with oils that may cause personnel to slip	• Perform regular cleaning and scraping of workshop floors, and replace any damaged wooden platforms	



C- Using a sharpening stone for cutting knives, chisels, etc	• Hands striking against the sharpening stone	• Work to be carried out by qualified and trained personnel	
	• Sparks flying from the sharpening stone or the workpiece	• Wear protective safety goggles for the eyes	
	• Sleeves getting caught between the rotating parts of the grinding stone	• Wear clothing with tight sleeves	
	• Hand injuries caused by sharp or serrated edges	• Wear cut-resistant gloves • Install guards on the rotating parts of the grinding wheel	
D - Use of hand tools – filing work	• Injury to upper limbs caused by sharp edges or hammering	• Wear heavy-duty gloves	
	• Flying fragments from hammering work	• Wear safety goggles • Work should be carried out by qualified and trained personnel	
E - Use of grinding and cutting stone	• Risk of electric shock	• All electrical connections and cables are insulated	
	• Flying fragments or sparks from grinding and cutting stone operations	• The stone is equipped with a protective guard to direct flying sparks • Wear safety goggles	
	• Injury to limbs due to impact with the grinding disc or contact with sharp edges	• Keep hands away from sharp edges and from the grinding/cutting stone • Wear personal protective equipment • Work should be performed by qualified and trained personnel	





Activity	Hazard	Existing Control Measures	Additional Control Measures
Welding works			
A - Electric arc welding works	• Fire or ignition in the presence of flammable materials	• Remove any flammable materials from the work area	
	• Burns from hot surfaces, contact with molten metal, or uninsulated welding cables	• Wear appropriate personal protective equipment for welding work • Use well-insulated welding cables and inspect them regularly to replace any damaged ones	
	• Eye strain or occupational eye disease caused by exposure to glare	• Wear protective goggles with appropriate shade level against glare	
	• Respiratory system affected by welding fumes	• Work in a well-ventilated area	• Wear a protective mask equipped with a ventilation system
	• Tripping over welding cables laid on the ground	• Lay welding cables away from walkways and personnel paths	
B - Diesel-powered welding machines	• Fire occurring in the machine or its components	• Refuel machines only after they have been completely shut down • Ensure machines operate in an environment free from flammable gases	
	• Clothing getting caught in rotating parts or injury resulting from contact with these parts	• Cover all rotating parts with protective guards • Do not handle any rotating machine parts until they are completely stopped	
	• Electric shock from exposed parts	• All parts and connections are intact and properly insulated • Conduct regular inspections of electrical connections and replace any damaged ones	
C - Electric welding machines	• Electrical short circuit due to insulation failure • Electric shock injury	• Lay welding cables away from transport equipment paths • Use approved electrical connections • Connection and disconnection should be performed only by qualified personnel • Do not lay cables in areas with water • Conduct regular inspection of cables and replace any damaged ones • Place welding machines close to the main power supply source	
D - Welding works using inert gas	• Suffocation caused by inert gas exposure	• Wear a protective mask equipped with ventilation and an auto-darkening feature with the required shade level	
E - Performing welding works in confined or poorly ventilated spaces	• Suffocation due to the accumulation of welding fumes or toxic gases and lack of adequate ventilation • In addition to the hazards mentioned in the previous point	• Apply all the previously mentioned control measures • Provide local ventilation or wear a protective mask supplied with external air from outside the confined space	



Activity	Hazard	Existing Control Measures	Additional Control Measures
Cutting works			
A - Flame cutting	<ul style="list-style-type: none"> Burns to parts of the body Eye strain or occupational eye disease 	<ul style="list-style-type: none"> Wear appropriate personal protective equipment Work should be carried out by qualified and trained personnel Wear flame-resistant safety goggles 	
	<ul style="list-style-type: none"> Fire or ignition caused by the presence of flammable materials 	<ul style="list-style-type: none"> Clear the work area of all flammable materials Stop work immediately if any gas leakage is detected 	
	<ul style="list-style-type: none"> Injury caused by gas cylinders falling to the ground 	<ul style="list-style-type: none"> Place cylinders on designated trolleys for handling and secure them with a firm chain Handle and transport cylinders with care 	
	<ul style="list-style-type: none"> Gas leakage from hoses or cylinder valves may cause fire or cylinder explosion 	<ul style="list-style-type: none"> Secure hoses with clips to prevent leakage Conduct regular inspections of hoses and replace any damaged ones Keep hoses away from vehicle paths, machinery, or sharp edges that could cause cuts 	
	<ul style="list-style-type: none"> Explosion of cylinders due to exposure to high heat sources 	<ul style="list-style-type: none"> Keep cylinders away from flame sources Conduct regular inspection of cutting tools and replace any damaged ones 	
	<ul style="list-style-type: none"> Cylinder valves exposed to mechanical stress 	<ul style="list-style-type: none"> Connect and disconnect fittings carefully, and only by qualified and trained personnel Coordinate with supplying companies to ensure the cylinders provided to the company are in good condition 	
	<ul style="list-style-type: none"> Flame backfire (flashback) 	<ul style="list-style-type: none"> Use flashback arrestor valves on cylinders 	
B - Cutting using an abrasive cut-off wheel (abrasive disc)	<ul style="list-style-type: none"> Injury caused by contact between the grinding disc and any part of the body 	<ul style="list-style-type: none"> Work must be carried out by qualified, trained, and authorized personnel who have completed the required training courses for using the abrasive cut-off wheel Wear appropriate personal protective equipment 	
	<ul style="list-style-type: none"> Risk of electric shock 	<ul style="list-style-type: none"> Ensure all electrical connections are intact and in good condition Do not perform work in wet areas or with wet hands Regularly inspect cable insulation and replace any damaged cables 	
	Flying sparks from the abrasive wheel may cause: <ul style="list-style-type: none"> Injuries to the face or eyes Spread of sparks to areas containing flammable materials 	<ul style="list-style-type: none"> Install a spark guard on the abrasive wheel Wear safety goggles to protect the eyes from sparks Clear the spark spread area of any flammable materials 	



• Working with an abrasive cut-off wheel inside enclosed spaces.	• The previously mentioned hazards associated with working inside enclosed spaces	• Implement the previously mentioned control measures, in addition to applying control measures when using a current higher than 24 volts	
C - Sheet metal cutting using shears	• Hand injuries due to contact with the cutting edge • Foot injuries caused by falling metal pieces	• Provide a guard to prevent hands from reaching the cutting edge level	

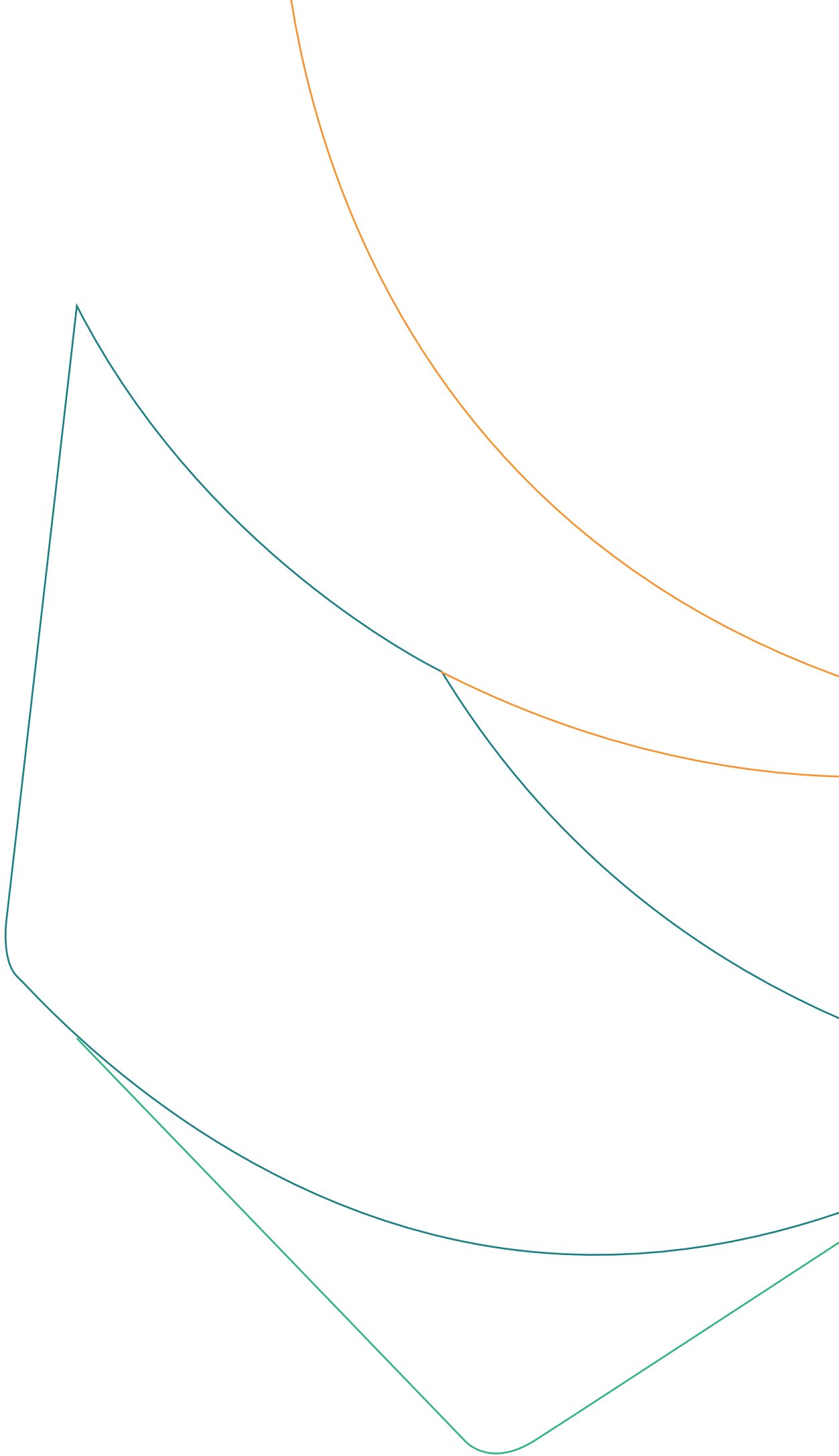
Activity	Hazard	Existing Control Measures	Additional Control Measures
Blacksmithing works			
Manual hammering	• Hands getting trapped between the piece and the hammer	• Keep the worker's limbs and those of any assistants away from the hammering area	
	• Hammer falling from the hand toward the head or another worker	• Secure the hammerhead firmly • Perform the work so that the hammering direction is away from pedestrian paths • Conduct regular inspections of tools and discard any damaged ones	
	• Falling of a workpiece or its parts toward a worker	• Use personal protective equipment	
	• Hand injury caused by friction with the hammer	• Wear heavy-duty work gloves	

Activity	Hazard	Existing Control Measures	Additional Control Measures
Lifting and handling of operating equipment	• Rope breakage during lifting operations	• Conduct regular inspections of lifting ropes and discard any damaged ones • Select the appropriate rope for the load • Attach identification tags indicating load capacity and diameter on each lifting wire	
	• Lifted load striking workers or falling on one of them	• Work should be carried out by trained and qualified personnel • Do not stand or pass under suspended loads • Inspect lifting ropes regularly • Test lifting equipment periodically to determine maximum load capacity	



Activity	Hazard	Existing Control Measures	Additional Control Measures
Common hazards associated with all workshop activities			
A - Lighting	<ul style="list-style-type: none">• Glare that affects vision• Poor lighting that strains eyesight	<ul style="list-style-type: none">• Ensure proper and balanced lighting distribution	<ul style="list-style-type: none">• Upgrade and improve lighting distribution and intensity
B - Noise	<ul style="list-style-type: none">• Hearing loss	<ul style="list-style-type: none">• Conduct periodic noise level measurements• Perform regular medical check-ups for workers• Wear appropriate protective equipment	
C - Opening and closing windows	<ul style="list-style-type: none">• Hand or finger injuries	<ul style="list-style-type: none">• Open and close windows carefully• Modify the window opening and closing mechanism for safer operation	
D - Electrical connections near metallic structures	<ul style="list-style-type: none">• Electric shock	<ul style="list-style-type: none">• Insulate electrical connections• Modify the current electrical wiring system	







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