Health & Safety Handbook

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CORE ELEMENTS

HSE POLICY

The management of "Company Name" is totally devoted to ensuring and promoting the safest and healthiest working conditions throughout the entire organization. Our employees are our most valuable asset, and their contribution to the success of our safety program is indispensable. "Company Name" acknowledges that safe operations are dependent not only on technically sound plant and equipment, but also on qualified personnel and an active HSE culture, and that no activity is so crucial that it cannot be performed safely.

To achieve this aim, we intend to

- Ensure that all applicable health, safety, and environmental procedures and work instructions are formulated and implemented.
- Make an effort to prevent injuries, ill health, and property loss through the identification of risks and risk assessments of all operations and processes.
- Ensure that all safety rules and regulations are adhered to, and that protective equipment is utilized when necessary and stated.
- Ensure compliance with all applicable environmental laws and regulations in the management of its operations
- Manage hazardous gas emissions, effluents, and waste materials using the most up-to-date equipment and technology in order to provide a favorable environment for its personnel and the area Flora and Fauna.
- Adhere to health practices that meet global standards. Invest accordingly in improving the health facilities and eliminating occupational health hazards for our employees, neighbors, customers, and operating markets.
- Periodically, this policy will be reviewed to ensure that it remains relevant and acceptable for "Company Name."

Note: Change this policy statement with your company policy.

Management Expectations

"Your Company Name" management expects all employees, contractors and visitors to follow these instructions within "Your Company Name" premises:

- Comply with HSE Policy and follow all relevant safe work procedures, SOPs, instructions and guidelines at all company locations and for the job you are going to perform.
- Get HSE induction/orientation from relevant HSE office before entering in operational areas for the first time or whenever required.
- Wear appropriate personal protective equipment in all operational areas and as per your job scope.
- Never endanger other employees by your acts or omission at work.
- Actively participate in toolbox talk/pre job safety meetings before starting any critical work.
- Attend all required HSE trainings for your position/work scope.
- Report all hazards, unsafe events, incidents & accidents as soon as possible, no matter how minor they are.
- Be aware of the all emergency equipment locations, first aid boxes, emergency exits, assembly points, fire alarm points, and fire extinguisher locations in your respective work areas.
- Never misuse any emergency equipment or move it from the designated area; except when it is to be actually used.
- Never use or distribute prohibited drugs or alcohol on the job or within company premises.
- Never keep weapons or explosives in company premises except security staff.
- Avoid smoking or smoke only at designated areas.
- Take care of your health. Exercise regularly and have a medical checkup at regular intervals.
- Take care of your environment. Save water and energy. Keep your workplace clean and tidy.

STOP all unsafe acts that you see. Have a meaningful discussion with the individual or crew so that they also understand the unsafe act and both of you agree on a safer alternative to complete the work.

The Essentials

Line of Danger

Keep yourself and others away from hazards or line of danger. Immediately report all unsafe conditions.

Risk Assessment

Assess the risks before starting any job. Ensure that appropriate control measures are in place for the identified hazards and risks.

Permit to Work

Obtain relevant permit to work whenever required. Follow all instructions mentioned on the permit.

Personal Protective Equipment

Protect yourself by wearing appropriate personal protective equipments suitable for the job.

Safety Procedures

Always follow safe working procedures, SOPs, guidelines while performing any job. Never take shortcuts.

Energy Isolations

For any maintenance work, ensure that all energy sources are well isolated. Verify isolations before starting the work.

Equipment Inspections

Inspect all equipment and machines at recommended frequencies. Ensure that all equipment is well maintained.

Job Supervision

Ensure that all critical jobs are properly supervised. The job supervisor should be competent enough and have authority to stop the unsafe work.

HSE GUIDELINES

Hazard Reporting

- Anyone within "Your Company Name" premises is encouraged to report any identified hazard which can contribute in making the workplace safer.
- Hazards can be reported by filling a controlled form named "Hazard Identification & Report Form" which is readily available at prominent locations at all sites or can be obtained directly from HSE department.
- The filled hazard report form should be submitted to HSE department through your departmental in charge.
- After analysis, the hazard report will be marked to concerned person/department for taking action to close of the hazard.
- Once the action is complete, it will be marked close after verification by HSE Staff.

Incident Reporting

- Any incident or near miss that occurs at any business location, however minor, must be reported without undue delay to HSE department and relevant departmental head.
- The first line manager of the reporting person will conduct a preliminary investigation and complete an Incident Intimation Report (IIR) on prescribe form and submit it to concerned HSE staff.
- The report will be submitted to Management after review through Incharge HSE within 24 hours of the incident occurrence.
- The investigation will then be conducted by a cross departmental in charges team to find out the root cause and to recommend most suitable corrective/preventive action to avoid recurrence of incident/accident.
- Complete investigation report will be submitted by investigation team to Management within 72 hours after occurrence.

At incident location, any evidence that may assist with the investigation process should remain intact and untampered except for when under taking actions necessary to remove injured persons or to render the site safe.

PERMIT TO WORK

Permit to Work

A Permit to Work is a procedure to ensure that all potentially hazardous routine and non-routine work in any installation can be carried out safely. It is the means of coordination between all concerned departments/personnel involved in the work. Following is a quick summary of the permit to work procedure:

- A relevant permit to work is required to be obtained before starting all potentially hazardous routine and non-routine jobs.
- All work permits will be issued by the concerned area Engineer / Officer. No one below the rank of Junior Engineer is authorized to issue or accept the Cold Work Permit whereas Senior Engineer for all other critical work permits.
- Work Permit will be accepted by the Engineer / Officer who is responsible to execute the job.
- All work permits will place responsibility on the issuer and acceptor. It must be ensured that all safety measures mentioned in the work permit has been implemented before starting the job. Work permit must be completed accurately in all aspects.
- There are three copies of the work permit, first will be retained by the issuing authority and second will be retained by the HSE Department. The third copy will be displayed on the site of work. These copies will not be destroyed after work and proper record should be maintained.
- Job specified in a work permit should be restricted to the job itself. New permit to be issued for any additional job.
- If the job is not completed during the time mentioned on the permit, fresh work permit will be obtained.
- After the completion of the work, the work permit is required to be closed properly by making sure that the job is satisfactorily completed and the area is cleaned.
- Each work permit has a separate color code to identify the nature of the job being carried out. Description of these types of work permit is as follows.

Permit Name	Permit Color	Description
Cold Work	Green	For all jobs not covered by the other work permits
Hot Work	Red	For all jobs which involves creation of sparks e.g. welding, cutting, grinding etc.
Vessel Entry	Blue	For entry in confined spaces e.g. vessels, tanks, pits etc.
Height Work	Dark Pink	For jobs to be performed at height above 2 meter (6 ft.)
Crane Operation	Brown	For all jobs which involves crane operations
Electrical Work	Pink	For all jobs on any electrical circuit / system
Excavation & Civil Work	White	For all the excavation and civil works
Vehicle Entry	Orange	For entry of vehicles in certain hazardous areas/plant
Radiography	Black	For radiography jobs on any equipment or pipeline etc.
Crude oil/Product Pipeline	Yellow	For all jobs on crude oil/product pipelines inside and outside plant premises

Risk Assessment

Risk assessment is a systematic approach towards identifying hazards and assessing the level of risks associated with any activity, area or equipment. The purpose of risk assessment is to ensure that appropriate control measures can be implemented keeping in view the hazards and level of risks involved in any activity, area or equipment. Following are the basic guidelines for risk assessment process.

- Any critical activity should only be started once the risk assessment for the activity has been completed and agreed control measures are implemented.
- Risk assessment should be conducted by a cross-functional team of experienced staff members which should be well familiar with the activity, area and equipment.
- All risk assessments should be documented on the prescribe form named "OH&S Risk Assessment Form" which is readily available with all departmental in charges or can be obtained from HSE department.
- Risks should be evaluated based on their likelihood of occurrence and their consequences. The detail of evaluation is as follows:

LEVEL OF RISK						
LIKELIHOOD		CONSEQUENCES				
		Minor	Moderate	Major	Severe	Catastrophic
		1	2	3	4	5
Almost Certain	5	5	10	15	20	25
Likely	4	4	8	12	16	20
Possible	3	3	6	9	12	15
Unlikely	2	2	4	6	8	10
Rare	1	1	2	3	4	5

LEGEND		
20-25	EXTREME RISK	Several fatalities / equipment damage may occur if the corrective/preventive action is not taken.
12-18	HIGH RISK	Death or permanent disability / serious injuries or hospitalization to 1-2 persons; if corrective/ preventive action is not taken.
6-10	MODERATE RISK	Minor injuries only; First Aid treatment may be required if the corrective / preventive action is not taken.
1-5	LOW RISK	The activity is permissible after taking all relevant control measures and bringing risk as low as reasonably practicable. If control measures are not taken then same can lead to first aid case / Near Miss / any unsafe activity / unsafe conditions that may lead to increase in risk severity level.

Personal Protective Equipment

Personal protective equipment, commonly referred to as "PPE" is the protective equipment worn to minimize exposure to hazards that may cause workplace injuries and illnesses. Personal protective equipment may include items such as coveralls, hard hat helmets, safety shoes, gloves, safety glasses, earplugs or earmuffs, breathing apparatuses, chemical suites, full body harnesses etc.

Following are the guidelines for proper use of personal protective equipment.

- Appropriate personal protective equipment is provided by Company to its permanent employees, long term contractual staff, visitors, trainees, apprentices involved in operational areas as per company policy.
- All personnel must wear mandatory PPE (Coverall, Safety Shoes and Hard Hat) before entering in any operational area.
- Persons involved in hazardous tasks must wear specific personal protective equipment as per their job requirement and as mentioned in the risk assessment/permit to work for the job.
- Always wear the right & compatible PPE for the job. Take advice from your job supervisor or concerned field HSE staff if required.
- All PPE should be properly maintained, cleaned and stored for their long term and effective usability. Moreover, all PPE should be inspected at regular intervals.
- Damaged PPE which cannot be further used should be returned back to stores through concerned Field HSE Engineer as per company policy.
- Following are the most common PPE and their use. Any other specific PPE like breathing apparatus, full face mask etc. must be used as per job requirement and hazards involved.

Hydrocarbons Safety

Handling, storage, processing, transportation, decanting and filling operations of hydrocarbons must not be considered safe, unless the following safety guidelines are followed:

- Integrity of all operating systems, equipments, vessels, storage tanks, pipelines and processes that handle hydrocarbons must be ensured to prevent unplanned releases which could result in incidents.
- Risk assessments of all activities/areas which involve transportation, production, storage, use or disposal of hydrocarbons must be carried out and reviewed every year to identify and mitigate potential hazards.
- Risk assessments must consider any temporary and permanent changes in process, procedures, equipment, products, materials or substances.
- All electrical & mechanical equipment installed in areas where hydrocarbons are expected must be of proper rating as per hazardous area classification and international standards.
- Safe distances of all ignition sources from hydrocarbon processing equipment, vessels, containers, storage tanks pipelines and vehicles must be maintained as per applicable regulatory requirements and international standards.
- Atmosphere in hydrocarbons processing, storage, decanting, & filling areas must be monitored regularly to identify any leakages and to avoid fire & explosions.
- During operation and maintenance activities of any equipment which involves hydrocarbons, all necessary precaution must be taken to prevent leakages, spillage, fire, explosion, personnel exposure and environmental damage.
- All equipment & processing plants which involves hydrocarbons must be operated within safe operating limits.
- Conscious labeling on equipment, storage vessels, containers, tanks and pipelines carrying or containing hydrocarbons or other hazardous material must be ensured as per appropriate international standards.
- Any safety equipment/control/device installed at hydrocarbon processing plants, decanting areas, storage areas, filling areas must never be bypassed. For any unavoidable situation, a risk assessment, permit to work and formal authorization from

Chemicals Handling

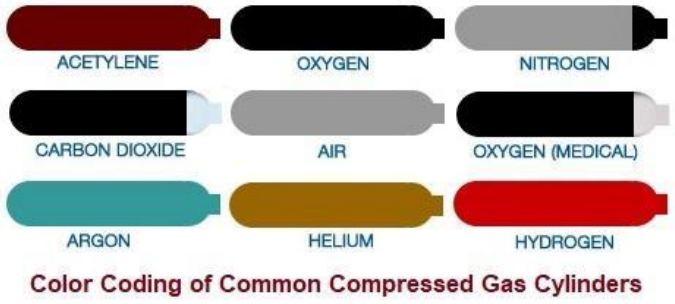
Any substance or any mixture around us is a chemical. It may occur naturally and can be made artificially. Chemicals may cause an immediate or long term risk to health or safety of persons and property through their characteristics. Follow these guidelines while handling chemicals:

- All chemicals should be handled and stored in a safe manner so as to avoid injury or adverse impact.
- It is important to consider chemical compatibility as some chemicals can react when stored with each other.
- Chemical storage should be well ventilated and away from other associated hazards like ignition sources.
- Avoid storing flammable chemicals in direct sunlight or near other heat sources.
- No explosive chemical should be stored in general chemical storage areas. Also explosive chemicals must be handled only by staff which is authorized and specially trained to do so.
- Ensure that all chemical containers are properly labeled and warning signs are posted near chemical storage area. Ensure that material safety data sheets (MSDS) should be available nearby.
- Use of appropriate personal protective equipment (PPE) must be ensured to avoid harmful effects while handling and use of chemicals. It is important to choose correct & compatible type of PPE for specific type of chemical. Information regarding required PPE can be obtained from material safety data sheets (MSDS).
- Wash your hands and contacted skin promptly after handling and use of chemicals or after leaving the chemical storage area.
- Eating and drinking must be avoided until you have washed your hands properly
- Chemical waste should be segregated into appropriate waste containers and disposed off according to manufacturer instructions as found in MSDS.
- Emergency equipment like eye wash showers, first aid boxes, spill kits etc. should be made available at point of storage and use.

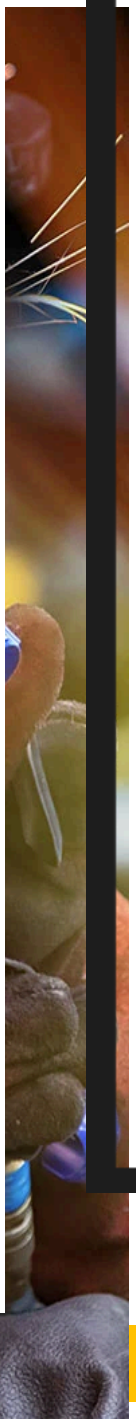
Hot Work

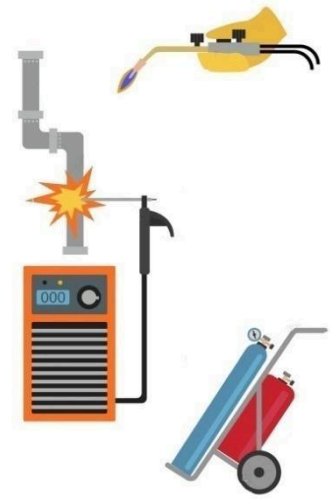
Hot work is any work that involves flame producing, spark producing or heat producing activities capable of igniting flammable vapors or combustible material. It should be the first priority to avoid hot work as far as possible and substitute it with safer alternatives like cold welding or bolting etc. If not avoidable, then understand the hazards and adopt following safety measures:

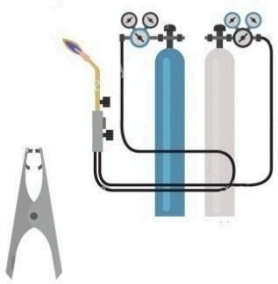
- Always try to perform the hot work in a designated safe area away from all flammable or combustible materials.
- Perform detailed risk assessment for the job and obtain permit to work. Never start work unless all safety precautions and control measures mentioned in the risk assessment & permit to work are in place.
- Conduct a pre job safety meeting/toolbox talk to communicate all hazards, safety precautions and relevant control measures to all concerned.
- Monitor the atmosphere using portable gas detector to confirm that there is no flammable atmosphere present in the area. Keep monitoring the area continuously till the hot job is complete.
- All oxidizing, flammable and combustible material within 15 meters of the worksite should be removed. Oil and chemical spills or deposits should be cleaned thoroughly and sanded.
- The equipment, tank, pipeline, vessel etc. on which the hot work is to be carried out should be washed and drained multiple times to ensure that there are no traces of flammable or combustible material left.
- Any potential sources of flammable vapor or gas, such as sample points, vents, drains, or relief valves situated within hot work site should be rendered safe by isolation/blinding.
- Installation of suitable plugs, double isolations and/or inert gas purging should be considered for hot jobs on high risk pipelines and equipment where the risk of flammable atmosphere is still present.
- Use fi rotect personn avoid sparks r
- Only tra rform hot wor

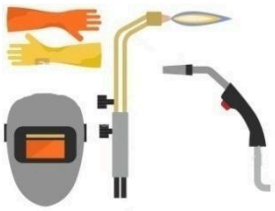


Color Coding of Common Compressed Gas Cylinders









Hot Work Equipment

Hot work equipment is one of the major hazards while performing any hot job. Any unsafe use of hot work equipment can lead to catastrophic incidents. Following are the guidelines for safe use of hot work equipment:

- Hot work equipment should only be operated by authorized and trained welders/personnel.
- All hot work equipment should be of appropriate type, kept in good condition, inspected and properly maintained.
- Install flashback arrestors on the outlets of all oxygen/fuel cylinder regulators and on the inlet of oxygen/fuel cutting torches.
- Always keep all welding gas cylinders in upright position and secured in a rack/portable cart.
- Ensure acetylene cylinders have a handle or valve wrench in place at all times.
- Oxygen regulator valves, gauges and fittings should not be lubricated with oil or grease.
- All hoses, valves, gauges, and fittings should be of proper rating, leak free and inspected at regular intervals. Any damaged or leak part should not be used.
- Welding plants should be properly earthed before starting operation.
- Terminals and live components of the welding plants should be adequately protected.
- Isolation switches on welding plants shall be readily accessible.
- Cables should be frequently inspected to ensure the insulation is intact. Any damaged cables or electrical holders should be properly repaired or replaced.
- Welding return/ earth cable should be attached as close as possible to the work instead of energizing the entire interconnected equipment.
- Keep welding cables away from power supply cables and high-tension wires.
- Engine-driven welding machines should be equipped with appropriate spark-arrestor mufflers.
- Welders should wear appropriate personal protective equipment suitable for hot work while operating hot work equipment.
- Turn off all equipment and close compressed gas cylinder valves

If hoses connected with welding gas cylinders catch fire, turn off the supply valves first then extinguish the fire.

Work at Height

Working at height means working at any place where a person can potentially fall and injure himself. Generally any work at a height greater than 1.8 m (6 ft) above the reference level is considered as height work. Following are the recommended control measures for safe working at height:

- Avoid working at height as far as possible.
- Try exploring alternate ways of working at height while standing on ground level. (e.g. painting of roofs can be done using long sticks rather than using a ladder)
- If working at height is unavoidable, perform detailed risk assessment for the job and obtain work at height permit. Never start work unless all safety precautions and control measures mentioned in the risk assessment & permit to work are in place.
- Conduct a pre job safety meeting/toolbox talk to communicate all hazards, safety precautions and relevant control measures to all concerned.
- Always try to use collective methods for fall protection and falling of material protection (e.g. installation of guardrails, toe boards, fences etc.)
- If collective fall protection is not practical then personal fall protection equipment must be used (e.g. safety harness, fall arrestors etc.)
- Personal fall protection equipment must be attached to an appropriate anchor point.
- Make sure all personal protective equipment used for working at height is properly inspected before use.
- Try to minimize the distance of fall from height by reducing the vertical distance. Never take shortcuts while climbing to height platform. Use proper access means.
- Avoid placing material and equipment near edges of work platforms. Always secure any tools you are taking at height.
- Use work at height equipment in proper and safe way and follow their specific safety instructions (e.g. ladders, elevating platforms, scaffolds etc.)
- Always secure any openings, unprotected edges etc.
- Only trained and competent staff that is medically fit should be allowed to perform work at height.

Avoid Working at Height

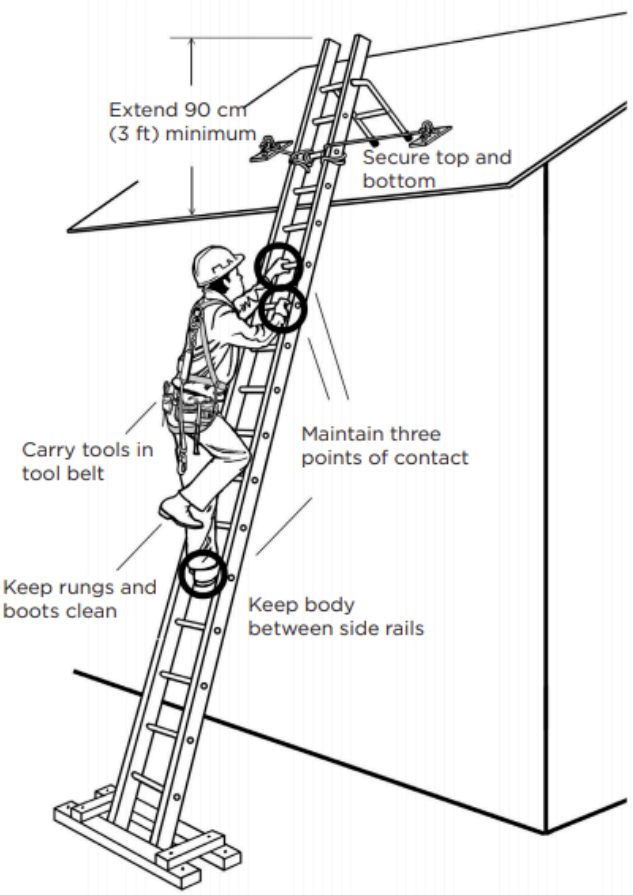
Use Collective Fall Protection

Use Personal Fall Protection

Ladders Safety

A ladder might be a common tool, but just like any other piece of equipment, it needs to be used correctly to be safe. Following are the guidelines for safe use of ladders:

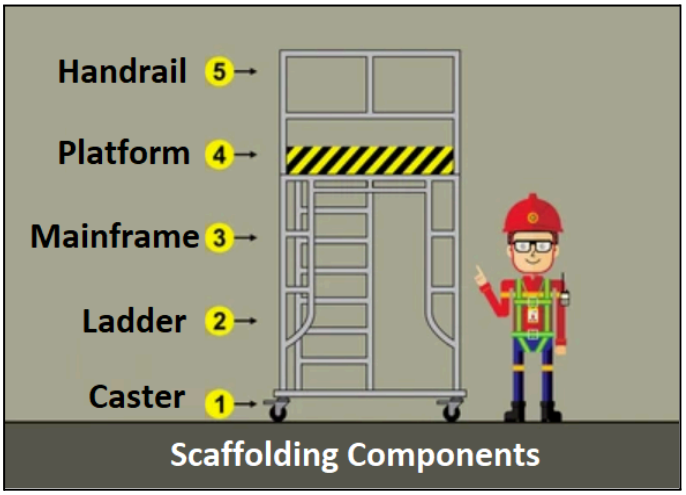
- Choose the right ladder for the job. Ladders are made of different types of material, shapes and sizes. Choosing correct type of ladder is the first step toward ladder safety. For example, using a metallic ladder for electrical work can be lethal.
- Thoroughly inspect the ladder before use. Never use the ladder if there is any visible sign of damage.
- Always set the ladder on a firm and leveled surface. Never set ladders on tables, chairs or other unstable objects.
- Erect the ladder up at a safe angle with 1:4 ratios between height and base. One foot out for every four feet up, depending on length.
- Secure the top and bottom of the ladder. Keep areas at the top and bottom clear of debris, scrap, material and other obstructions.
- When climbing up or down, always face the ladder and maintain 3-point contact.
- Never carry tools, equipment, or material in your hands while climbing. Secure them in a carrying bag on your back or with belt.
- Ensure that ladder rungs and your shoes are clean before climbing.



Scaffolding Safety

Scaffolding is a temporary structure used for work at height for construction, maintenance and repair jobs. Unsafe scaffolding has the potential to result serious accidents. Following are the guidelines for safe use scaffoldings:

- All scaffoldings should be erected as per manufacturer guidelines and applicable standards and must be inspected by a competent person thoroughly before use.
- Only competent and authorized persons should be allowed to erect and work on scaffoldings.
- Perform detailed risk assessment for the job and obtain work at height permit. Never start work unless all safety precautions and control measures mentioned in the risk assessment & permit to work are in place.
- Conduct a pre job safety meeting/toolbox talk to communicate all hazards, safety precautions and relevant control measures to all concerned.
- All connections of the scaffold should be tightened and properly secured. No section of the structure should be cracked, rusty, bent, or deformed.
- The work platform of the scaffold should be leveled and free from any damage. Proper guardrails and toe boards should be available.
- No one should be permitted to erect or carry scaffolding near live overhead electrical cables, or equipment.
- Suitable fall protection equipment should be used while erecting, dismantling and working on scaffoldings.
- Climbing on the scaffold should only be made through proper climbing ladder installed with the scaffold. Any other means of climbing should be strictly avoided.
- Wheels and casters of the scaffoldings should be locked while workers are on the scaffold.
- Appropriate precautions should be taken for working near hazardous locations e.g. plant areas, confined spaces etc.
- Where materials are to be positioned on scaffolding, it must be ensured that the scaffolding is not overloaded.



Scaffolding Components

Confined Spaces

A confined space is any space which is large enough for human presence but has restricted means of entry or exit and is not designed for continuous human occupancy. Confined spaces have the potential to contain hazardous or flammable atmosphere. Some examples of confined spaces are tanks, vessels, sewers, cellars etc. Following are the recommended control measures for safe entry and working in confined spaces:

- Avoid confined space entry as far as possible. Entry should be made only when all other options have been ruled out.
- Perform detailed risk assessment for the job and obtain vessel entry permit. Never start work unless all safety precautions and control measures mentioned in the risk assessment & permit to work are in place.
- Conduct a pre job safety meeting/toolbox talk to communicate all hazards, safety precautions and relevant control measures to all concerned.
- Ensure that all sources of energy & pipeline streams connected with the confined space have been rendered safe by isolation/blinding.
- Ensure that the confined space to be entered is properly drained, washed and ventilated for sufficient amount of time to remove any hazardous or flammable contents. All vents/manholes should be kept open all the time.
- Perform atmosphere testing using portable gas detector inside the confined space at different points. Never enter the confined space if atmosphere inside the confined space is hazardous or flammable. Verify and repeat the atmosphere test often as possible.
- Only trained and competent staff that is medically fit should be allowed to perform work inside confined space.
- Hazards inside the confined space may change with time keeping in view the job in progress. Ensure that changing hazards have been considered and workers are trained to recognize the changes.
- A stand-by person must be stationed all the time at the entry point and be able to communicate with the entrant.
- A suitable harness with appropriate lanyard should be attached to the entrant. The other end of the lanyard should be outside the confined space for non-entry rescue in case of emergency.

Conditions in a confined space may change rapidly. Ensure frequent atmospheric testing and adequate rest breaks for the entrants.

Crane Operations

Cranes have the ability to lift heavy loads however they also have an increased potential for catastrophic incidents. Following are the guidelines for safe crane operations:

- Cranes should only be operated by qualified/certified crane operators having valid HTV license & crane operator certificate.
- The crane and all other lifting gears involved in the crane operation must have suitable load lifting capacity and must be certified.
- Detailed inspection of the crane & lifting gears should be conducted before starting crane operations.
- Perform detailed risk assessment for the job and obtain crane operation work permit. Never start work unless all safety precautions and control measures mentioned in the risk assessment & permit to work are in place.
- Conduct a pre job safety meeting/toolbox talk to communicate all hazards, safety precautions and relevant control measures to all concerned.
- All energy sources which are potentially hazardous to the crane job shall be secured, relieved, disconnected, and or restrained before any crane job.
- No other work should be permitted within the crane swing radius during crane operations.
- Crane outriggers should be placed on flat, firm surface.
- Suitable taglines should be tied with the load for safe handling in the air.
- A competent signalman should be deputed at visible angle. The signals should be clear and known to everyone.
- Under no circumstances anyone should stand below the lifted load or ride on a load that is being lifted.
- Crane operations should be avoided in thunderstorm and high winds.
- During movement of crane, proper route for crane movement should be decided and communicated to all concerned. Outriggers & crane boom must be closed and swing lock latched. No slings/chains/belts should be present in crane hooks.
- Back alarm/horn should be available and functional to alert [illegible] on reversing crane.
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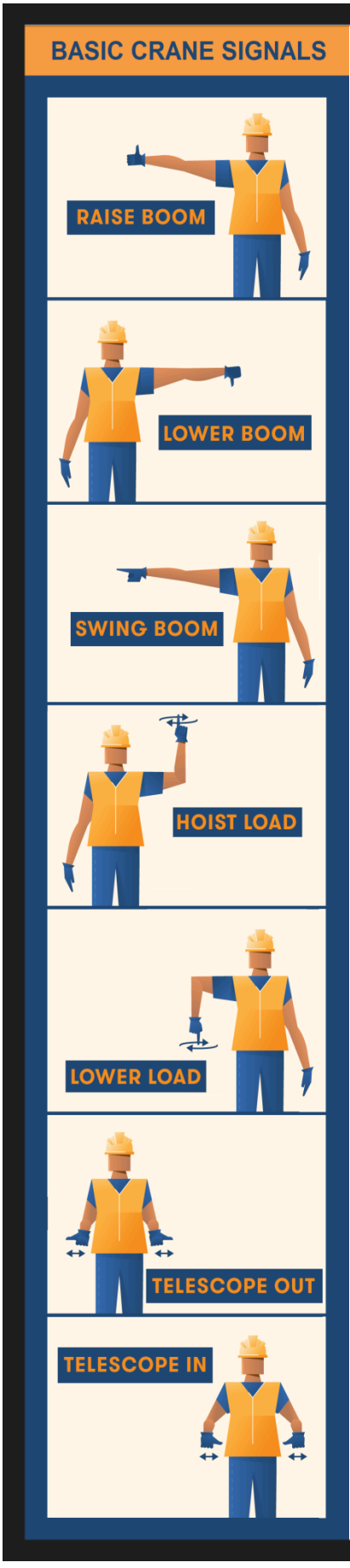
A stop signal must always be obeyed regardless of who gives the signal.



Forklift Operations

Although a forklift is very useful equipment in any workplace, there are number of risks involved in it operation. Following are the guidelines to ensure safe forklift operations:

- Forklift should only be operated by qualified/certified forklift operators having valid HTV license & forklift operator certificate.
- The forklift and all other lifting gears involved in the forklift operation must have suitable load lifting capacity and must be certified.
- A walk around inspection of the forklift & lifting gears should be conducted before starting forklift operation every day.
- Forks of the forklift should never be used to lift personnel or as a work at height platform.
- Under no circumstances anyone should stand below the lifted forks or ride on the forks.
- Forks of the forklift should never be used to excavate ground or to push objects/equipment. Also never lift a load with one fork.
- A seat belt must be worn while operating a forklift.
- All forklifts should be equipped with back alarm/horn to alert personnel when reversing.
- Keep forks low to the ground to provide clear forward visibility. If the load restricts the operator visibility, operate the forklift in reverse.
- Operate forklift within the designated speed limits. It's important to not stop, turn, and change directions suddenly.
- When placing loads on forks, be sure to check them for balance. Travel with the load tilted backwards and keep forks as low as possible to increase the stability of the equipment.
- All other safety hazards as per area condition (e.g. ground leveling, un-compacted surface, other vehicles in the vicinity etc.) should be well addressed during forklift operations.

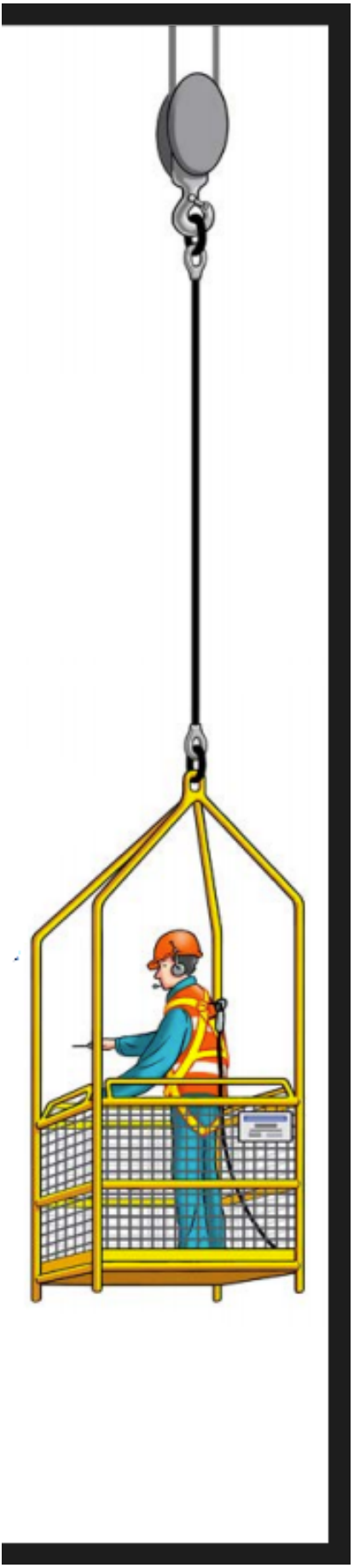
Obstructed Visibility Can Lead to Accidents

Lifting Accessories/Equipment

Lifting accessories comprise of devices that connect the load to the crane or any other lifting machine. These are the most importance parts in terms of safety of personnel and equipment during any lifting operation. Following are the guidelines to ensure safe use of the lifting accessories.

- All lifting accessories which are to be used during lifting operation should be inspected, certified and fit for the intended purpose.
- Use of substandard handmade lifting accessories is strictly prohibited.
- A visual examination of all lifting accessories should be carried out before every use.
- Any visibly damaged lifting accessory should never be used for lifting purpose, no matter what load is to be lifted.
- Installation of the lifting accessories with the load & crane/lifting device should be performed only by authorized and competent persons.
- All lifting accessories should be installed in an appropriate and safe manner to prevent any risk of falling load.
- Only correct type of lifting accessories should be used keeping in view the type of load and all associated safety factors.
- Personnel should keep their hands, fingers and feet clear of pinch points when installing lifting accessories.
- Under no circumstances, the safe working load limit of the lifting accessories should be exceeded.
- All lifting accessories should be stored at designated area in an orderly manner.
- Welding and repairing of lifting accessories should be avoided. Any unavoidable repairs must be subjected to recertification after proper inspection as per manufacturer guidelines.

Some Examples of Unsafe Lifting Accessories



Personnel Lifting

Cranes & hoists are not specifically intended for lifting personnel but a man riding basket may be suspended from a crane's hook for work at height for short periods of time. Following are the guidelines to ensure safe lifting of personnel using a man riding basket:

- When the carriage of personnel by crane is required, the man riding basket must be suitably inspected, tested and have a valid third party test certificate.
- The basket's total weight & weight lifting capacity must be mentioned on the test certificate.
- Crane, wire ropes and other attached lifting equipment must also be inspected and have a valid inspection certificate.
- All structural members of man riding basket should be free from any visible defect/deformation.
- All cranes used for carrying personnel must be provided with a dead man's handle facility to ensure that the brake is applied when the control lever is released.
- Personnel riding the basket should be trained, authorized and medically fit to perform work at height.
- Crane hooks must be fitted with safety latches or equivalent and the operator must be in his cabin at all times when the personnel are lifted.
- Ascending and descending should be made at slow speed.
- Limit devices must be fitted to the cranes to ensure that the carrier cannot be raised above the over hoist limit of the crane.
- The limit switch must be tested, daily, before raising persons in the baskets.
- All personnel using man riding basket must be secured to the master link of the supporting sling or crane hook by a safety harness.
- All personnel should keep all parts of the body inside the man basket during work at height.
- It is strictly forbidden to drive the crane while there is personnel onboard the man basket.
- The crane operator must at all times have a clear visual of the personnel riding the man basket and also be able to communicate with them audibly.

Man riding basket must not be loaded in excess of its rated capacity.

Excavation/Ground Disturbance

Excavation work generally means work involving the removal of soil from a location using tools or machinery. Excavation is one of the most hazardous activities. Following are the guidelines to ensure safety during excavation work:

- Perform detailed risk assessment for the job and obtain Excavation/Civil work permit. Never start work unless all safety precautions and control measures mentioned in the risk assessment & permit to work are in place.
- Conduct a pre job safety meeting/toolbox talk to communicate all hazards, safety precautions and relevant control measures to all concerned.
- Excavator should only be operated by qualified/certified excavator operators having valid HTV license & excavator operator certificate.
- Ensure that all underground hazards (i.e., pipelines, electric cables, instrument cables etc.) have been identified, located and if necessary, isolated.
- Soil movement should be controlled to prevent collapsing by appropriate shoring, sloping, benching etc. as per requirement.
- Suitable entry and exit point shall be provided when working in trenches, considering any possible emergency and weather condition.
- All excavations, no matter how much deep should be adequately barricaded to prevent anyone from falling in.
- All other safety hazards as per area condition (e.g. ground condition, un-compacted surface, other vehicles & equipment in the vicinity etc.) should be well addressed.
- All excavation jobs must be supervised by a competent person having authority to stop any unsafe work.
- Use proper personal protective equipment keeping in view the job requirement.

Hand & Power Tools

A tool that is manually operated without use of external power source is called a Hand Tool (Hammer, screwdriver, pliers, wrench, cutting saw, etc.) whereas a tool that is powered by an external power source like electricity, air or fuel engine is called a Power Tool (Grinder, drill machine, abrasive wheel etc.). There are many hazards associated with hand and power tools however they can be used safely by adopting following safety precautions:

- All hand & power tools must be used only by trained and authorized personnel only.
- Always use right tool for the right job. Never use any tool which is not designed to perform the specific job.
- Ensure that safety guards, grounding and safety switches are in place and in good condition.
- Use appropriate personal protective equipment suitable for the job being carried out with hand & power tools.
- Always ensure that operating switch of the power tool is at off position before connecting the power source.
- Be extra cautious during electric work. Ensure that the tool is suitable for the electric work and no part of its insulation is broken or damaged.
- Always tie/secure the tools when carrying them at height.
- Never use hand or power tool by holding work piece with one hand and the tool with the other. Secure the work piece first.
- Never use sparking tools in flammable atmosphere.
- Keep faces of hammers, chisels, bars or similar tools free of mushroom heads and other defects.
- Wooden handles of all tools should be sound and securely wedged or fastened to the tool.
- Never put extra ordinary force or full body weight on a tool. Use a bigger tool instead.
- Always store hand & power tools in a designated safe location.
- Inspect all hand & power tools at defined frequencies and maintain them in good working condition. Never use defective or improper tools and never modify the design of a tool.
- Do not wear loose clothing or jewelry when using hand and power tools.
- Be ready for any emergency situation. Know the location of

Never pull the electrical cord or hose to disconnect any power tool.

Mechanical Equipment

There can be numerous potential hazards around mechanical equipment such as cutting edges, gears, chains, revolving shafts and rotating blades etc. Effective safety controls on mechanical equipment prevent the workers from serious incidents. Following are the guidelines for safe use of mechanical equipment:

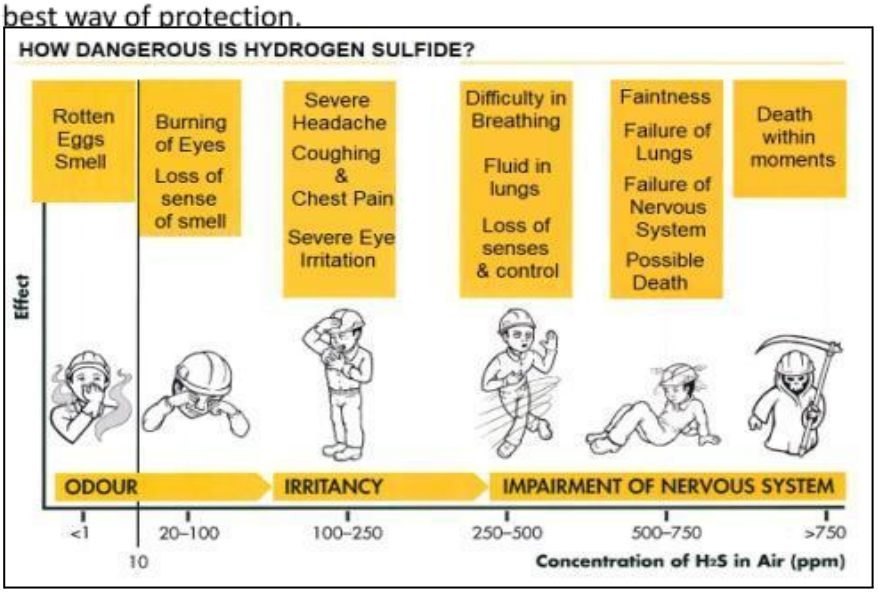
- Only authorized persons/operators should be allowed to operate relevant mechanical equipments installed within company premises.
- Any mechanical equipment which requires constant supervision should never be left unattended.
- All internal moving parts of the mechanical equipment should be properly guarded and secured.
- Any maintenance work on mechanical equipment should be carried out after proper isolation of all energy sources and after obtaining relevant permit to work and risk assessment.
- Any guards removed for maintenance or repair purpose should be installed back before starting the machine.
- To ensure safe operation of the mechanical equipment, preventive maintenance schedule as per manufacturer's recommendation should be followed strictly.
- Any abnormal noise or vibration in the mechanical equipment should be reported to all concerned and must be rectified at earliest.
- Appropriate emergency stop buttons to stop the mechanical equipment in case of emergency should never be bypassed and must be functional at all times.
- Appropriate firefighting equipment & first aid box should be kept available at easily approachable distance from where the mechanical equipment is installed.
- All personnel should wear necessary personal protective equipment as per requirement while working around mechanical equipment.
- Never wear loose clothing or jewelry items around any mechanical equipment.

Removal of guards from mechanical equipment while in operation is strictly prohibited.

Hydrogen Sulfide (H_2S)

Hydrogen sulfide is a colorless, flammable, extremely hazardous gas with a "rotten egg" smell. The primary route of exposure is inhalation and the gas is rapidly absorbed by the lungs. As Hydrogen Sulfide (H_2S) occurs naturally in crude oil, natural gas and sewers, there is probability of encountering with H_2S at "YOUR COMPANY NAME" fields/Rig. Follow these guidelines to be safe from H_2S hazards:

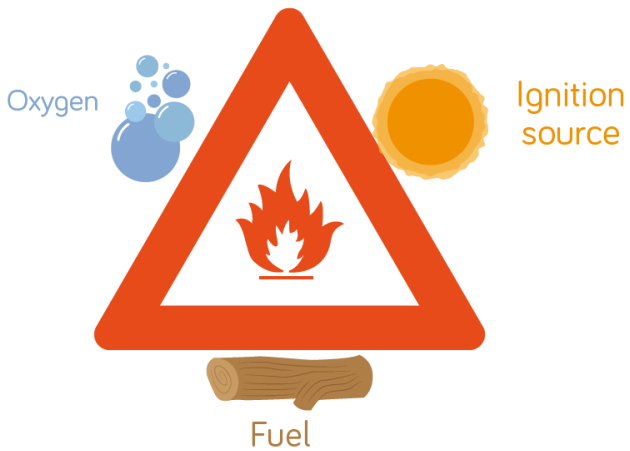
- All personnel required to work near equipment containing hydrogen sulfide must be trained in H_2S safety and use of breathing apparatus.
- Cautionary signs must be posted at appropriate locations where H_2S gas may be present.
- Ensure proper & timely maintenance of H_2S handling plant, equipments, vessels, pipelines to avoid H_2S leakages. Since H_2S is highly corrosive, so timely maintenance is an important measure to avoid exposure.
- Adequate number of calibrated fixed & portable H_2S gas detectors must be available & operational in areas where H_2S gas may be present.
- Never enter any place where H_2S gas is confirmed to be present unless you are wearing a suitable breathing apparatus and other necessary personal protective equipment.
- Immediately evacuate the area to if you smell rotten eggs. Never rely on your nose as H_2S impairs the sense of smell.
- Never try to rescue any person affected by H_2S unless you are trained to do so and wearing a suitable breathing apparatus.
- Atmosphere must be tested to check the presence of H_2S before entering in confined spaces, process vessels, tanks, cellars and sewerage systems. Use ventilation systems to ensure that H_2S and other toxic or flammable contents are adequately vented before entry.
- Always remember, avoiding exposure to hydrogen sulfide is the best way of protection.



Fire Safety

There is no denying that fire can be very dangerous. The potential for fire in a workplace or home is not something to take lightly. Follow these guidelines to avoid any fire incident:

- Avoid smoking in all operational areas & offices. Smoke only at designated smoking areas.
- Do not use mobile phones or other electrical devices (not suitably rated for hazardous area) in any hazardous area where there is potential of presence of flammable atmosphere.
- Minimize the storage of combustible material (e.g., paper and wood) in offices areas. Essential documents and records should be stored in orderly manner.
- Keep all potential ignition sources away from flammable and combustible materials.
- Take necessary precautions to avoid fire from household/office/operational area appliances & equipment. Never alter or make unauthorized repair to any equipment, appliance, pipeline, electrical wiring etc.
- All electrical equipment, wirings and fixtures should be inspected at regularly frequencies to avoid electrical fires.
- Avoid hot work as far as possible. For unavoidable hot jobs, always obtain a hot work permit, conduct risk assessment and implement all relevant control measures to avoid fire & explosion.
- Take necessary precautions to prevent ignition from static electricity for all hazardous equipment and during all hazardous activities.
- Ensure good housekeeping in all areas and timely cut wild bushes and grass.
- Use only properly rated equipment as per hazardous area classification in operational areas.
- Ensure timely inspection of all fire detection (smoke detectors, alarms etc.) and fire protection (fire extinguishers, fire pumps etc.) equipment.
- Never misuse any firefighting equipment or relocate from its designated area.



Electrical & Appliances Safety

Working with electricity and utility appliances must not be considered safe, unless the following safety guidelines are followed:

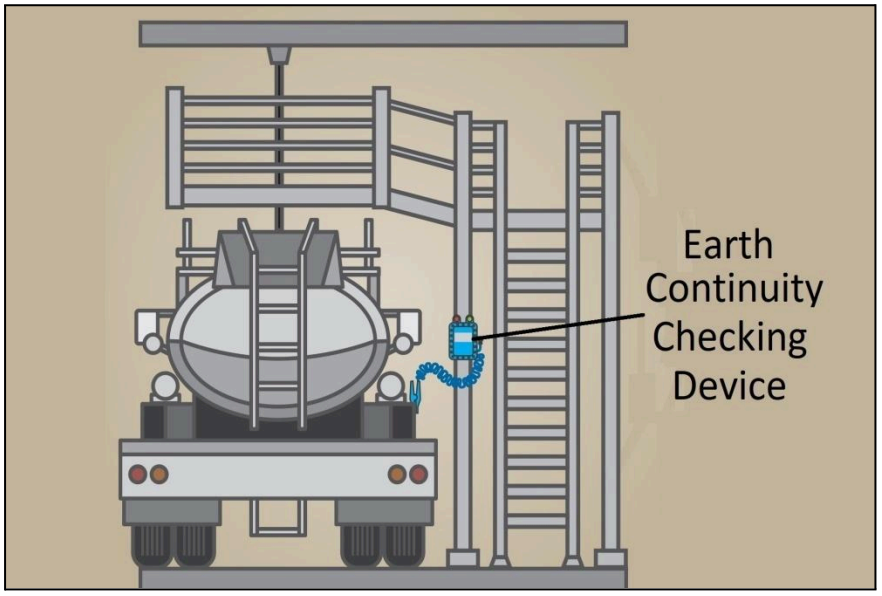
- All new installations of gas, electricity and water lines within company premises including residences should be installed as per applicable engineering standards and relevant safety precautions as per manufacturer guidelines.
- This specially applies to materials of piping, fittings, regulators and connections.
- No person other than engineering/maintenance staff is allowed to install, repair, alter or make connections to any part of the electricity, gas and water lines/appliances installed within company premises.
- First time operations of all such appliances should only be started after proper inspection.
- It is the responsibility of end user to ensure safe operation of the appliances under his control and to report any hazard/complaint immediately to all concerned.
- Inspection of all electrical lines, wirings, circuit breakers, connections and appliances should be ensured as per relevant SOPs.
- Adequate earthing of equipment and metallic structures must be ensured and tested as per defined frequencies.
- Work on live lines must be avoided wherever possible.
- Ensure to conduct proper risk assessment, compliance of permit to work, relevant SOPs and use of appropriate PPE's before starting any electrical work.
- For working in hazardous areas, make sure all electrical tools are suitable for potentially flammable or combustible atmospheres.
- While undertaking excavation work, the possibility of a buried electrical cables or utility lines should always be considered.
- Never overload circuits and extension boards.
- Never keep water near electrical appliances and cables. Also electricity should never be handled with wet hands.
- Shut down all electrical appliances before leaving the offices/ rooms.

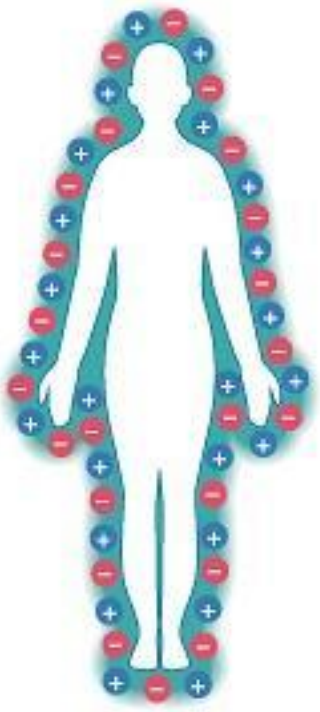
Never repair or alter any electrical or utilities connections by yourself. Only authorized Engineering/Maintenance staff is allowed to do so after taking appropriate safety measures.

Static Electricity Precautions

Electric charges can build up on an object or liquid when they move in contact with other materials. This is called static electricity. When enough charge is built up, a spark is created which may lead to fire or explosion. Follow these guidelines to be safe from static electricity hazards:

- All metallic structures, operational area equipments and electrical equipment should be properly grounded/ earthed to prevent build up of static charges.
- Suitable lightning arrestors should be installed in high risk areas for adequate protection from lightning.
- Earthing status should be checked at regular intervals to ensure that it remains intact and effective.
- Prior to transferring of liquid (oil, water or chemicals) from one container to another or to a transport vehicle, attach earthing cables with the containers/vehicle.
- Do not use mobile phones in any hazardous area where there is potential of presence of flammable atmosphere. Electromagnetic waves of mobile phones have the potential to build up static charge.
- Avoid wearing woolen sweaters or fabrics with high potential of static charge buildup (Silk, wool, synthetic fabric etc.) in hazardous areas. Use Company provided PPE instead.
- Only company provided safety shoes (Anti static) should be worn in all hazardous areas to prevent from static charge buildup in the body.
- Be extra careful during filling of flammable liquids in drums, cans or tanks. Avoid splashing and ensure proper earthing as pre requirement.
- For high risk operations (e.g. crude or LPG decanting/filling operations) ensure that earth continuity checking devices (Scully System) is functional and connected properly before starting the operation.






Mechanical


Electrical


Pneumatic


Thermal


Hydraulic


Chemical

ENERGY ISOLATIONS

Energy Isolations

Isolations provide barriers and protection from hazards such as electricity, hazardous materials, stored energy and moving machinery. To ensure effective isolations from such hazards, the following minimum requirements should be met:

- Before starting any isolation activity, it must be ensured that the designated authorized person has performed the risk assessment and relevant permit to works have been obtained.
- Keeping in view the job requirement, all necessary isolation points and methods of isolation should be agreed by all concerned involved in the job.
- For electrical isolations, lockout/tag out all necessary electrical breakers/switches before any activity requiring personnel to work on or near de-energized circuit parts or where there is risk of unexpected startup of equipment.
- Other energy sources such as pressurized gas, process fluids, and pneumatic, hydraulic, thermal, chemical, and mechanical systems should be isolated by valves, blinding, double block and bleed, or disconnecting.
- Shut down/de-energize equipment and remove any residual energy (e.g., contents of process piping) by draining, venting, or purging after isolation.
- Identify & crosscheck isolations prior to beginning work.
- Tags with a “DANGER, DO NOT OPERATE” tagline should also be used wherever required.
- Before starting work, try to start or energize the equipment locally to verify proper isolation and that the equipment is de-energized.
- After a change in conditions or after any work break, a retest to revalidate the absence of energy should be conducted.
- Only the personnel originally attaching the lockout/tag out are authorized to remove it. When a shift change occurs, the oncoming supervisor must review isolation locations and placement of lockout/tag out.
- Remove isolations and lockout/ tag out only when the work is completed and the equipment is safe to energize.
- Necessary personal protective equipment must be worn while performing or removing energy isolations.

Simply closing a valve or turning off equipment from selector switch is not an effective method of isolation.

High Pressure Operations

Working with pressurized equipment is always potentially dangerous. Any pressurized equipment should not be considered safe unless appropriate safety measures are adopted. Following are the guidelines for safe working with pressure.

- Only authorized & trained personnel should be allowed to operate, pressurize or depressurize high pressure equipment which should be well familiar with the procedures and associated hazards.
- All valves controlling the high pressure equipment/pipelines must be opened or closed slowly.
- No attempt should be made to locate high-pressure leaks by feeling with the hands.
- Always be prepared for the variations in pressure as sudden changes of pressure can cause noise, severe vibration and shock loads which can cause panic situations.
- Securely anchor high pressure relief lines and any above-ground pressurized line that could move during operations.
- Pressurized lines where whip checks or hose safety lanyards are installed must be depressurized completely before removing any whip check or hose safety lanyard.
- During pressurization of any equipment, all unnecessary personnel should stay out of the immediate danger area until the operation is completed.
- Barriers or signage should be posted to prevent unauthorized personnel from entering high pressure areas to avoid any injury in case of equipment failure.
- Always check for trapped pressure by opening bleed ports before opening any piping or equipment.
- Timely calibrate all pressure gauges installed on pipelines and equipments.
- Keep body and hands out of line of danger when removing any plugs or caps.
- During opening of any flange, bolts should be loosened first and then flange should be carefully separated before completely removing the bolts.
- Pressure Equipment such as paint spray guns, high-pressure jetting equipment, and sand blasting equipment should always be directed away from the body and away from other personnel.

Use only a high point bleed port to verify that all pressure has been relieved due to potential plugging of the low-point drains.

Hydrostatic testing

A hydrostatic test is a way in which equipments, vessels, pipelines, and tanks are tested for strength and leaks. Hydrostatic testing normally involves pressurizing the equipment above its normal operating pressure which can be hazardous in many ways. Following minimum safety requirements should be implemented before starting any hydrostatic testing activity.

- Only authorized & trained personnel should be allowed to perform hydro testing which should be well familiar with the procedures and associated hazards.
- Perform detailed risk assessment for the job and obtain relevant work permit. Never start work unless all safety precautions and control measures mentioned in the risk assessment & permit to work are in place.
- Conduct a pre job safety meeting/toolbox talk to communicate all hazards, safety precautions and relevant control measures to all concerned.
- All critical factors like locations of check valves, air vents, lowest-rated components, relief valves, test medium, location of filling points, and support requirements of equipment, safe clearance distances, and points of inspections must be considered before starting the hydrostatic test.
- All testing equipment involved in hydro testing activity should be of proper rating, inspected and certified. Also all pressure gauges should be free from any errors and calibrated.
- Pressure test sequence, intervals, and duration of pressure test must be clear and agreed with all concerned.
- Place necessary barricades and warning signs around the testing area and keep unauthorized personnel away from danger zone.
- Disconnect and/or blind equipment or piping that is not being pressure tested. Install restraints to restrict movement of the piping and joints during the test.
- Vent hazardous gases or vapors clear of any areas where personnel are working or possible ignition sources.
- Adequate test relief valves should be installed to avoid vacuum during draining of test fluid or overpressure due to thermal expansion.
- Do not leave test pumps unattended while in operation, unless

Do not exceed pressures above the recommended test pressure of the equipment / piping.

Pressurized Containers

A pressurized container or compressed gas cylinder is a portable pressure vessel for storage of high volume of gases above atmospheric pressure. There is wide range of hazards associated with pressurized containers specific to their contents and use. Follow these guidelines while handling & use of pressurized containers:

- Avoid mishandling of pressurized containers/compressed gas cylinders and store them at designated safe area.
- Handle all pressurized containers/compressed gas cylinders with care and avoid dropping or hitting them against anything.
- All pressurized containers/compressed gas cylinders must be placed in upright position and be secured with a chain or strap in a proper rack or cabinet.
- Compatible valve protector caps must be in place on all compressed gas cylinders all the time except while in use.
- Always properly secure all pressurized containers/compressed gas cylinders before transportation.
- Oxygen and fuel gas cylinders must be stored at least 20 feet apart or be separated by a non-combustible barrier.
- Avoid storing pressurized containers/compressed gas cylinders in confined areas as any leakage can result in dangerous gas buildup in the area.
- Ensure that all pressurized containers/compressed gas cylinders are properly labeled or color coded for identification as per various types of cylinders & their contents.
- Never temper the identification label or change the color of pressurized containers/compressed gas cylinders.
- Use only proper standardized fittings, adaptors, hoses, flashback arrestors etc. with the pressurized containers/compressed gas cylinders. Ensure to inspect them at appropriate frequency.
- Keep empty pressurized containers/compressed gas cylinders away from full ones.
- Never try to repair any portable pressurized container/compressed gas cylinder.
- Always use appropriate personal protective equipment while handling and use of pressurized containers/compressed gas cylinders.

Color Coding of Common Compressed Gas Cylinders

Compressed Air

Compressed air is used almost in every workplace. Due to the fact that it is so common, people fail to recognize its potential hazards. Citing it as a major hazard, follow these guidelines while working with compressed air:

- All hoses, accessories, air compressors and air receiving vessels should be inspected at regular intervals and must be kept in good condition and properly maintained.
- Proper identification and marking of safe working pressure must be ensured on all air receivers.
- Integrity of all air receivers must be ensured and a valid test certificate must be available.
- Ensure all air receivers are equipped with a pressure gauge, safety release valve, overpressure tripping switch and a drain valve located at the bottom of the receiver.
- Never use compressed air to transfer flammable liquids.
- All compressed air fittings should be wired and/or restrained to prevent them from whipping.
- Only hose clamps designed for compressed air service should be used. Use of jubilee clamps should be avoided.
- Ensure all connections and couplings are secure, and hold the open end of the hose firmly to avoid uncontrolled "whipping" of the hose.
- Never point the nozzle of an air hose at anyone and never use compressed air to clean debris from a person's skin or clothing.
- Always wear appropriate personal protective equipment before working with compressed air.

Noise

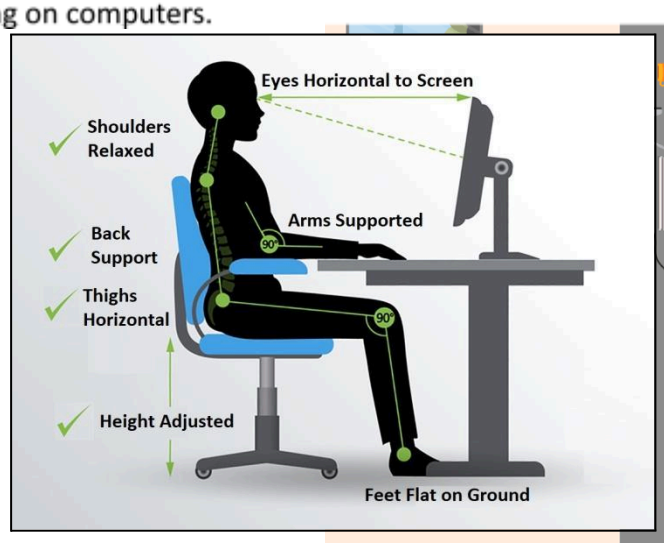
Noise is one of the most common occupational hazards in any workplace. When machines (e.g. engines, power tools etc.) are operated, they emit pressure waves which hit our ear causing vibrations in the eardrum and subsequent damage to hearing. Follow these guidelines to reduce noise exposure:

- All noise generating equipment should be kept properly maintained and every possible effort should be made to reduce the noise levels to acceptable values by adopting good engineering practices

Office Safety

Office environment is mainly associated with ergonomics related hazards, electrical hazards, fire hazards, slipping & tripping hazards. Working in office environment can be made safer by following these guidelines:

- Arrange office furnishings in a manner that provides unobstructed area for movement.
- Ensure that electrical cords and phone cords do not cross walkways or pose a tripping hazard. Do not tape cords or run them underneath carpets.
- Be very careful from floor transitions and stairs. Always try to use handrail while on stairs.
- Open blind doors carefully. There may be someone coming from other side.
- Always close the file cabinets and drawers after use. Never place heavy objects on top of cabinets.
- Repair /replace torn or frayed carpets as soon as possible.
- Never overload circuits and extension cables. Never use improper or damaged electrical plugs.
- Organize cables under your workstation to avoid tripping hazard and short circuiting.
- Keep water away from power sockets and electrical equipment.
- Turn off computers, monitors, printers and copiers when not in use and when leaving office.
- Do not store hazardous materials or chemicals in the office area.
- Smoke only at designated areas.
- Know the location of first aid boxes, fire extinguishers and all other emergency equipment available in your office area.
- To prevent from eyes strain, after every 20 minutes computer work, look 20 ft away for 20 seconds.
- To prevent from Musculoskeletal Disorder, after every 20 minutes of computer work, take a break for 20 seconds and change your posture.
- For better workstation ergonomics, follow these guidelines while working on computers.



AVOID ROAD ACCIDENTS

Driving Safety

Road accidents are costly, but more importantly they may result in serious injury or death. To avoid road accidents for company as well as for your personal vehicles, follow these driving safety guidelines:

- Only designated personnel/drivers having valid driving license as per class of vehicle are allowed to operate vehicles within company premises or on road for company business.
- Pre startup checks (coolant level, lubricant level, battery electrolyte, washer fluid level, spare wheel, brakes and thorough visual checks) should be ensured before starting the vehicle for first time in the day. Also ensure that vehicle is kept fit for use and in a safe working order.
- All vehicles should be equipped with the standard emergency equipment. (A suitable fire extinguisher & an updated first aid kit)
- Vehicles which are likely to operate in hazardous areas must be adequately protected to avoid spark generation. Also a suitable spark arrestor must be installed on engine exhaust.
- Ensure that seat belts are functional and worn before starting your commute.
- No one is allowed to drive any vehicle under the influence of drugs/alcohol.
- Strictly avoid smoking in company vehicles and using cell phones while driving.
- Never overload any vehicle. Number of passengers should not exceed manufacturer's design specification of the vehicle.
- Ensure that any load in the trunk/cargo section is properly secured.
- Follow the safest route to reach your destination. Avoid taking shortcuts.
- Strictly follow designated speed limits. Ensure safe distance is maintained from the vehicle next to you.
- Follow all road safety signs and never violate traffic signal on cross sections.
- For long drives, take a break of at least 15 minutes after every 2 hours of driving preferably at suitable rest areas.
- Avoid driving when you are fatigued or sleepy. Take rest first.
- Never give ride to any unknown person in company as well as in personal vehicles.

Food Safety

Food Safety refers to handling, preparing, cooking and storing food in a way to best reduce the risk of getting sick from food borne illnesses. Food borne illnesses are usually infectious in nature and caused by bacteria, viruses, parasites or chemical substances entering the body through contaminated food. Food can become contaminated at any point however the primary responsibility lies with food handlers and cooks. Follow these guidelines in order to ensure that the food is safe to consume:

- Wash your hands properly with soap before starting cooking, serving or consuming food.
- Food handlers must cover their heads with appropriate caps all the time.
- Avoid wearing rings, watches or any other jewelry items while handling food items.
- All utensils and food preparing surfaces must be clean and washed frequently. Never use dirty cloth to dry the surfaces and utensils.
- Ensure that drains are kitchen drains are not clogged. Never let water to accumulate in kitchen area.
- Keep raw meat away from fresh vegetables and fruits. Use separate utensils, cutting board and knives.
- Raw meat, vegetables, pulses etc. must be washed properly before cooking. Never use soap or any chemical to wash them.
- Use clean water for cooking food and daily consumption. The best way is to boil the water before use.
- Properly cook the food at appropriate temperature and flame.
- Always try to consume fresh food or keep it refrigerated. Never use any food which has started rotting.
- Refrigerated food should not be used more than once after they are warmed.
- Keep all food items covered all the time.
- Regular medical checkup of all food handlers must be ensured.
- Never cook food if you are feeling unwell.
- Avoid touching your face or other body parts while handling food items.
- Ensure personal hygiene, timely trim finger nails and hair.

Hot Weather

Hot weather is associated with many health and safety risks which should not be ignored. Follow are some simple guidelines to keep you safe in hot weather:

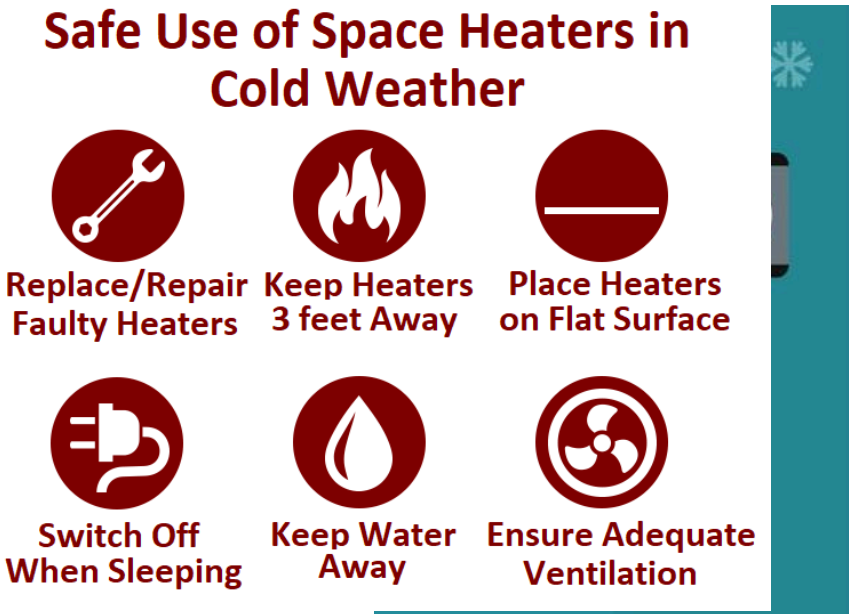
- Plan your work ahead. Try to perform outdoor work in early hours of the day.
- Stay hydrated. Drink plenty of water and fresh fruit juices. Avoid carbonated beverages and caffeinated products.
- Try to stay under the shed as far as possible. Cover your head and neck when going outdoors.
- Use good quality sunglasses to avoid direct sunlight and ultraviolet rays.
- Wear light clothing. Avoid wearing dark color clothes and try to change your clothes daily.
- Take rest breaks. Help your colleagues in their work so that work is not compromised.
- Keep air conditioner temperature set at 26 degree Celsius to avoid sudden heat shock when going outside.
- Try to park your vehicles under the shed. Remove any flammable containers like air fresheners or sanitizers bottle from the vehicle.
- Eat healthy & fresh food. Avoid eating junk food.
- Take special care of children and elders as they are more susceptible to heat related illnesses.
- Keep in mind that risk of fire increases during hot weather. Arrange to cut unnecessary grass & bushes around your workplace and home.
- Always turn off all electrical appliances, fans and air conditioners before leaving the office/home.
- Following are the danger categories as per heat index & air temperature.

Danger Category	Temperature (°C)	Possible Heat Illness Symptoms	Work : Rest (Minutes)	Water Intake
Extreme	52+	▪ Heat stroke is imminent	20 : 10	1 cup every 10 minutes
High	39 - 51	▪ Heat exhaustion & heat cramps are likely. ▪ Heat stroke is likely with prolonged sun exposure and physical activity	30 : 10	1 cup every 15 minutes
Moderate	30 - 38	▪ Heat exhaustion & heat cramps may be possible. ▪ Heat stroke is possible with prolonged sun exposure and physical activity	60 : 10	1 cup every 20 minutes
Caution	25 - 29	▪ Fatigue possible with prolonged sun exposure and physical activity	Normal	1 cup every 30 minutes

Cold Weather

Winter has its own attraction and fascination however, it is associated with certain hazards which can become life threatening if not taken seriously. Follow are some simple guidelines to keep you safe in cold weather:

- The first protection is the use of proper clothing. Dress warm in layers with a wind resistant outer layer if you are going outside. Wear a hat and gloves. Keep your face & neck warm with a scarf.
- Stay dry. There is an increased risk of getting sick with wet cloths in winter as wet clothing chills the body rapidly. Remove any wet clothing immediately and wear dry and warm cloths.
- Try to carry an umbrella with you if there is rain forecast.
- To avoid skin diseases, increase water intake, cover your skin as much as possible and use moisturizers.
- Eat healthy & fresh food. Avoid eating junk food.
- Ensure adequate ventilation and sunlight in rooms/offices to avoid getting sick.
- Be extra careful when using room heaters. Always ensure proper ventilation in the room where heater is operating.
- Keep room heaters at least 03 feet away from other objects and yourself.
- Switch off the heater before sleeping or leaving the house/office.
- Protect your children & elderly as they usually get sick in the early winter which makes it difficult to bear the whole season.
- Keep your children away from room heaters to avoid burn injuries, electric shock and getting them sick due to carbon mono oxide poisoning.
- Always be extra conscious while driving in fog and if possible, avoid driving in dense fog. Keep your vehicle fully maintained, use fog lights and follow speed limits.



EMERGENCY RESPONSE GUIDELINES

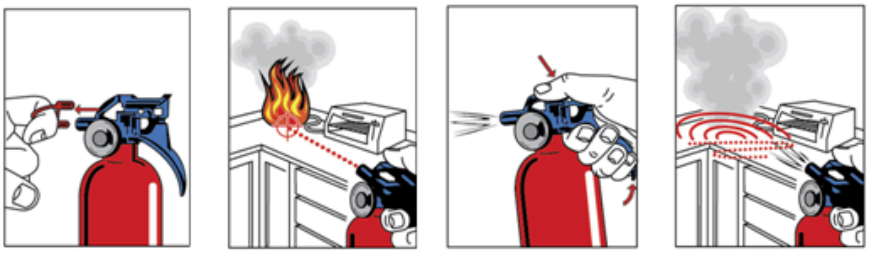
Fire Emergency

You may encounter fire emergency anywhere anytime. Following are some simple emergency response guidelines for fire emergencies:

Fire in a Building

- Do not panic and follow the emergency response plan of the building if you are familiar with it.
- Upon seeing fire in a building you are not familiar with, activate the nearest fire alarm. If there is no fire alarm, then shout "Fire Fire" to alert others.
- Fight fire only if it is small enough and there is a fire extinguisher available.
- Evacuate the building in an orderly manner via the stairs; do not use the lift.
- Help others get out only if it is safe to do so.
- Keep away from the building and if there is an assembly point, immediately report to it.
- Never return to the building until the authorities announce that it is safe to do so.
- Bear in mind the compatibility of fire extinguisher & fire extinguisher operating method while fighting fire. Both are mentioned below:
-

Extinguisher		Type of Fire				
Colour	Type	Solids (wood, paper, cloth, etc)	Flammable Liquids	Flammable Gasses	Electrical Equipment	Cooking Oils & Fats
	Water	✓ Yes	✗ No	✗ No	✗ No	✗ No
	Foam	✓ Yes	✓ Yes	✗ No	✗ No	✓ Yes
	Dry Powder	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✗ No
	Carbon Dioxide (CO_2)	✗ No	✓ Yes	✗ No	✓ Yes	✓ Yes



P PULL THE PIN IN THE HANDLE

A AIM THE NOZZLE AT THE BASE OF THE FIRE

S SQUEEZE THE LEVER SLOWLY

S SWEEP FROM SIDE TO SIDE

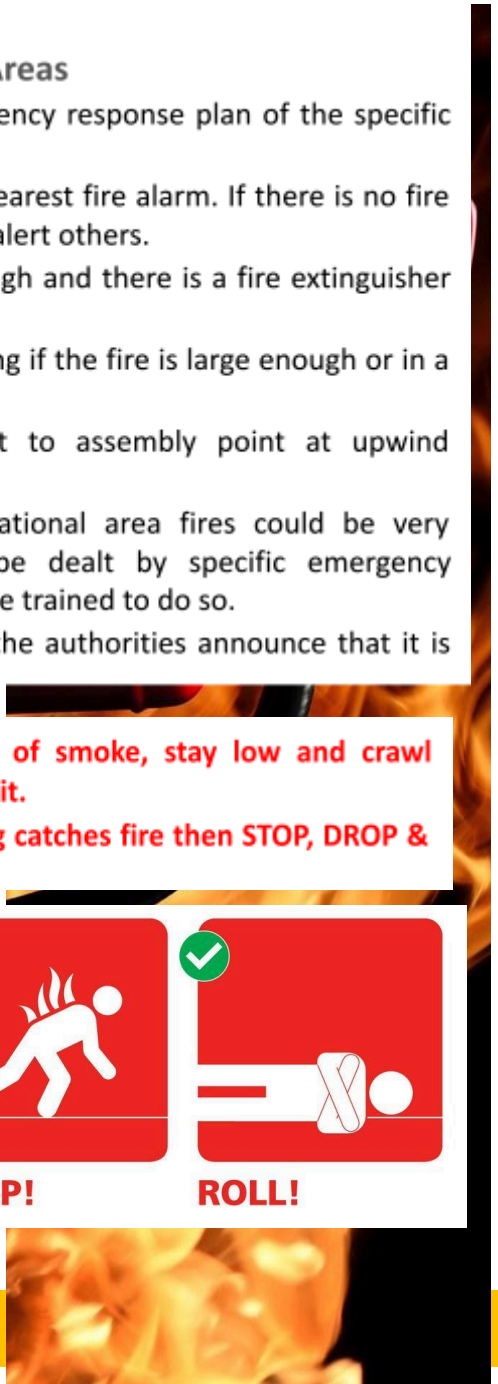
Fire Emergency

Fire in Your Car

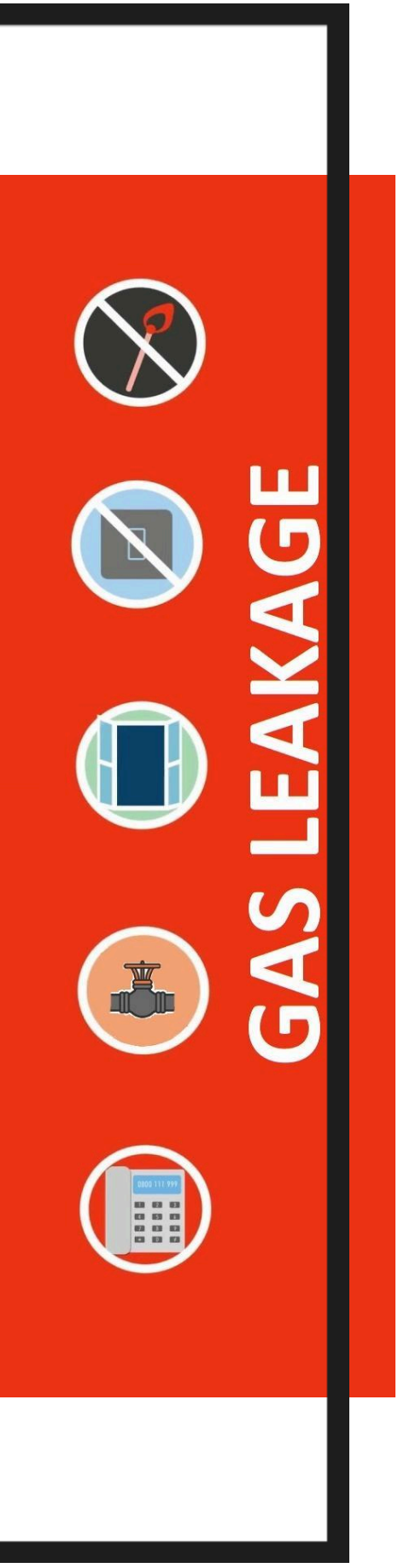
- If you observe smoke or flames coming from your vehicle, slow down and stop the car to the side of the road.
- Turn off the engine and evacuate the vehicle immediately.
- Never enter the vehicle to collect your personnel belongings.
- If there is a fire extinguisher in your vehicle, you may try to put out the fire without putting yourself in danger. (It's always good thing to keep a fire extinguisher in your vehicle.)
- If the fire grows too large, move away from the vehicle to a safe area.
- Call for emergency help (1122). In case of fire in company vehicle, immediately inform all relevant authorities.
- Warn oncoming traffic from the burning vehicle and keep others away until the help arrives.

Fire at Plant or Operational Areas

- Do not panic and follow emergency response plan of the specific plant/operational area.
- Upon seeing fire, activate the nearest fire alarm. If there is no fire alarm, then shout "Fire Fire" to alert others.
- Fight fire only if it is small enough and there is a fire extinguisher available.
- Never try to engage in firefighting if the fire is large enough or in a potentially hazardous area.
- Evacuate the area and report to assembly point at upwind direction from the point of fire.
- Keep in mind that plant/operational area fires could be very dangerous and should only be dealt by specific emergency response team members who are trained to do so.
- Never return to the area until the authorities announce that it is safe to do so.



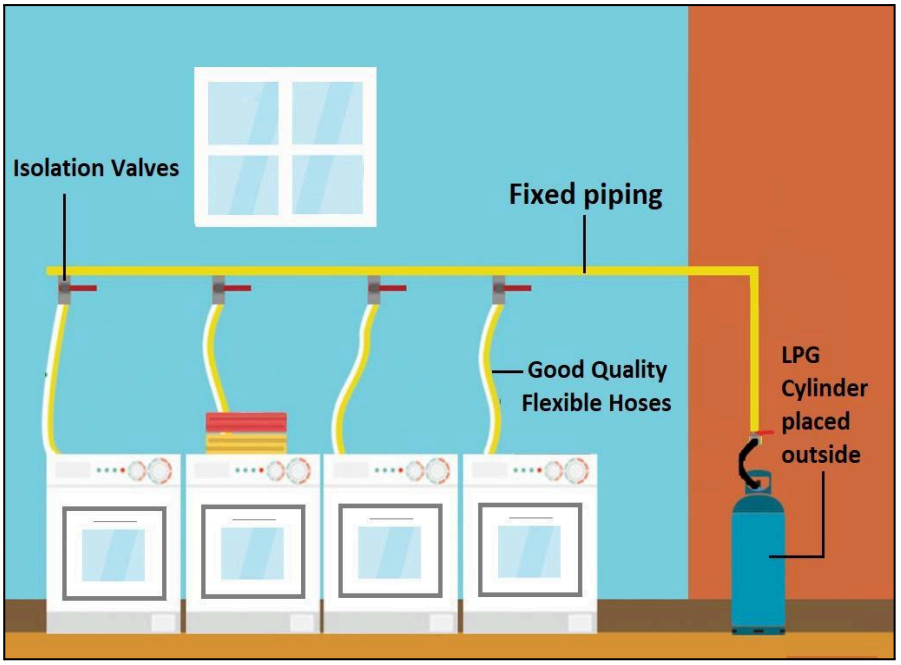
- **If there is lot of smoke, stay low and crawl towards the exit.**
- **If your clothing catches fire then STOP, DROP & ROLL**



Natural Gas/LPG Leakage

Most probable locations for natural gas or LPG leakage are kitchens and areas where natural gas or LPG appliances/heaters are operated. Follow these emergency response guidelines for natural gas leakage emergencies:

- If you smell gas, first ensure your own safety.
- Keep a wet cloth on nose before approaching in the area for any isolation or ventilation.
- Put out all flames and turn of the stove, gas valves, heaters and regulators if in operation.
- Isolate the electrical supply from main breaker.
- Open doors and windows to ventilate the area/building.
- Do not switch the lights on or off, or operate other electrical equipment. Switching electrical equipment can trigger an explosion.
- Never use cell phone where gas leakage exists.
- Evacuate the building/area and isolate the gas supply from main valve (if known) or from LPG cylinder (if installed).
- Call concerned department if you are at company premises. In case of home, call your natural gas providing company (1199) and emergency services (1122) about the leakage.
- Don't re-enter the building/area until the isolation of gas supply is ensured and area is checked for presence of gas traces.
- In order to avoid gas leakage emergency, only use standardized good quality fittings & appliances and place LPG cylinders outside in well ventilated area.
- Never use LPG appliances with natural gas supply and vice versa.



Medical Emergencies

Bleeding

- Check if there are any foreign objects (e.g. glass fragments) in the wound.
- Elevate the injured arm or leg above the heart level.
- Place a sterile cotton pad or cloth over it.
- Apply firm direct pressure on the wound using your palm or fingers.
- Secure the wound with a bandage.
- Move to hospital if the bleeding doesn't stop.

Fractures

- Signs of fractures include extreme pain, tenderness, immobility and swelling.
- Calm the casualty down.
- Rest, support and immobilize injured part in a position most comfortable for the casualty.
- If the casualty has a dislocated shoulder, fractured upper arm, forearm or wrist, support it via your neck with the help of a cloth.
- If the casualty has a fracture in the leg, straighten the injured leg and bring the uninjured leg (which acts as a splint) close to the injured leg.
- Bandage the legs together and knot on the side of the uninjured leg.
- Transfer the causality to the nearest hospital.

Burns

- Cool the affected part with cool running water or immerse in cold water for at least 10 minutes.
- Apply only ointments used to treat burns (i.e. burnol)
- Do not cover the affected area with cotton wool. However you may cover it with sterile bandage (if available).
- Do not break any blisters or remove anything that is sticking to a burn.
- Seek medical assistance immediately if the burns are deep or in case of severe pain.

Sprains

Medical Emergencies

Electric Shock

- A person may not be conscious enough to help himself after an electric shock.
- In case you are nearby a person who received an electric shock, at first make yourself safe and do not touch him barehanded. The person may still be in contact with the electrical source.
- Turn off the source of electricity if possible. If not, move the source away using a non-conducting object like plastic or wood.
- Check to see if the victim is breathing and have a pulse. If not, then perform CPR if you are trained to do so.
- Do not attempt to move the victim unless he is in further danger. There might be wounds or burns which may get worse.
- If you don't know how to perform CPR then cover the victim with a blanket or cloth to keep the body temperature regulated.
- Call for the ambulance immediately (1122)

Cardiac Arrest

- To know if you are having a cardiac arrest, first you need to able to identify its symptoms.
- Symptoms are severe chest pain (like squeezing, or a heaviness, or pressing) at the central or left part of the chest, lasting usually for at least 20 min. The pain may also radiate to the left upper arm, neck or jaw with continuous sweating.
- Should you experience a heart attack – regardless of whether you're alone or in the presence of others, the very first thing to do is to call for emergency medical help (1122).
- No matter how close you are to a hospital or health clinic, under no circumstances should you attempt to drive yourself there. You could lose consciousness while driving; causing an accident that could further harm yourself and others.
- Cough repeatedly and apply pressure on the chest area during a heart attack.
- Take aspirin as quickly as you can. Aspirin helps prevent blood clots and improves blood flow by relaxing the walls of arteries if you are sure the casualty is not allergic.
- If someone else gets cardiac arrest in your presence, immediately

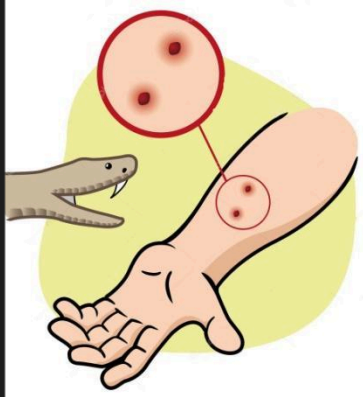
Medical Emergencies

Choking

- If someone is choking, stand behind the casualty and place one leg between the casualty's legs, making sure the casualty's legs are shoulder-width apart.
- Slide both arms under the casualty's arms, make a fist with your thumb tucked in and position it against the centre of his breastbone. Cover your fist with your other hand.
- Give five thrusts in an inward motion and look for any object that falls out from causality's mouth.
- Repeat the process until the choking is cleared.
- If the person becomes unconscious, transfer him to hospital immediately.

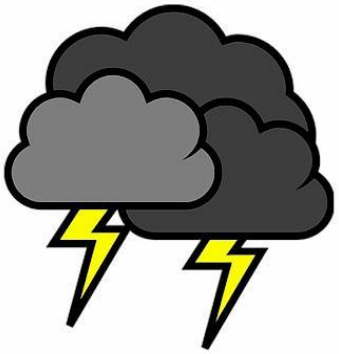
Snake Bite

- In case of snake bite or scorpion sting, immobilize entire limb.
- Calm the victim and advise not to move. It is very important as due to increased heart rate, venom may spread fast in body.
- Tie a band 2 to 4 inches above the wound.
- Do not cut or suck the wound.
- Call for emergency services or shift the casualty to nearest hospital.
- Anti venom should only be given by a doctor.



Heat Stroke

- Move the person into a cool place, out of direct sunlight.
- Remove the person's unnecessary clothing, and place the person on his side to expose as much skin surface to the air as possible.
- Cool the person's entire body by sponging or spraying cold water, and fan the person to help lower the person's body temperature.
- Watch for signs such as seizure, unconsciousness for longer than a few seconds, and difficulty breathing.
- Apply ice packs in each armpit and on the back of the person's neck.
- If the victim has stopped breathing, apply CPR if you are trained to do so.
- Call for emergency services or shift the casualty to nearest



Thunderstorm & Lightning

- Avoid taking a shower or bath; pipes and bathroom fixtures can conduct electricity.
- Unplug electrical appliances from the sockets.
- If you are outside, take shelter in a building.
- Avoid holding metal objects and standing under tall trees or near metal fences.
- Do not stay on high ground, roof tops or balconies.
- Avoid using cell phones and electrical appliances.

Earthquake

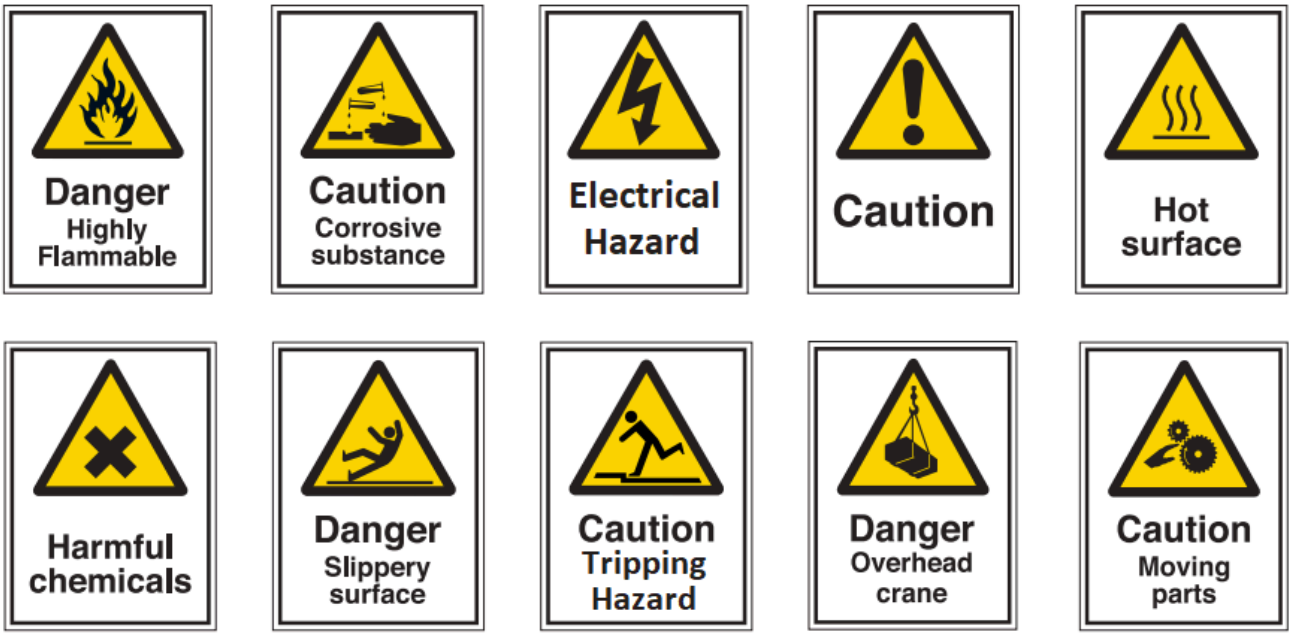
- Keep calm and immediately shut off electricity, gas and tap water.
- Protect yourself from falling objects.
- DROP, COVER and HOLD ON! (Move as little as possible - most injuries during earthquakes occur because of people moving around, falling and suffering sprains, fractures and head injuries)
- Evacuate the building in an orderly manner; do not use elevators.
- After the earthquake, if you smell gas, get out of the building and move as far away as possible.
- Check if people near you are hurt and give necessary first aid.
- Turn on the radio/TV for emergency instructions and disaster reports.
- Better to wear shoes or boots to avoid being hurt by broken window glass or other sharp objects.
- After an earthquake, the disaster may continue. Expect and prepare for potential aftershocks.
- Look for and extinguish small fires. Fire is the most common hazard after an earthquake.
- Help others to get out only if it is safe to do so.

If you are disabled (even temporarily, you should plan ahead for emergencies and be aware of your own capabilities and limitations

SAFETY SIGNS & MEANINGS

COMMON PROHIBITION SIGNS

COMMON WARNING SIGNS

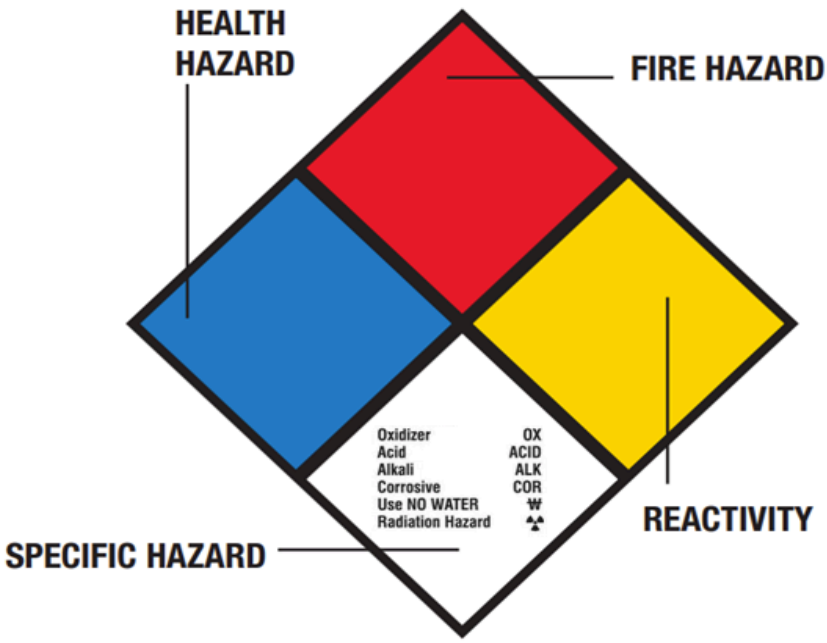


COMMON MANDATORY SIGNS

COMMON SAFE CONDITION SIGNS

COMMON FIRE SIGNS

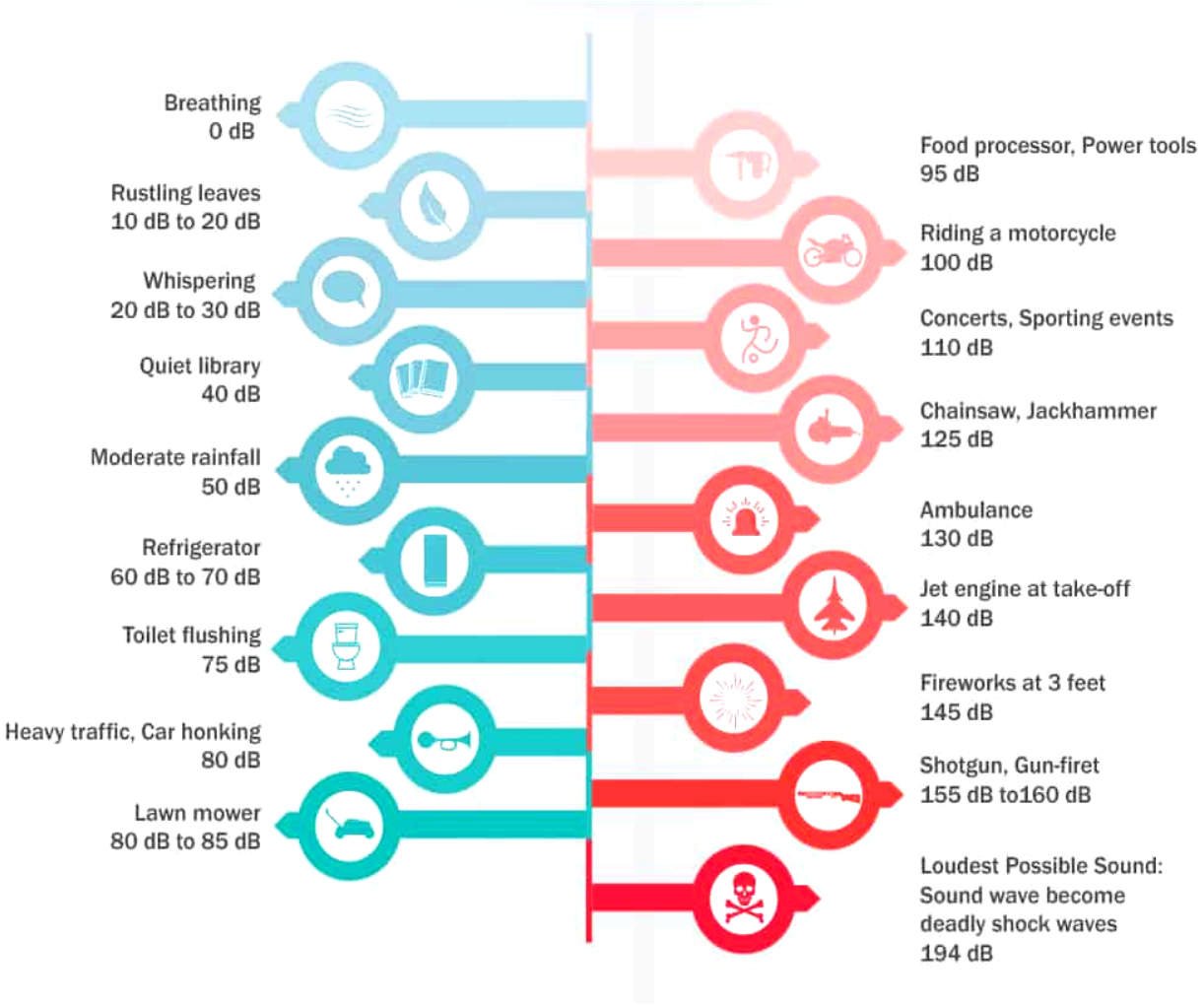
HAZARDOUS MATERIALS CLASSIFICATION (NFPA DIAMOND)



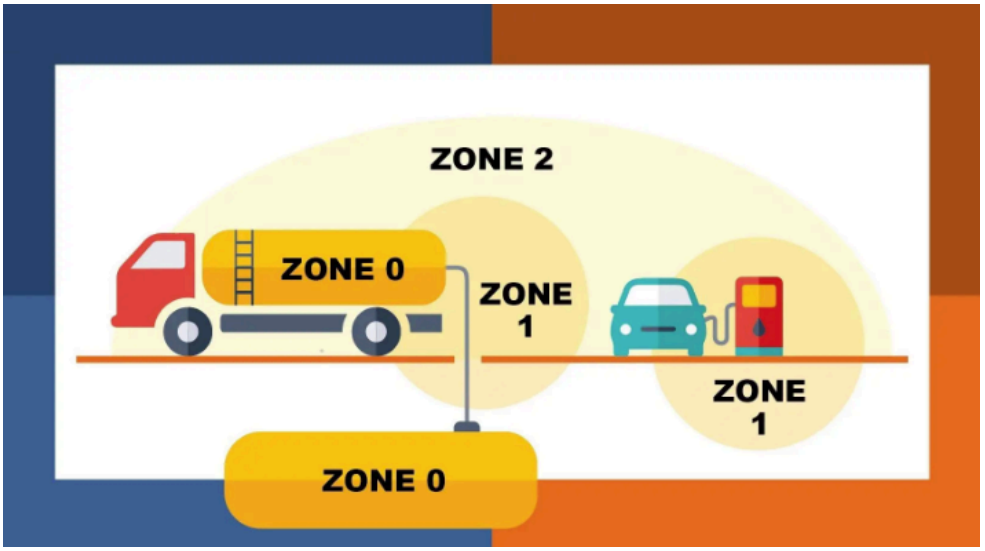
RATING EXPLANATION GUIDE					
HEALTH		FLAMMABLE		REACTIVE	
Recommended Protection		Susceptibility to Burning		Susceptibility to Energy Release	
4	Special full protective suit and breathing apparatus must be worn	4	Very Flammable	4	May detonate under normal conditions
3	Full protective suit and breathing apparatus should be worn	3	Ignites under normal temperature conditions	3	May detonate with shock or heat
2	Breathing apparatus with full face mask should be worn	2	Ignites with moderate heating	2	Violent chemical change but does not detonate
1	Breathing apparatus may be worn	1	Ignites when preheated	1	Not stable if heated use precautions
0	No precautions necessary	0	Will not Ignite	0	Normally stable

CHEMICAL HAZARD PICTOGRAMS

Common Noise Levels



Hazardous Area Classification



Zone Classification	Definition Of Zone	Division Classification
Zone 0 (gases)	An area in which an explosive mixture is continuously present or present for long periods **Typically 1000 hr/year**	Class I Division 1 (gases)
Zone 1 (gases)	An area in which an explosive mixture is likely to occur in normal operation **Typically 10-1000 hr/year**	Class I Division 1 (gases)
Zone 2 (gases)	An area in which an explosive mixture is not likely to occur in normal operation but in accidental events or abnormal operation of equipment **Typically 1-10 hr/year**	Class I Division 2 (gases)

Important Safety Distances

Area/Activity/Equipment	Safe Distance
Distance from energized power line from which equipment (e.g. crane boom) must not be operated	Up to 50 KV : 10 feet 50 to 200 KV : 15 feet 200 to 350 KV : 20 feet 350 to 500 KV : 25 feet 500 to 750 KV : 35 feet
Minimum horizontal working distance from overhead power lines	Minimum 10 meter at both sides
Height of flare stacks	Not less than 9 meters high from the surrounding topography
Rig generators from well head	Not less than 30.5 meters (100 ft)
Parking area from well head	Not less than 30.5 meters (100 ft)
No personnel should be permitted between the wire line unit and the wellhead when the wire line is moving.	At a distance closer than 6 ft (1.8 m) to the line
Spark arrestors or equivalent equipment shall be provided on all internal combustion engine exhausts located within	30.5 meters (100 ft)
BOP control unit from well head	Not less than 08 meters
Distance between crane boom and Riggers	Barricaded around swing radius. (Keep visual contact with helpers at all time + Install audible signals on cranes)
Minimum distance between well head and storage tanks	Not less than 25 meters
Distance of heater or treater	Not to be less than 90m from wellhead
Hazardous area during well testing where no open fires and smoking allowed	90 meters from the well, well head tanks or separator or any place likely to contain inflammable gas or vapor
Flame proof electrical equipment is mandatory in area around well or well-head tank or separator or a place likely to contain accumulation of inflammable gas	Within 15 meters
Flammable liquids storage from wellbore (except for fuel in the tanks of operating equipment)	At least 50 ft (15.2 m) aways
Separation distance between Oxygen and Fuel cylinders storage	Not less than 20 feet
Perforating operations shall not be performed while any transmission set (radio/telephone) is in operation	Within 90 meter of the well and or perforation truck
Displaying of warning notices in hazardous	Within 90 meter radius

areas	
Provision of hydrants with fog nozzles & adequate lengths of hose pipes	At a distance of not less than 90m from each vulnerable point
Work permit required for Work At Height	6 feet height and above
Depth of trench where it is considered as confined space	4 ft or greater in depth
Trench must be sloped or shored in	Any trench 5 ft or deeper
The soil from the trench to be piled away from trench	At least 02 ft away
Fall protection to be worn	6 feet height and above
Distance between ladder and wall	1:4 rule or 75 degree angle from wall (structure)
Ensure welding cables remain continuous of the electrode holder during electric arc welding operations	within 3m (10 ft)
Items not to be placed on shelves of the ceiling where fire sprinklers are installed	within 45cm (18 inches) below the sprinklers
Flare pits and stacks from the process units, tanks or any source of inflammable gases and vapor	Not less than 90 meters horizontally cross-wind or down-wind
Minimum Horizontal Distance Between Shell of Pressurized LPG Tank and Line of Adjoining Property That May Be Developed	2000 to 30000 gal : 50 feet 30001 to 70000 gal : 75 feet 70001 to 90000 gal : 100 feet 90001 to 120000 gal : 125 feet Above 120000 gal : 200 feet
Minimum horizontal distance between the shell of an LPG tank and a regularly occupied building	50 ft for buildings used as control 100 ft for all other buildings.
Minimum horizontal distance between the shells of pressurized LPG tanks	5 ft or three quarters of the diameter of the larger vessel, whichever is greater
Minimum horizontal distance between flammable & combustible liquid (Class I, Class II, or Class IIIA stable) storage tanks from property line that is or can be built upon including the opposite side of a public way	275 or less gal : 5 feet 276 to 750 gal : 10 feet 751 to 12,000 gal : 15 feet 12,001 to 30,000 gal : 20 feet 30,001 to 50,000 gal : 30 feet 50,001 to 100,000 gal : 50 feet 100,001 to 500,000 gal : 80 feet 500,001 to 1,000,000 gal : 100 feet 1,000,001 to 2,000,000 gal :135 feet 2,000,001 to 3,000,000 gal : 165 feet 3,000,001 or more gal : 175 feet
Minimum horizontal distance between flammable & combustible liquid (Class I, Class II, or Class IIIA stable) storage tanks from nearest side of any public way or from nearest important building on the same property	275 or less gal : 05 feet 276 to 750 gal : 05 feet 751 to 12,000 gal : 05 feet 12,001 to 30,000 gal : 05 feet 30,001 to 50,000 gal : 10 feet 50,001 to 100,000 gal : 15 feet 100,001 to 500,000 gal : 25 feet 500,001 to 1,000,000 gal : 35 feet 1,000,001 to 2,000,000 gal : 45 feet 2,000,001 to 3,000,000 gal : 55 feet 3,000,001 or more gal : 60 feet
Note: The above list is not exhaustive/ final.	

Common HSE Acronym List

Acronym	Description
AED	Automated External Defibrillator
AFFF	Aqueous Film Forming Foam
ALARP	As Low As Reasonably Practicable
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
ATEX	Atmosphere Explosive
BA	Breathing Apparatus
BBS	Behavior Based Safety
BLEVE	Boiling Liquid Expanding Vapor Explosion
CAPA	Corrective & Preventive Action
CIM	Chief Inspectorate of Mines
CPR	Cardiopulmonary Resuscitation
DCP	Dry Chemical Powder
DOT	Department of Transportation
DPT	Dye Penetration Test
EEBA	Emergency Escape Breathing Apparatus
EIA	Environmental Impact Assessment
ELCB	Earth Leakage Circuit Breaker
ELSA	Emergency Life Saving Apparatus
ESD	Emergency Shutdown
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
GFCI	Ground Fault Circuit Interrupter
HAZID	Hazard Identification
HAZOP	Hazard and Operability Study
HIRA	Hazard Identification & Risk Assessment
HSE	Health, Safety and Environment
IADC	International Association of Drilling Contractors
IEE	Initial Environmental Examination
IDLH	Immediately Dangerous to Life and Health
IR	Infra-Red

IIR	Incident Intimation Report
JSA	Job Safety Analysis
KPI	Key Performance Indicators
LEL	Lower Explosive Limit
LFL	Lower Flammability Limit
LTA	Loss Time Accident
LTI	Loss Time Incident
LOTO	Lock out / Tag out
LPG	Liquefied Petroleum Gas
MAWP	Maximum Allowable Working Pressure
MOC	Management of Change
MPI	Magnetic Particle Inspection
MS	Management System
MSDS	Material Safety Data Sheet
NDT	Non Destructive Testing
NFPA	National Fire Protection Association
OEL	Occupational Exposure Limit
OFI	Opportunity for Improvement
OH&S	Occupational Health & Safety
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
PPM	Parts Per Million
PSM	Process Safety Management
PTO	Power Take Off
PTW	Permit To Work
RCA	Root Cause Analysis
RHA	Road Hazard Assessment
ROW	Right of Way
SABA	Supplied Air Breathing Apparatus
SCBA	Self-Contained Breathing Apparatus
SIB	Self-Induction Branch
SOP	Standard Operating Procedure
SSV	Subsurface Safety Valve
STEL	Short Term Exposure Limit
SWL	Safe Working Load
TBT	Toolbox Talk
TPI	Third Party Inspection
TRIR	Total Reportable Incident Rate
TWA	Time Weighted Average

UEL	Upper Explosive Limit