

HSE Interview Questions and Answers Free Download

1. *What is the safety?*

The condition of being protected from or unlikely to cause danger, risk, or injury is Called Safety.

2. *What is the accident?*

It is an unexpected or unplanned event which may or may not result in injury or damage or property loss or death.

3. What is the injury?

It is defined as a harmful condition sustained by the body as a result of an accident.

3. *What is the hazard ?*

The inherent property of a substance or an occurrence which has potential to cause loss or damage property, person or environment.

4. *What is the risk?*

5. In probability of the realization of the potential for loss or damage or injury.

6. *What is the incident?*

It is an event which represents the deviation from the intended sequence of designed steps.

7. What is safety policy?

Any company has a social and legal obligation to provide a safe and healthy working environment for all his improvement to all his employees.

8. What is safety audit?

The safety audit is the process that identifies unsafe conditions and unsafe acts the plant and recommended safety improvement. Walk through it evaluates the unsafe condition notice able to the naked eye during work through the plant. (stores, civil work, erection work)

Inter mediate-more details to study and review of plant design and plant operation.

Comprehensive –it evaluates the safety factors in the plant on the base engineering, analysis, testing, measurement.

9. What is safety tag?

Safety tag can be defined a surface made of card board or paper board on which English local languages letters written for warning safety instructions to employees.

10. What is safety program?

11. Safety program can be defined as five methods by which accident can be prevented easily they are engineering, education, enforcement, enthusiasm and example safety programs are plain spoken and carry out certain legal steps.

12. What is attitude?

Attitude may be described as continuous behavior. If man's behavior is good, then his action will be either correct or safe.

13. What is emergency planning?

Emergency planning can be defined as a control measure. It can control the accidents safe guard people and provide information to media.

14. What is work permit system?

Work permit system is a “written documents” for permission to undertake a job by area in charge or it is written document issued by the area in charge to the performer to under take the specific job.

15. What is work at height?

Any work above 2 meters from the ground is caused work at height.

16. What is confined space?

An area which is small and enclosed or an area where one entry and exits or where a man cannot work comfortably in any location is caused confined space.

17. What is excavation?

Marking a hole or tunnel by digging the ground by man or machine is called excavation.

18. What is scaffolding?

It is a temporary platform constructed for supporting both men and materials and working safety at a construction site.

19. What is welding?

The process of joining of metals either by electrical or by gas is called welding

20. What is gas cutting?

The process of joining of cutting metals by using oxygen and combustible gas is called gas cutting.

21. What is sand blasting?

The process of removing rust dust, dirt, scales and old prints from the old surface using compressed air is called sand blasting.

22. What is painting?

The process after sand blasting is called painting.

23. What is LEL?

The minimum concentration of vapor, gasses, and dust in air below which propagation of flame does not occur on contact with a source of ignition is called LEL.

24. What is UEL?

The maximum proportion of vapor, gasses, and dust in the air above which proposal the flame does not occur on contact with a source of ignition is called UEL.

25. What is manual handling?

The process of lifting, carrying and stacking materials by men is called manual handling.

26. What is house keeping?

Housekeeping means not only cleanness but also the orderly arrangement of operations, tools, equipment's storage facilities and suppliers.

27. What is personal protective equipment?

It is an equipment's used to project the person from hazards such dust, dirt, fumes, and sparks etc. It is the barrier between hazard and person.

28. What is grinding?

A grinder is a portable machine with a wheel guard in position to reduce the danger.

29. What is Crane?

A tall machine used for moving heavy objects by suspending them from a projecting arm with a hook.

30. What is fork lift truck?

Fork lift truck is designed to handle heavy loads.

31. What is JSA?

The procedure of analyzing job for the specific purpose of finding the hazards and developing.

32. What are the duties of a safety officer?

- Prepare tool box talk
- Prepare monthly statistics
- Prepare the checklist
- Accident reports
- Management meetings
- Arrange the safety classes/training
- Arrange monthly safety bulletin
- Inspection of fire extinguisher
- Arrange first aid training classes
- Arrange safety competitions like quiz, slogan, poster
- Competitions exhibition etc.

33. What are the duties of a supervisor?

- He has to instruct these workers about the work methods and procedures.
- He has to maintain discipline among the workers
- He has to supply necessary materials
- He has to control quality and cost of the job
- He has to guide has workers in doing a job in the correct and safe way
- He has to supply suitable personal protective equipment to his workers

- He should conduct periodical safety meetings.
- He should conduct safety inspection of his working area
- He should know about the fire fight equipment
- He should know investigate the accident and find out the cause of accident

34. What are the pre cautions for welding?

- Remove all combustion material from the place of welding
- Clear the work area and cover wooden floor with fire proof mats. (welding mechanic should be kept with in the visibility of the welders.
- Erect fire resistance screen around the work
- All welding cables should be fully insulated
- All welding mics shall be double earthed
- Welding area should be dry and free from water
- Keep the fire extinguisher/sand really
- Use leather hand gloves, goggles, and helmets
- Switch off the power when welding is stopped
- Do not allow the helper to do welding
- Do not shift he welding cable unless the electric power is switched off.
- Do not allow the helper to carry the welding. The terminal of the welding cables should be provided 3-cable with lugs and kept tight.
- Oxygen hose in black and acetylene hose in red in color as per standard
- Nrv of the blow torches should be maintained properly avoid back fire
- Welders should be trained properly
- Cylinders should be stored in a cold dry place away bottom heat and direct sunlight.
- Proper house keeping, good ventilation in the working area
- Smoking should be avoided from welding area
- Hose connection should be proper made

- **Barricade the work area and put a sign board**
- **Rolling of cylinders should be avoided**
- **Flash back arrestor should be attached to each cylinder**
- **Any leakage of cylinder should be kept separately**

35. What are the precautions for gas cutting?

- **Keep fire extinguisher nearby**
- **Keep fire watch nearby**
- **Remove all combustible from work area**
- **Use all necessary PPE**
- **Never put welding gas cylinder in side a confined space**
- **Hoses shall not be laid in path ways**
- **Gas cutting torch should have flash back arrestors**
- **Gas test to be done to check for the presence of flammable gas in site.**
- **Good house keeping and ventilation necessary in working area.**
- **Hose connections should be made properly**

36. What are the precautions for "sandblasting"?

- **The compressed airline, hoses and another fitting must installment firmly without leaks the hose.**
- **Mis use compress are should be avoided**
- **A fresh air hood or mask must be worn**
- **House keeping can be done period cally**
- **Fire extinguish her shall be kept near by**
- **Dust mask ear plugs/muffs should be used**
- **No sand blasting shall be done on top of floating roof tank in service.**
- **Use goggles & face shield**

- Sand blasting operation must be gas free

37. What is the precaution for "painting"?

- All flammable material should be cleared from the work area
- The required protective clothing and equipment must be worn
- Cartridge respirators shall always be worn
- Adequate ventilation is necessary
- Adequate washing facilities must be readily available
- Barrier cream should be applied to the skin

38. What are the hazards in welding?

- Eye injury
- Burn injury arc realization
- Electrical shock light arc radiation
- Heat, light, and radiation affect heat fume
- Poisonous gases chipped price of weld metal
- Fire
- Explosion scattering
- Noise sparking
- Sparkling
- Flying sand

39. What are hazards and injuries in manual handling?

- Cutting fingers due to sharp edges
- Burns due to handling of hot articles

- **Foot injuries due to dropped articles**
- **Slipped disc due to improper posture in lifting on object**
- **Strains to wrist or fingers**
- **Sprains, wounds hernias, fractures**

40. Cause of accidents in manual handling?

- **Improper lifting**
- **Carrying too heavy loads**
- **Improper gripping**
- **Failure to use PPE**
- **Lifting greasy, oily and irregular objects**
- **Poor physique**

41. What precautions are needed to avoid the accident in manhandling?

- **Stand at safe distance from the load**
- **Sharp edge and burns are removed before lifting a**
- **PPE such as safety gloves and safety shoes are to be**
- **If the weight is too heavy for one person to lift, then he has to seek the assistance.**
- **The pathway is not blocked by obstacles while carrying the load.**
- **The different actions, movements, and forces necessary while carrying the load.**
- **Modify the task by using hooks and crow bars.**
- **Mechanical equipment like cranes shall be used.**
- **Modify the objects**
- **Change the way things are used.**

42. Tips for manual handling?

- **Plan**
- **Clear the path**
- **Move in close to the load**
- **Secure your grip**
- **Hold your head upright**
- **Maintain normal curves of the spine**
- **Power the lift with legs and body weight**
- **Don't twist**

42. Cause of accidents in mechanical handling?

- **The sudden failure of wire rope or a chain**
- **Slipping of the load from the sling**
- **Swinging of the load at the time of lifting**
- **The load sometimes hits the man**

43. What are the accidents in "poor house keeping"?

- **Men getting hit by falling from overhead**
- **Men slipping as greasy, wet or dirty floor**
- **Men falling in open tank without cover in level floor**
- **Accidents due to poor lighting**
- **Fire accidents due to faulty electrical wires**

44. What are the advantages in good house keeping?

- **It helps in the reduction of accidents including fire accidents**
- **It saves the property damages**
- **It improves employee morale**
- **Better productivity**
- **Working area becomes presentable**
- **Human energy is conserved**
- **Visitors are very much satisfied**
- **The burden of supervisor is reduced**

45. How to care and maintenance of hand tools?

- **Tools must be kept clean and free from corrosion**
- **Keep metal parts lightly oiled**
- **Remove burrs from edges of tools and heads of chisels.**
- **Tools which are not in use must be stored separately**
- **A good worker regularly inspects his tools**
- **Do not use tools without handles**

46. How to prevent accidents of "power tools"?

- **The operators should wear face shields or safety glasses**
- **Power tools should be placed in the store room after use**
- **Power tools should have protected by guards**
- **Pneumatic hoses or electric cables of power tools should not pass through passage ways.**
- **The electrical power tools should be properly earthed**
- **Never horse play with hose of pneumatic tools**
- **Power tools machines should be maintained and operated properly.**

47. What are the causes of accidents of "hard tools"?

- Due to wrong way using of tools.
- Due to defective condition of tools
- Due to failure of using right tools for right job
- Due to wrong way of carrying tools
- Due to strong of tools in safety

48. what precautions are necessary for electrical work?

- All electrical installations shall be as per standard electricity rules
- Only competent persons should handle the electrical equipment.
- The equipment should be earthed properly
- All temporary electric lines should be drawn at least above man's height
- Cable should be completely insulated
- Cable should not have any joints
- Only connection for one point
- Good house keeping on the area
- Fire protection equipment to be kept near by
- Use rubber gloves and rubber boots
- Use good quality of wire
- Power isolation close to the job
- Use three pin plug instead of loose wire
- Never operate any electrical equipment with wet hands
- Never stand wet surface while working electrical equipment
- During thunder storm do not stand under tree
- Proper sign board is necessary

- **No person shall work on any live electrical conductor**
- **The switch shall only be put on by person who switched it off**

49. What are the hazards in construction?

- **Fall of person from top and getting injured**
- **Fall of objects from top and below person injury**
- **Fall of materials from top and damaged**
- **Person falls into excavated pit**
- **Collapse of soil and below person get injury or may**
- **Damage of ug cables and sewage pipe**
- **Collapse of scaffolding and person fall from height, get injury**
- **Electrical shock**
- **Fire and explosion**
- **Burn injury**
- **Health and lung problems**
- **Snakes bite**
- **Poisonous gas**
- **Foreign body in eye**

50. Cause of accident in construction?

- **Erection equipment failure**
- **Falling of persons from height**
- **Electrical shocks**

- **Improper lighting**
- **Non-stop working by worker**
- **Up safe work methods**
- **Collapsing of earth during trench excavation**
- **Failure of use safety equipment**
- **Working a height without safety belt**

51. *General safety precautions in construction?*

- **Adequate first aid equipment should be kept ready**
- **Adequate fire fighting equipment should be available**
- **All general electrical rules should be followed**
- **Suitable lighting arrangements should be necessary at night work**
- **Work men at height should be wearing safety belts**
- **Work men handling cement should be provided with goggles, rubber gloves and rubber boots by nose mask.**
- **The moving parts of grinding machines used construction site should be covered with guards**
- **The moving parts of grinding machines used construction site should be covered with guards**
- **Excavated material should not be kept near the excavated**
- **Very short duration of work red flags must be hoisted and more duration red banners must be stretched**
- **Defective tools should not be used**
- **The worker should not carry tools in his hands when climbing a ladder**
- **Excavation should be guarded by suitable fencing**

52. *How to erect scaffolding?*

- **It should be erected on levels firm ground**
- **It erected by trained/skilled person**
- **It is constructed using metal pipes and wooden boards**

- It should be design and constructed from good and sound material
- Not to be erected on loose earth
- Clamps should be fixed
- Properly bracing
- Sole plate is necessary the base of vertical pipe

53. Safety precaution of scaffold?

- Wooden board not be painted
- Wooden board should not to any cracks
- Check for rust in pipes/clamps
- Clamps should be fixed and good quality
- Boards thickness should be 3.4 cms and no bending
- The construction must be rigid, properly based
- Use of good and sound materials
- The wooden bellies has not joint
- Vertical poles should not be more than 6 feet
- Chains, ropes used for the suspension of scaffoldings
- Never throw any materials from height
- Use safety harness while working at above 6 feet
- Properly ties to be arrangement

54. What controls measures are necessary for confined space?

- Enter with air line bar sets
- Use 24v flame proof hand lamps
- A hole watch to be kept near man hole
- Keep fire fighting equipment ready

- **Gas test to be done to check for oxygen level**
- **Provide blowers**
- **Don't smoke in confined space**
- **Use ropes and harness**
- **The spaces clean before entry**
- **Use non-sparking tools if there is any risk of flammable vapors being present.**

55. Safety rules when using ladders?

- **The foot wear is not greasy, oily and muddy and has a good grip on the rungs.**
- **When climbing or coming down a ladder should be facing the ladder side and had on with both hands.**
- **Carry light tools in pockets in a shoulder bag.**
- **Hold on with at least new hand if use of both hands then, use safety belt**
- **Never climb higher than the third rung from the top on straight or second tiered from the top on the extension ladder.**
- **Step ladder must be fully open and the divider locked**
- **The metal ladder shall not be used near electrical equipment.**
- **Metal ladder shall not be placed on firm footing and at angle of 75**
- **Any ladder found defect in any way should be marked do not use**
- **The ladder shall not be placed in a box or drum.**
- **Rubber protection on head and heel of a ladder is necessary.**

56. Safety rules ensuring oxygen cylinders?

- **Oxygen cylinders should not be kept near combustible materials.**
- **Oxygen cylinders should not be handled with grassy hands or gloves.**
- **Oxygen cylinders and their fittings should not be tested with oil based soap solution.**
- **Oxygen cylinders and other combustible gas cylinders should not be stored together.**

- The top cover of the cylinder should be kept in position and screwed safety when not in use.
- Cylinders should not be used as rollers for moving materials
- Oxygen must not be used for ventilating confined spaces.

57. Safety rules in using compressed air?

- Only authorized persons should be used compressed air.

THANKS



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HSES QUESTIONS AND ANSWERS



SAFETY STANDARDS

HELMET: -----	Z-89.1	1981	(ANSI)	*5240 (BS)
SAFETY GLASS:-----	Z-87.1	1968	(ANSI)	*2092 (BS)
SAFETY HARNESS-----	Z-359.1 & Z-10.14		(ANSI)	*1397 (BS)
SAFETY SHOES-----	Z-41.1	1967	(ANSI)	
RESPIRATOR-----	Z-88.2	1992	(ANSI)	
SAFETY ON SCAFFOLDING—	A-10.4	1988	(ANSI)	

1. What is Work Method Statement?

Ans: It is the document submitted by contractor to client, covering the general work procedure of a particular job in a safe manner as per required standard.

2. What is the use of W.M.S.?

Ans: We can plan and execute the work easily and safely. It also helps to know the Codes and Standards used for each activity.

3. What is JSA and what is it use?

Ans: Job Safety Analysis is the step by step analysis of a job to determine the safe working procedure. It includes the following steps.

- Watch the job being done
- Breaking the job down into steps
- Describe the hazards in each step of task
- Identify the desired control measures
- Implement these counter measures in the job execution

4. What is Work Permit?

Ans: Work Permit is the written document authorizing a person or a group to perform maintenance, inspection, or construction work.

5. What is a Confined Space?

Ans: Any space having a limited means of access or egress, which subject to the hazards like deficiency of oxygen, toxic or flammable gases or substances, dust etc.

6. In what circumstances a confined space work permit can be issued?

Ans: If properly ventilated, gas test readings are satisfactory, properly barricaded and warning signs are posted, trained standby man is present with log sheet, sufficient lighting and low voltage electricity (24V-110V), proper means of communication, locked and tagged out if necessary, lifeline and man retrieval system if necessary, etc.

7. Who is a Confined Space Attendant?

Ans: He is one who is aware of the confined space hazards and know how to react if anything goes wrong, able to maintain confined space entry log sheet etc.



8. What are the hazards in a confined space?

Ans: Oxygen deficiency or enrichment, present of toxic or flammable gases, chemical hazard, fire hazard, fall of materials, fall hazards, electrocution, dust, sound, heat or cold, caught in between moving parts of equipments, engulfment, etc.

9. What are the duties of a confined space attendant?

Ans: He is responsible for the safety of entrants, should be present whenever people are working in confined space, maintain update entry log sheet, maintain continuous communication with entrants and monitor conditions in the confined space to ensure a safe working atmosphere, prevent unauthorized entry of personnel, initiate alarm for help if needed, evacuate the entrants if conditions are not satisfying or incase of any general evacuation is initiated, contact rescue personnel if necessary, etc.

10. Give some examples of a Confined Space?

Ans: Pipes, Vessels, Tanks, Boilers and Tubes areas, Silos, Trenches and Excavations deeper than 4feet, Sludge pits, Duct works, etc.

11. Name one hazardous job in a Confined Space?

Ans: Welding, grinding, chemical cleaning, use of gas cutting set, erection of materials.

12. Who is a competent person?

Ans: Is one who is properly trained and authorized to perform a specific work in a safe manner.

13. What is an accident?

Ans: An accident is an uncontrolled event that results in undesirable consequences to personnel (injury/illness) or the assets (damage/loss) to the environment.

14. What is near miss?

Ans: A potential hazard, which not yet caused an accident or an occurrence that did not result in but have the potential to result in undesirable consequences to personnel (illness/injury) and/or to the assets (damage/loss) or to the neighboring community and environment.

15. Who make an accident report?

Ans: Concerned area supervisor or site safety representative.

16. Who makes an accident investigation report?

Ans: A team of front line supervisor, HSE manager, Sub-Contractor representative if sub-contractor personnel are injured, high officials depending upon the severity of accident.

17. What is the use of the accident investigation report?

Ans: To find out root cause of the accident, make recommendations to prevent re-occurrence and evaluate the effectiveness of emergency response.

18. What is waste management?

Ans: Waste management means safety disposing the by-product of a process or a work to the environment (after proper treatment, if necessary) so that no threat for livings, properties and environment exists.

19. What is MSDS?

Ans: Material Safety Data Sheet is the document prepared by the manufacturer giving product name, producer's address, emergency contact phone number, information of ingredients, possible hazards, first aid measures, precautions to be taken for storage and handling (recommended PPE, extinguishers), physical and chemical properties, etc.

20. What is Isotope?

Ans: Isotope means one or more species of atoms having same atomic number but different mass number.

Isotope can be stable or unstable. Radioactive isotopes are unstable substances, which emits heavy particles (alpha and beta) and higher energy electromagnetic waves (Gama) from their nucleus by decay.

21. Why is an Isotope hazardous?

Ans: Isotopes are hazardous because it emits uncontrolled energy in the form of radioactive waves which is hazardous to all living things as it can destroy the its living tissues that causes fatality or can convert it in cancer.

22. What is radio activity?

Ans: Radio activity is the spontaneous disintegration of atomic nuclei, the nucleus emits ALPHA particles, BETA particles, GAMA particles, or electromagnetic rays during this process.

23. What is the unit for measuring radiation?

Ans: Micro Silver or Milli - Rem.

24. In what condition a work permit can be issued for Radiography?

Ans: The controlled area is calculated, evacuated and barricaded with yellow/black tapes, warning signs (a minimum of 4nos.), and red or yellow flash lights.

25. What are the safety measures to be taken while doing radiography?

Ans: Ensure a competent person is surveying outside the barricaded area with survey meter. The crew is authorized and following safety precautions. The controlled area is calculated, evacuated and barricaded with yellow/black tapes, warning signs (a minimum of 4nos.), and red or yellow flash lights.

26. What is the controlled area?

Ans: Any area where the radiation dose is more than 0.75 mRem/h (7.5 micro sivert).

27. What is a Gieger meter?

Ans: It is the instrument used to measure the radiation dose (Radiation Survey Meter).

28. What is the used of a film badge?

Ans: This badge will be worn by personnel, exposed to radiation due to their nature of duty and this is processed to calculate the received radiation dose of a person during the period (normally 1 month) of exposure.

29. What is a decay chart?

Ans: It is the chart showing the change in radioactivity of a source, for a period, at regular interval of time.

30. Who is an authorized exposed person?

Ans: He is one who got formal training in the used of sealed source and x-ray equipment used in industrial radiography.

31. What are the requirements of a man basket?

Ans: It should be designed and fabricated according to standards, have third party certificate, two guide ropes, damage free lifting gears, the load bearing capacity should be written on the man basket, shackles with cotter pin only to be used.

32. How are slings inspected?

Ans: All slings must be inspected before every use and periodically it should be inspected thoroughly and should be rejected, if found wear of one third the original outside diameter of outside individual wires, severe corrosion, distortion (kinking, crushing, bird-caging), broken wires (a maximum of 10 randomly distributed broken wires in one rope lay or 5 broken wires in one strand in one rope lay), heat damage (loss of internal lubricant by over heat exposure), pulled eye splices (any evidence that eye splices have been slipped, sleeves damage) deformation of wires and strands or pushed out of their original position and the sling should be clean from dirt or rust. Before use of the slings has to be color coded as per the month color code.

33. What are the requirements for a crane lifting?

Ans: Crane positioned on firm and level ground with wood pads and steel plates. Outriggers are fully extended, tires are off ground, certified operator and rigger are available, safe load indicator is working, the check list is filled with competent person, crane has a valid inspection sticker, insurance and third party certificate, the loads weight is confirmed and it is within the safe working limit of the crane, safety devices are not bypassed, the swing arm radius is barricaded and unauthorized people are evacuated, the lifting tools are free from defects, pads are used to protect the slings from load and vice-versa, wind speed is less than 32kmh, approved lifting plan is available for critical lifts, permit for the activity is obtained, crane operators and riggers vision is not obstructed, the load is well balanced, and tag lines are used to control the weight etc.

34. What is working radius?

Ans: It is the maximum distance where the crane boom has to reach for lifting or lowering the load.

35. What is SWL?

Ans: Safe Working Load is the maximum load that can be applied to the lifting tool, safely.

36. What is lifting plan?

Ans: It is the document prepared for planning a critical lift by calculating and considering all factors which is going to effect the lift and there by selecting the correct tools and cranes and ensure the safe lifting procedure to be followed for the particular lift, giving details such as the size and weight of the object to be lifted, which crane is used for lifting and what the safety factor is, where the crane is positioned, from where the load is lifted, where it is fitted, size and SWL of each lifting tool used. And load chart is attached with it.

37. What is a excavation?

Ans: A man made cut, cavity, trench or depression formed by earth removal.

38. What is a trench?

Ans: A narrow excavation, where the depth is grater than the width.

39. What is shoring?

Ans: A structure that support the sides of an excavation and protect against cave-ins.

40. What is the difference between a flash-back arrestor and a check valve?

Ans: A check valve allows flow in one direction only. This prevents oxygen reaching acetylene cylinder and acetylene reaching oxygen cylinder in the event of blockage in the torch or line or pressure variations. But a flash back arrestor prevents reverse flow, stops the flow of flame from reaching the cylinder in the event of a flash back or the temperature exceeds a limit (220 deg F).

41. What are the classes of fire and what type of extinguishers are used for them?

Ans: Class A: Ordinary combustibile materials

Ex: Paper, wood, cloth, plastic, rubber

Extinguisher- Water, DCP, Foam, CO2, Halon

Class B: Combustible liquids and gases

Ex: Gasoline, diesel, oil, grease, oil based paint, tar

Extinguisher- CO2, Foam, DCP

Class C: Energized electrical equipment

Extinguisher- DCP, FM-200, Halon, Carbon Dioxide

Class D: Combustible metals

Ex. Magnesium, Potassium, Zinc, Calcium, Sodium, Titanium

Extinguisher- Metal X-type, Combustible metal type.

42. What are the responsibilities of a fire-watch?

Ans: Fire watch is a person designated to identify and eliminate fire hazards, alert and extinguish fire incase of any outbreak of fire and to protect the person and properties from a fire. He is the man to react first incase of fire by keeping a close watch on such hazardous areas.

43. What is color coding system?

Ans: This is the system followed to inspect and ensure the serviceability of tools, equipments periodically (normally it is monthly) like fire extinguishers, full body harness, lifting gears, electrical codes and cables, power tools, etc. These things are inspected by combatant person and are indicated by putting the color of particular month (this color is decided in advance and is being followed by all people at particular site). The items which are found defective or unserviceable will not be color coded and has to be removed from service.

44. Who can color code?

Ans: Competent Person.

45. What is the maximum distance between two adjacent accesses in a long excavation?

Ans: A ladder must be present within 25ft., of employees working in excavation.

In open excavation – At every 30 meters on the perimeter, if less than 1.2 meters deep.

- At every 7.5 meters on the perimeter, if more than 1.2m deep.

46. What is an excavation considered as a confined space?

Ans: If depth is more than 1.2 meters.

47. Who can erect a scaffolding.

Ans: Certified scaffolder.

48. Who can inspect the components used for erecting a scaffold?

Ans: A competent and certified scaffolding supervisor.

49. What is a tag system?

Ans: A tag is put on scaffolding, by a competent person, indicating the present condition whether it can be used and whether fall protection needed or not.

Red Tag: Do not use (Is being erected or dismantle)

Yellow Tag: Can be use with 100% fall protection (is incomplete or cannot be completed)

Green Tag: Safe to use (Scaffolding is complete)

50. Who can place a scaffold tag?

Ans: Competent person (Scaffolding Supervisor).

51. What are the details in a scaffolding tag?

Ans: Location, Maximum loading capacity (kN/m² or psf); Date erected and date inspected with foreman's name and signature.

52. In which conditions a scaffold cannot be erected?

Ans: Extreme weather (strong wind, rain, ice), ground not stable, safe clearance (minimum 10ft.) cant be maintained with live wire, certified workers and supervisor are not available, permit not available.

53. What is the minimum overlapping of two adjacent planks in a scaffold platform?

Ans: Not less than 12 inches

54. What is a guard rail system?

Ans: A barrier consisting of top rails, midrails, toe boards and vertical uprights erected to prevent men and materials falling from an elevated work area.

55. What is a toe board?

Ans: Barrier secured along the sides and ends of a platform to guard against falling of materials, tools, and other objects.

56. What is the minimum height of a toe-board?

Ans. 4 inches.

57. what is the height of top rail from platform?

Ans. 38 to 45 inches.

58. In what circumstances fall protect on system to be used?

Ans. If a person could fall more than 1.8 meters then a fall protection system should be used.

E.g. Any activity at an elevation more than 1.8 meters such a erection, dismantling or maintenance of scaffolding, pipes, equipment,...

59. what is the minimum width required for a walk-way?

Ans. Minimum width of walk way is 18".61.

60. what materials can be b placed on a scaffold platform?

Ans. All types of construction materials when is used for particular construction activity can be kept on scaffolding platform but before keeping the materials and tools required fro the work on the platform, we must ensure load bearing capacity of that scaffolding platform. The platform shall not be over loaded and shall be fitted with falling object protection system like toe board, nets etc.

61. What are the minimum requirements for working on a scaffold?

Ans. Mobile scaffolding shall be plumb, level and square. It shall only be used and moved on a surfaces sufficiently firm and level to ensure stability. It shall be move only by manually pushing or pulling the base. No men equipment or materials shall be on the working platform or elsewhere on the scaffolding while it is in motion. Castor shall be locked at all times except during scaffold movement. The temporary foundation or track set on uneven ground for scaffold movement shall be level and properly secured. The height of the working platform shall not exceed 4 times of the minimum base dimension. If it exceed this limit outriggers must be installed. A complete guard rails system must be provided. The scaffolding shall be inspected and tagged before use by a competent person.

62. when should we inspect a scaffold?

Ans. A scaffold shall be inspected and tagged after completing erection. Also before each work period or where they are altered. Adjusted or subjected to rain or heavy winds.

Thereafter the scaffold shall be examined at least once seven days.

63. With what color a ladder can be painted?

Ans. Aluminum ladders and wooden ladder shall not be painted.

64. What is life line?

Ans. A life line is a component that consist of a flexible line that connects to an anchorage at one end to hang vertically or that connect to anchorages at both ends to stretch horizontally and which serves as method to connect other component of a personnel fall arrest system to the anchorage.

65. How can we calculate the safe anchorage of a life-line?

Ans. When life line is used they shall be fastened to fixed safe points of anchorage capable of supporting 2300 Kgs. Shall be independent, and shall be protected from sharp edges and abrasion. Safe anchorage points may include structure members (minimum 4" structural member or 4" pipes) but do not include guard rails, vents, other small dia piping systems, electrical conduit, outrigger beams or counter weights. It shall be made from 10 mm dia. Width ropes. Horizontal life lines shall be installed at the highest feasible point, preferably above shoulder height. This life lines shall be maintained with unloaded sag at the centre no greater than 30 cm (12 inches) for every 10 meters of life line length between attachment points

66. What is Lock out/ Tag out system?

Ans. For servicing or maintenance of live equipment or pipe lines, where the unexpected energizing or release of energy could cause injury, lock and tag are placed on the isolating device to avoid uncontrolled operation and give details of the lock-out schedule.

67. Expand the following:

- STARRT- Safety Task and Risk Reduction Talk
- COSHH- Control of substance hazardous to Health.
- OSHA- Occupational Safety and Health Administration.
- OSHAS- Occupational Health and Safety Assessment Series.
- ELCB- Earth Leakage Circuit Breaker.
- GFCI- Ground Fault circuit Interrupter.
- BS- British Standard \institute.
- SWL- Safe working Load .
- ANSI- American National standards Institute.
- Lost Time Incident.



- ASTM- American Society for Testing of Materials.
- JSA- Job Hazards Analysis.
- LEL- Lower Explosive Limit.
- UEL- Upper Explosive Limits.
- PEL- Permissible Explosive Limit.
- REL- Recommended Exposure Limit
- PSI- Pounds/Square Inch (1 bar= 14.7 psi)
- STEL- Short Term Exposure Limit.
- WBGT- Wet Bulb Globe Temperature
- APR- Air Purifying Respirator
- ASR- Air Supplying Respirator.
- SCBA- Self Contain Breathing Apparatus.
- RSO-Radiation Safety Officer
- NFPA- National Fire Protection association

68. What is the importance of a Tool box meeting?

Ans. The workers can be educated about safe rules and procedures, and their awareness can be improved on some special task its importance.

69. What is an Emergency Evacuation Plan?

Ans. It is the procedure to provide concise guide lines for evacuation in case of some emergency and to identify the emergencies in advance. This also helps us to plan and to define roles and responsibilities of all building custodian fire wardens and occupants.

70. What is a Hydro Test?

Ans. It is the test carried for leak test for pipes, equipments etc by filling water in these equipments and pipes with some pressure and its joints and connection are checked for any leak or breakage.

71. What is a Hipot- Test?

Ans. It is the insulation leakage test done for high voltage electrical cables, with high voltage megger.

72. What are the safety requirements for doing a hot work?

Ans. a). Remove all combustible materials from the area(with 10 mm), possible.

- b). Use fire blanket to protect immovable materials and also for welding slugs.
- c). Cover the area with fire blanket for containment of park generated while doing hot work.
- d). Provide proper fire extinguisher in sufficient numbers.
- e). Appoint a fire watch with red jacket, If necessary.
- f). Barricade the area and post proper signage.
- g). Use of proper PPE and damage free tools and equipment.
- h). Obtain a valid hot work permit.
- i). Conduct gas test if presence of combustible gases expected prior to work.

72. What are the benefits of near miss reporting?

Ans. To make analysis of the incident in order to avoid re occurrence.

To rectify the cause of those near misses before it turns into accidents.

To identify the deficiency of site performances and final remedial actions.

To improve safety performances by reducing LTAs, incident and near misses.

73. What is a risk assessment?

Ans. risk assessment is a method of estimating the rate of risk of an activity, by classifying actual and potential consequences and finding out mitigating actions to limit that risk.

74. In what situation Ear protection is needed?

Ans. In areas, where sound pollution is more than 85 dBA.

75. what is the emergency evacuation procedure to follow in the event of gas release ?

Ans. don't get panic on hearing alarm.

Switch off al the equipment and energized circuits.

Observe the direction of wind flow, proceed out in the cross wind direction to the plant boundary fence and then proceed up wind.

Obey further instructions from emergency response team.

Resume work after getting clearance only.

76. what is an "Assembly Muster Point"?

Ans. The area determined and marked for assembly of people working in case of any emergency.



INTERVIEW QUESTION FOR HSE

1. What is the difference between Risk and Hazards?
2. Explain Flash Back Arrestor?
3. Name any ten types of Hazards?
4. List the main causes of accidents with suitable examples.
5. What is the difference LMI and Anti Two Block?
6. What is MSDS?
7. What is PASS in the use of fire extinguisher?
8. List the requirements for a Crane to work at site?
9. List the main parts of a scaffold?
10. What is the difference between JSA and STA?
11. What are the points to be considered for an excavation safety inspection?
12. List the safety requirement for working at height?
13. List the safety Hazards in confined space?
14. List the Safety points for storage and use of Compressed Gas Cylinders?
15. What is CABA?
16. List the documents to be checked during Administrative Audit?
17. What do you understand by 100% tie off?
18. List the document to be audited during HSE Audit?
19. Explain HSE Policy statement?
20. List the requirements to be met for approving an Hot Work Permit?
21. What is IDLH?



Incident Based Automation, IBA, System
Business Process Modeling, Interview
Safety Officer
January 30, 2007

Interview Notes by Craig Tanner, Senior Data Architect

NOTE: See interviewer questions at bottom based on interview write-up. Answer to be provided for finalization of interview notes.

Interviewee is a Safety Officer for Type II Teams.

Question: What is the overall mission for the Safety Officer?

Answer:

1. To look out for the safety and welfare of everybody on the incident. To recognize potentially hazardous situations and inform others of those hazards.
2. To develop the safety action plan

Question: Do you attend the in-briefing?

Answer:

Yes. The safety officer will begin to learn of hazardous situation even at the in-briefing

Question: What happens after the in-briefing?

Answer:

He starts putting together the operational safety action plan.

Question: Who is your audience?

Answer:

1. All people that are working on the incident are the beneficiaries of the plan.
2. Immediate audience are other people on his safety team
3. Supervisors of all the other teams
4. Crew Bosses

Question: What is the content of your message?

Answer:

1. The warnings or text about potentially unsafe situations
2. Any risks or hazards with the highest potential for serious accident or injury.
Examples include:
 - a. Driving and vehicle movement is one of the biggest safety issues

b. Changes in weather is another

Question: Is there any enforcement on your part?

Answer:

1. You have authority to use direct intervention to correct dangerous situations (if they fall outside of regulations, guidelines and standards set by the agencies)
2. The Safety Officer has emergency authority to shut-down any part of the operations at an incident if he or she sees conditions that are serious safety issues. Lightning storms is one such situation.
3. You can identify and inform personnel of dangerous practices, such as people without proper personal protective clothing.
4. The Safety Officer can get additional resources to help, such as local law enforcement, park rangers, etc.

Question: What actions do you take as part of steady state operations?

Answer:

1. Walk the fire line, see what conditions are like
2. See what conditions exist in the base camp
3. Report on and correct safety issues and potential hazards
4. Report regularly with the incident commander
5. Provide a safety briefing as part of the morning report
6. Prepare a safety message as part of the Incident Action Plan (IAP)

Question: How many different forms or documents do you have to keep track of?

Answer:

1. The Safety Officer has to report on ICS 214 (Unit Log)
2. 25A – Form listing divisions, operational assignments, and also lists hazards (This is done at the planning meeting every afternoon)

Question: Does the Safety Officer do a report after a safety issue?

Answer:

1. Must do an After Action Review – Not a standard form but a review / debrief with the rest of his team

Question: Who are the other people who help with safety?

Answer:

1. Facilities unit leader
2. Food unit leader – for food handling safety and general food safety issues

Question: Is there a particular source report or other source of information that you use that would indicate trends?

Answer:

1. The Safety Officer might review the medical log, but typically will visit the medical unit several times a day.
2. The most typical trends in injuries are:
 - a. Blisters
 - b. Foot Problems
 - c. Dehydration
 - d. General sickness
3. There is an I-SUITE injury and illness module coming on line that may indicate trends and other issues.

Question: What do you have to do when there is a serious accident?

Answer:

1. Make sure that medical attention is provided first
2. Secure the area
3. Inform the Incident Commander
4. Conduct an investigation

Question: At what point during demob does the Safety Officer leave the incident?

Answer:

1. The Safety Officer attends the closeout meeting
2. Provides a safety data summary as part of the final narrative

Recommendations:

1. There are some situations where two safety officers are needed. Since there are so many things and situations to look at, one person can't be wandering around the base camp and the fire line at the same time.
2. Continually add to various web sites that list lessons learned for safety issues
3. Don't replace good observations with checklists.
 - a. There seems to be a drive to add a lot of checklists to the incident team. The time required to complete these checklists can take away good observation time.

Safety Interview Questions with Answers

1. What does the following stand for?

- I. ELCB – Earth Leakage circuit breaker
- II. COSHH – Control of substances Hazardous to health
- III. PEL – Permissible exposure limit
- IV. SWL – Safe Working load

2. What is the PEL of Hydrogen sulfide?

Ans) 10PPM

3. What are the Hazards when working at height? (Write any 4)

- I. Scaffolds
- II. Stairs
- III. Ladders
- IV. Building Structure
- V. Medically Un-Fit
- VI. Unsafe Access-Egress Facility
- VII. Over Crowding
- VIII. Working without Proper PPE

4. What are the element of audit?

Ans) Five Elements of safety audit is

- I. Policy & Organization
- II. Strategy and Planning
- III. Implementation and operation
- IV. Performance measurement
- V. Evaluation and review.

5. What does the following stands for?

- I. PPM – Parts per Million
- II. STEL – Short-Term Exposure Limit
- III. TLV – Threshold Limit Value
- IV. LEL – Lower Explosive Limit

6. Give three examples of excavation hazards.

- I. falls into trenches or excavations
- II. tripping over equipment, debris and spoil
- III. excavated material or other objects falling on workers
- IV. exposure to underground services or overhead electrical cables
- V. unstable adjacent structures
- VI. mishandled or poorly placed materials
- VII. hazardous atmosphere (noxious gases/lack of oxygen)
- VIII. toxic, irritating or flammable and explosive gases
- IX. Incidents involving vehicles and other mobile equipment.

7. Why Halon type fire extinguishers are banned universally?

Ans) it's not ecofriendly due to release of CFCs which causes global warming and ozone holes (or)

Halons are low-toxicity, chemically stable compounds that have been used for fire and explosion protection from early in the last century. Halon has proven to be an extremely effective fire suppressant. Halon is clean (i.e., leaves no residue) and is remarkably safe for human exposure.

Although some states are banning the sale of certain hand-held extinguishers for non-commercial uses, the answer is generally no. However, effective January 1, 1994, the production and importation of new Halon was banned in the developed world through an international agreement called the Montreal Protocol.

8. List any 2 safety measures at roof work?

I. Isolate overhead electric lines.

II. Use of safety nets and fall arrest systems.

9. What is the unit of light?

Ans) There are many different units for measuring light and it can get very complicated. Here are a few common measurement terms:

I. Candela(cd)

Unit of luminous intensity of a light source in a specific direction. Also called candle.

Technically, the radiation intensity in a perpendicular direction of a surface of $1/600000$ square meter of a black body at the temperature of solidification platinum under a pressure of 101,325 newton's per square meter.

II. Foot-candle(fcorftc)

Unit of light intensity, measured in lumens per square foot. The brightness of one candle at a distance of one foot. Approximately 10.7639 lux.

III. Lumen(lm)

Unit of light flow or luminous flux. The output of artificial lights can be measured in lumens.

IV. Lux(lx)

Unit of illumination equal to one lumen per square meter. The metric equivalent of foot-candles (one lux equals 0.0929 foot-candles). Also called meter-candle.

10. Write any three environmental hazards on construction site?

I. Air pollution

II. Water pollution

III. Noise Pollution

IV. Asbestos dust becoming airborne

11. Write any 4 hazards in hot work activity?

I. Fire

II. Explosion

III. Electrocution

IV. Burns

V. Arc-flash

VI. Oxygen-depletion

VII. Toxic fumes

12. Identify activity for hot work permit?

Ans) welding & grinding

13. List 4 items to be considered prior to entering a confined space?

I. Is the Atmosphere Safe or not. Gas monitors typically check for the following.

a) Oxygen (O₂) Levels High/Low.

b) Carbon monoxide (toxic gas).

c) Hydrogen sulfide, also known as "sewer gas".

d) Lower Explosive Limit (LEL) – This is the level where combustion can occur from gases produced by a variety of organic compounds that mix with oxygen.

II. Adequate EXIT and ENTRY.

III. Proper Ventilation system.

IV. Equipment's Inspection.

V. Lighting Arrangements.

VI. Communication system.

VII. Competency of working crew (Training / Experience).

14. What is the Min & Max percentage of O₂ allowed to work in confined space?

Ans) As per OSHA 19.5 % - 23.5%.

15. Which is highly flammable among below?

Ans) Hydrogen

16. Write any three heat-stress related disorders?

I. Heat stroke - Defined by a body temperature of greater than 40 °C (104 °F) due to environmental heat exposure with lack of thermoregulation. Symptoms include dry skin, rapid, strong pulse and dizziness.

II. Heat exhaustion - Can be a precursor of heatstroke; the symptoms include heavy sweating, rapid breathing and a fast, weak pulse.

III. Heat syncope - Fainting as a result of overheating.

IV. Heat edema

V. Heat cramps - Muscle pains that happen during heavy exercise in hot weather.

VI. Heat rash - Skin irritation from excessive sweating.

VII. Heat tetany - Usually results from short periods of stress in intense heat. Symptoms may include hyperventilation, respiratory problems, numbness or tingling, or muscle spasms.[4]

17. Ratio of positioning ladders?

Ans) 1:4

18. What is the voltage to be used for power tools?

Ans) 110 or 220 Volts

19. List three occupational diseases in construction industry?

- I. Asbestos-related injuries such as mesothelioma and other cancers.
- II. With noise damage to the ear, it may take many years for the symptoms to appear.
- III. Hand-Arm Vibration Syndrome (HAVS) can cause permanent damage.
- IV. Respiratory Ailments (silica).
- V. Repetitive work is one of the major causes of Musculoskeletal Disorders (MSDs).
- VI. Dermatitis- Reaction of the skin to any irritant varies from one individual to another.

20. What is the Maximum PEL for 8 hrs of noise?

Ans) As per OSHA 90 dBA.

21. Total capacity of bund wall should be?

I. The gross capacity of the bunded area should be 110% of the capacity of the biggest tank or 25% of the total capacity of all tanks within the bund whichever is greater. Wall type bunds at tank storage facility should be from 0.5 m to 1.5 m high. The distance between tank and bund walls must be at least 1 m. If the bund wall s are more than 1 m above floor provide steps or

ladder for quick escape.

II. Drums Storage: The gross capacity of a bunded area should be sufficient to hold at least the volume of 25% of the drums to be stored up to 10 KI plus 10% of any volume in excess thereof.

III. Tank Vehicle Loading: The capacity of a bunded area should at least equal to 100% of the largest compartment of any tank vehicle using the filling facility and the maximum quantity capable of being discharged from the filling point with full flow during a period of 2 minutes.

22. Safety harness is required at the height of 5.9 feet.

23. Gaps between planks of platforms shall be no wider than 25 mm.

24. Name the instrument used to measure wind speed.

Ans) Anemometer

25. Guardrails shall be 42 inches in height.

26. What is the min. distance for excavated materials to be kept from the edge of excavation?

Ans) 5 Feet or more.

27. PH value of corrosive waste is more than 5

A) 9 B) 5 c) 4 D) 8

28. Write any 4 sign of damage when you inspect safely harness?

I. Webbing (rips, fraying, fatigue (or thinning), abrasions, cuts, broken fibers, or chemical or corrosive damage. Fading of webbing color can indicate UV wear)

II. D-rings (bending, distortion, rust, corrosion, cracks, nicks, burns, deep scratches or other signs of fatigue)

III. Buckles (distortions or sharp edges)

IV. General Damage/Wear and tear

29. Ratio of slope for type A soil is $\frac{3}{4}$:1.

30. Write different types of work permit.

I. Cold work permit

II. Hot work permit

III. Electrical work permit

IV. Mobile Vehicle entry work permit

V. Radiography work permit

VI. Excavation work permit

VII. Easement work permit

VIII. Road Closure Work permit

IX. Confined Space Work permit

31. What do you refer when handling Hazardous Materials?

I. Follow all established procedures and perform job duties as you've been trained.

II. Be cautious and plan ahead. Think about what could go wrong and pay close attention to

what you're doing while you work.

III. Always use required PPE—and inspect it carefully before each use to make sure it's safe to use. Replace worn out or damaged PPE; it won't provide adequate protection.

IV. Make sure all containers are properly labeled and that the material is contained in an appropriate container. Don't use any material not contained or labeled properly. Report any damaged containers or illegible labels to your supervisor right away.

V. Read labels and the material safety data sheet (MSDS) before using any material to make sure you understand hazards and precautions.

VI. Use all materials solely for their intended purpose. Don't, for example, use solvents to clean your hands, or gasoline to wipe down equipment.

VII. Never eat or drink while handling any materials, and if your hands are contaminated, don't use cosmetics or handle contact lenses.

VIII. Read the labels and refer to MSDSs to identify properties and hazards of chemical products and materials.

IX. Store all materials properly, separate incompatibles, and store in ventilated, dry, cool areas.

X. Keep you and your work area clean. After handling any material, wash thoroughly with soap and water. Clean work surfaces at least once a shift so that contamination risks are minimized.

XI. Learn about emergency procedures and equipment. Understanding emergency procedures means knowing evacuation procedures, emergency reporting procedures, and procedures for dealing with fires and spills. It also means knowing what to do in a medical emergency if a co-worker is injured or overcome by chemicals.

32. What are the documents should be submitted when apply for excavation permit?

I. Excavation work permit

II. A safety checklist may prove helpful when you consider specific site conditions such as the following:

- a) Traffic,
- b) Proximity and physical conditions of nearby structures,
- c) Soil,
- d) Surface and ground water,

- e) Location of the water table,
- f) Overhead and underground utilities, and
- g) Weather

33. Give examples of ignitable waste.

I. Liquids with a flashpoint of less than 60o C / 140o F

II. Solids that burn spontaneously

III. Flammable compressed gas

IV. Oxidizers

V. Materials with National Fire Protection Association (NFPA) or Hazardous Materials Identification System (HMIS) flammability hazard rating of 3 or 4.

34. Give examples of Toxic waste.

Ans) Arsenic, Barium, Benzene, Cadmium, Carbon Tetrachloride, Chlordane, Chlorobenzene, Chloroform, Chromium, O-Cresol, M-Cresol, P-Cresol, Cresol, Endrin, Heptachlor, Hex chlorobenzene, Hexachlorobutadiene, Hexachloroethane, Lead, Lindane, Mercury, Methoxychlor, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Selenium, Silver, Tetrachloroethylene, Toxaphene, Trichloroethylene, Vinyl Chloride

35. Give examples of Reactive waste.

I. Materials that tend to be unstable at normal temperatures and pressures

II. Water reactive materials

III. Explosives

IV. Cyanide or sulfide bearing wastes

V. Pyrophoric metals such as sodium

VI. Cyanide wastes

VII. Ethers

VIII. Peroxides

36. Give examples of Reactive waste.

I. Aqueous solutions with pH less than 2 or greater than 12.5

II. Liquid that corrodes steel at a rate greater than 6.35 mm per year (0.25 inches per year) at a test temperature of 55°C (130°F)

III. Strong acids

IV. Alkaline degreasers

V. Water/wastewater treatment chemicals

VI. Any debris that is contaminated with this material

37. Write any 5 cold work activities?

I. Painting (hand)

II. Engineering Routine maintenance work which does not involve unbolting or cutting.

III. Erection and dismantling of scaffold.

IV. Pressure testing of plant equipment.

V. Engineering construction activities.

38. Write 5 characteristic of inert Gas?

I. They are also called Noble Gases or Inert Gases or Zero Group Elements.

II. They have eight electrons in their valence shell except helium ($Z=2$).

- III. Their valence shell are complete.
- IV. They are chemically inert.
- V. They have high values of Ionization Potential.
- VI. Noble gases are diamagnetic due to absence of unpaired electrons.
- VII. They are monoatomic gases.
- VIII. They are colorless and odorless gases.
- IX. All these are present in our atmosphere except radon.
- X. Noble gases are quite soluble in water.

HSE

PROBABLE QUESTIONNAIRE

FOR INTERVIEW



HSE Questions and Answers

Q. What is the Safety?

Safety is freedom from unacceptable risk of harm. (The word safety drives from the Latin word 'SALVUS' means uninjured and healthy)

Q. What are the responsibilities of an HSE Officer?

- The HSE Officer acts an advisory capacity to the management and supervision with regards Health and Safety Environment,
- He is to monitor and ensure that the activities are being performed with the acceptable safety norms.
- Helping supervisors to identify the hazardous and unsafe conditions and ensuring rectifications.
- Conducting tool box meeting, Supervisors safety meeting, conducting training in various topics, conducting safety incentive program, conducting safety auditing/inspection.
- Taking disciplinary action against the violations.
- Conducting risk assessment and JSA, pre task meeting and all other project related safety requirements.
- Keep track record all incidents at site.
- He is to investigate hazards and dangerous occurrences, examine the cause of accident, carry out safety inspection on site and what remedial steps/action has been under taken.

Q. What is a 'Permit to Work' Procedure / Work Permit System?

- The 'Permit to Work' (PTW) Procedure is a formal written system, which utilize a document to control the work by means of potential hazards identification and risk assessment.
- The work permit is also a means of communication among various supervisors or their respective belonging to operation, maintenance, controlling teams and contract personnel, who are involved in work preparation and / or its execution.

Q. Explain Types of Work Permit normally used in oil & gas industry?

Types of Work permits: 5 types of work permit

1. Hot Work Permit (red)
2. Cold Work Permit (green)
3. Radiography Permit (yellow)
4. Vehicle/mobile plant entry work permit
5. Confined Space Entry Permit

(a) Cold Work Permit:

A document that specifies precautions identifies hazards and controls all work that is not hot and radiographic in nature.

(b) Hot Work Permit:

A document that specifies precautions, identifies hazards and controls all work involving actual naked flames, sparks or has potential for creating sparks or heat.

(c) Radiography Work Permit:

A document that specifies precautions identifies hazards and control all work involving radiographic in nature.

(d) Vehicle / Mobile Plant Entry Permit:

A document that specifies precautions identifies hazards and controls all work involving entry of a vehicle or mobile plant into a hazardous area.

(e) Confined Space Entry Permit:

A document that specifies precautions identifies hazards and controls all work involving entry to an enclosure, which has limited means of entry or exit, not designed for continuous occupancy.

Q. Explain Each Work Permit Validity? (as per KOC)

Hot / Cold / Radiography Permit:

Valid for a maximum duration of seven consecutive days from the date of issue subject to renewal by the permit issuer.

Note: Validity Period for Cold or Hot work permit in Non-Hazardous area can be extended for a maximum one month with approval from concerned Team Leader.

Confined Space Entry Permit:

Valid for one continuous work shift or part thereof; however the permit is to be renewed / re-endorsed in case of crew change, transfer of responsibility, work suspension or as recorded in the permit.

Vehicle / Mobile Plant Entry Permit:

Valid for one continuous works shift for Vehicle entry, whereas for Mobile Plant Entry it is valid for maximum 7 consecutive working days from the date of issue subject to renewal by Permit Issuer.

Q. Explain Each Work Permit Distribution? (as per KOC)

Work Permit will be made out in FOUR COMPIES

- The Original for worksite
- 1st copy for Permit Applicant
- 2nd copy of all permits (except cold work permit) forwarded to FIRE TEAM by the permit issuer
- 3rd copy shall be retained by the issuing authority

Note: After completion of work and permit closure as per procedure...

Original kept on record with Permit Issuer. 1st copy shall be retained by the Permit Applicant (for minimum 6 months). 3rd copy can be given to Worksite Supervisor for their record.

Q. What is e-WP (Electronic Work Permit)? (as per KOC)

Electronic Work Permit (e-WP) is a web-based solution through KOC intranet to manage electronically the authorization process of non-routine activities which are carried out in KOC business as per Permit to Work Procedure (KOC.SA.004).

Q. What important details a work permits gives?

It is a form, which is signed by higher responsible people to carry out the specific job. It clearly states:

- What is to be done,
- Where,
- When and
- What are the safety precautions to be taken.

Q. What is Cold work, Hot Work and Radiography work?

Cold Work:

Any work that does not involve a source of ignition or naked flame or does not have spark generating potential is classified as a Cold Work.

Hot Work:

Any work which involves the use of naked or a source of ignition or spark generating potential is classified as a Hot Work.

Radiography Work:

Any work that involves the use of a radioactive source, shall be covered by a radiography work.

Q. What is the Excavation? And types of excavation?

Any man made cavity, cut, trench or depression on an earth surface formed by earth removal.

Types of Excavation:

- A. **Manual Excavation:** The excavation without using any powered equipment.
- B. **Mechanical Excavation:** The excavation work using any electrical or mechanical equipment.

Q. Explain about Excavation Notification?

Excavation notification is a document to notify concerned authorities, who have responsibility and jurisdiction for safety and integrity of above ground and underground services existing at the propose site of excavation.

- Excavation notification must be supported by a work permit.
- Excavation notification is valid for **90 days** from the date of issued.
- Excavation notification is required for all excavations **regardless of depth**.

Q. Why Excavation Notification required for excavation?

Excavation notification gives detailed information about the underground facilities and it is to be signed by all KOC concerned departments to confirm that the proposed excavation location has been identified and all safety measures have been taken for the existing underground facilities.

Q. What is EXCAVATION HAZARDS?

- Cave in or collapse of soil
- Risk due to presence of underground installations, pipelines, cables.
- Drowning due to water seepage into trench.
- Soil vibration due to machinery / heavy vehicles operations in the vicinity.
- Lack of Oxygen or asphyxiation etc.
- Underground obstruction or damage to buried pipelines & services
- Accidental fall of personnel or equipment inside a trench
- Struck / hit by excavating machinery
- Dropped / falling objects
- Flammable & / or toxic gas release
- Exposed to airborne contaminants
- Fire & explosion
- Electrical shock due to contact with energized electrical / telecom cable.
- Possible presence of explosive devices

- Damage to shallow underground services due to weight of heavy equipment such as mechanical excavator.
- Encountering wet soil (mixed with water) or reaching water table.
- Encountering contaminated soil

Q. Enlist precaution to be taken prior to taken to and during excavation work?

OR

What is the safety precautions required for a safe excavation?

- No excavation work in KOC area without clearance of *Explosive Ordinance Disposal (EOD)*.
- No mechanical excavation closer than **5 meters** to any **hydrocarbon** carrying pipeline.
- No mechanical excavation closer than **3 meter** to a **non-hydrocarbon** carrying pipeline, cables and services.
- For any excavation **deeper than 1m**, ladder must be positioned projecting minimum 1 meter above the edge of the excavations.
- Ladders shall be provided **every 7.5 meters** (25 feet) of lateral travel in the trench.
- Ladders shall be securely supported at the bottom as well as at the top.
- Excavated material shall be placed **1m** from the edge of the excavation for depth up to 1.2 meter.
(Accordingly placement of excavated material shall be increased proportion to the depth of excavation.)
- Heavy equipment, machinery shall be kept **at least 3 meters away** from the edge.
- Any walkway across trench shall have scaffold type platform with handrails.
- All trenches shall have barrier (such as fixed guardrails) and reflective warning notices clearly displayed. Flashing lights are mandatory during poor visibility.
- The access to plant, equipment and emergency services must not be obstructed by the trenches.
- No mechanical excavation is allowed inside the existing KOC facilities (Gathering Center, Booster Station, water injection and handling facilities, etc.)

Q. What is confined space?

- Any enclosure having a limited means of entry & exit and it is not designed for continuous occupancy.
- There will be a presence of any hazardous substances such as flammable and toxic gases, oxygen deficiency, hot or humid atmosphere or any combination of it.

Examples: Process vessels, Tanks, Bins, Stacks, Large pipe, Duct, Pits & Trench etc.
Any excavation with depth more than 1.2 meter.

Q. What are the Confined Space Hazards?

A confined space may have one or combination of the following hazards:

- Oxygen deficiency
- Presence of flammable, combustible or pyrophoric materials (HC, Sludge etc.)
- Presence of toxic gases, corrosive or hazardous materials (H₂S, Co, NH₃ etc.)
- Poor illumination, Ventilation & Communication.
- High temperature and humidity.
- Limited entry & exit / Restricted access.
- Restricted movement inside.
- Falling / Tripping hazards
- Presence of reactive or self-igniting material.
- Hazard due to electricity or moving machinery.
- Hazard due to pressurized fluid.
- Hazard due to nature of work carried out inside confined space.

Q. What is the procedure for entering a confined space hazards?

OR

What are the important PRECAUTIONS for confined space?

Procedure for entering confined space:

1. Permit must be procured from operations, making sure of the following.
 - a. Complete isolation of the space to be entered.
 - b. Draining, depressurization and purging or cleaning should be performed.
 - c. Gas test should be conducted to ensure no hazardous atmosphere is present.
 - d. Space ventilation.
2. A Pre task meeting must be conducted with all authorized entrants prior to entering confined space.

3. The attendant (Stand by man) shall be assigned at the entrance to maintain communication with employees working inside to ensure their safety. A log book shall be maintained at the entrance to keep track of the people inside the space.
4. Safety attendant must be trained and authorized to use gas testing equipment.
5. Entrants must wear body harness, and if necessary a life line be attached to the harness to avoid entry-rescue.
6. Lighting should be provided, if necessary a maximum of 24 volts, lighting should be used attached a GFCI.
7. Only intrinsically safe or explosion-proof equipment shall be used inside.
8. Depending on the situation, emergency rescue team may be put on standby.
9. If an emergency occurs within the confined space, the standby person must not enter it until rescue team arrived.
10. Barricade the area with warning sign board.

Q. What you know about working in a confined space entry? OR

Explain about confined space entry?

Any enclosure having a limited means of entry & exit and it is not designed for continuous employee occupancy.

- Before entering in the confined space, must need to obtained a confined space entry work permit, make sure that all required isolation being done.
- Frequently gas test is to be carried out to confirm that area is free of toxic gas or flammable atmosphere.
- If the area is contaminated or it has oxygen deficiency the provided BA sets or air line respiratory system.
- Conduct pre-task meeting for the employees who will be entering inside the confined area and get there signature to conform that they are aware of the hazards and safety measures.
- The attendant (Stand by man) to assigned at the entrance. A log book shall be maintained at the entrance to keep track of the people inside the space. The attendant shall not be assigned to other duties. If an emergency occurs within the confined space, the standby person must not enter it until rescue team arrived.
- The entering people should use body harness with lifeline for the emergency rescue purpose.
- Any required electrical lighting or tools should not exceed more than 24 volts and attached with GFCI / ELCB. It should be intrinsically safe or explosive proof.
- Barricade the area with warning sign board.

Q. Explain H₂S? OR What is H₂S and its characteristics explain?

- H₂S is produced or generated by decomposition of organic materials.
- It is a highly toxic gas and highly flammable.
- Its smell like rotten egg at low concentrations and not detectable by order at high concentration.
- It is highly flammable. (flammable at 4.3% to 45.5% by volume in air)
- It is colourless.
- It is heavier than Air.(1.19)
- It is highly soluble in water and other liquid.
- When burned or flared it forms sulphur dioxide (SO₂) which is also colorless and highly toxic gas.
- The exposure limits **10 PPM is the maximum allowed for 8 hours.**
- Increasing exposure will cause headache and irritation of eyes.
- 800 PPM or more will be instantly fatal.

Exposure Limit:

TLV-TWA of H ₂ S	=	10 ppm
TLV-STEL of H ₂ S	=	15 ppm
IDLH of H ₂ S	=	100 ppm

- Note:** - Up to 10ppm work can be done without respiratory protection system.
- 10 to 100ppm work can be done by SCBA or Air lined breathing apparatus.
- Above 100ppm work not permitted, allowed only for rescue.

Q. What are prominent H₂S HAZARDS?

H₂S Hazards:

- Eyes and respiratory irritation.
- Dizziness, headache, nausea, abdominal pain.
- Loss of consciousness, Brain damage possible, death / fatal.

Q. Explain the precautionary measures to be taken while approaching H₂S prone area?

Precautionary Measures – H₂S:

- Sufficient number of escape masks shall be kept in areas where H₂S is liable to present.
- In case H₂S presence is suspected in an area, the persons must put on escape mask immediately and toxic gas test must be made immediately with appropriate detector to determine the concentration of H₂S in air.
- Working person should be equipped with personal detectors and alarming device to alert in case of H₂S presence.

- In case of H₂S alarm, all personnel should vacate the area after donning the escape set / breathing apparatus and report to the designated assembly point for mustering.
- If working in H₂S contaminated atmosphere must wear suitable BA set and work in pairs to support and rescue each other in the event of difficulties.
- Know the wind direction and evacuate in the cross wind direction in case of H₂S leak.
- Never go to a low-lying area during H₂S leak.
- Paste H₂S warning sign in H₂S prone areas.
- The presence or suspected of H₂S in any part of the plant or sewer shall be reported immediately to supervisor and respective area fire station for arranging rescue and support.

Q. How to treatment of persons affected by H₂S?

Positive pressure breathing apparatus must be worn by any persons attempting a rescue.

- The victim must be immediately moved to fresh air, possibly in the upwind direction of the gas leak. The rescuer must be outside the contaminated area before removing his/her personal BA set.
- **If the victim has stopped breathing**, resuscitation must be started immediately, using artificial respiration or a resuscitator if available. Resuscitation must be continued until the victim starts breathing unaided or until qualified medical assistance arrives. Medical help must be summoned as soon as possible.

Q. Define TLV-TWA, STEL and IDLH?

TLV –TWA:

Time Weighted Average (TWA) concentration of the contaminant in air over the normal work shift of 8 hours, to which workers can be exposed without respiratory protection in a 40 hour workweek.

TLV-STEEL:

Short Term Exposure Limit (STEL) when exposed only for a short period of 15 minutes. This maximum concentration can be allowed to breathe 4 times during 8 hours with minimum 1-hour interval between exposures.

IDLH:

Minimum concentration of contaminant in air which is Immediately Dangerous to Life and Health (Note: Air supplied respirators are required in IDLH atmospheres.)

Explosive range (TLV, STEL & IDLH) for different GAS:

GAS	TLV- TWA (PPM)	STEL (PPM)	IDLH (PPM)
Hydrogen Sulphide (H_2S)	10	15	100
Sulphur Dioxide (SO_2)	2	5	100
Ammonia (NH_3)	25	35	300
Chlorine (Cl_2)	0.5	1	10
Carbon Monoxide (CO)	25	50	1200
Acetylene (C_2H_2)			

Q. What is Flash Point (FP)?

Minimum temperature at which a flammable mixture of gas or vapor in air will momentarily flash when a source of ignition (spark) is introduced.

Q. What is Auto Ignition Temperature (AIT)?

Minimum temperature required to initiate self-sustained combustion of a solid, liquid or gas in the absence of a source of ignition.

Q. What are LEL/LFL and UEL/UFL?

Lower Explosive Limit (LEL): or (Lower Flammable Limit)

Minimum concentration of vapor or gas in air which will burn when a source of ignition (spark) is introduced.

Upper Explosive Limit (UEL): or (Upper Flammable Limit)

Maximum vapor/gas to air concentration above which flame propagation will not occur, i.e. the mixture is "too rich" to burn.

Note-1: Flammable Gas Detectors (Meters) measure % LEL, hence actual LEL means 100% of full-scale reading of the meter. Below LEL (100% of meter reading), a mixture is "too lean" to burn.

Note-2: LEL of airborne combustible dust: If the dust obscures vision at a distance of 5 feet (1.52 m) or less it is considered as at LEL (ex. Sulfur or coke).

Explosive range (Lower & Upper) for different GAS:

Flammable GAS	LEL / LFL (by volume in air)	UEL / UFL (by volume in air)	AIT (by volume in air)
Hydrogen Sulphide (H₂S)	4.5 %	45.5%	260 C / 500F
Sulphur Dioxide (SO₂)			
Ammonia (NH₃)	15 %	28%	651.57 C / 1204 F
Chlorine (Cl₂)			
Carbon Monoxide (CO)			
Acetylene (C₂H₂)	2.5%	80%	
Methane- CH₄ (Natural Gas)	5%	15%	
Petrol (Gasoline)	1.4%	7.6%	

Q. What is scaffolding?

Scaffolding is a temporary working platform to provide supports both men and materials for working place. It is used in maintenance, construction and demolition work etc.

Types of scaffoldings:-

- Permanent scaffolding
- Hanging scaffolding
- Suspended scaffolding
- Mobil scaffolding.

Q. What are the points to be checked while green tagging erected scaffolding?

Before using of scaffold check the tag (7 days validity).

Green tag we can use the scaffold and Red tag for not use and Yellow tag use only for scaffolding works.

- Level and firmness of the ground.
- Sole plate
- Base plate
- Standards
- Ledger
- Transom
- Couplers
- Planks (boards)
- Toe boards
- Braising

- Guard rails
- Mid rail
- Out riggers
- Ladders

Q. What is Potential Hazards of scaffolding?

- Collapse of Scaffolding.
- Falling from height.
- Falling object.
- Slip & Trip hazards.
- Pinch point hazards / Sharp edges
- Opening without guardrail.
- Scaffold erection during storm or high winds, raining and poor visibility.
- Blocking emergency access and walkways

Q. What is the cause of scaffolding failure?

- Slipping of unsecured ladder.
- Use of unsuitable scaffold or faulty materials.
- Inadequate or irregular platform width.
- Omission of guard rails or toe boards.
- Failure to properly secure the scaffold to the building or to brace it adequately.
- Overloading on the scaffold platforms.

Q. What is the precaution during scaffolding erection?

- Scaffolding erection, dismantling should be done under the supervision of a *COMPETENT PERSON* (Scaffolding Supervisor).
- 'Red Tag' means Danger "do not use" and Green Tag means "scaffold complete-ready for use" when completed.
- Gap between boards/planks should be 1 inch (25mm).
- Top guardrail, midrail and toe board should be provided.
- Guard rails and Toe boards shall be fitted to the inside of standards.
- Guard rail should have a height between 915 mm (0.9 m or 90 cm or 3' feet) to 1143 mm (1.15 m or 3' 9")
- Toe board should be **6" (15 cm)** high and secured with toe board clips.
- If scaffold to be erected on soft ground should be used sole plate.
- Worker shall not work on scaffolds during storms or high winds or poor visibility.
- Sole plate shall extend under at least two standards.
- Base plates with screw jacks should be proper scaffold leveling adjustment.
- All standard shall be vertical.
- Ledgers shall be securely fixed to standards couplers.

- Scaffolds should be properly braced by cross bracing or diagonal braces or both for securing vertical members together.
- Access ladder must be provided for any platform & clamped with scaffold structure.
- Ladder should be **4:1 ratio** and **angle 75°**.
- Ladder should be rise **1 meter** (42 inch) above from the landing place/platform.
- Scaffold should be not obstruct access to/from any *fire fighting equipment / emergency equipment, operating area equipment, instrument and control panels, ladders, stairways* etc.
- Scaffold platform opening should be secured with guardrail and sign board.
- All scaffolding couplers should be tightened.

Q. What are the Hazards Associated with Electricity?

Hazards:

- Inadequate wiring.
- Exposed electrical parts
- Wire with bad insulation.
- Undergrounded electrical systems and tools.
- Overloaded circuits
- Damaged power tools and equipments.
- Using the wrong PPE and tools
- Overhead Powerlines.
- All hazards are made worse in wet conditions.

Q. What are the Precautions to be taken to avoid electrocution?

- All electrical work must be covered by an appropriate work permit.
- The authorized person approved by the relevant Maintenance Team can carry out electrical work.
- Electrical safety floor mats made from a special grade of insulating rubber shall be provided in front of switchboards or high-voltage equipment to protect personnel against accidental electric shock.
- Warning tape on top of buried cables and electrical cable tiles must be provided as an early warning notice for excavations.
- All portable electrical equipment must be approved by the Maintenance Team and shall be used as per suitability for the relevant area only.
- Do not reach blindly into areas that may contain energized parts.
- Do not enter into a space where adequate lighting and working space is not available.
- Only Industrial type plugs and sockets shall be used on all locations other than offices and houses.

- All testing and measuring equipment used for the electrical works should be tested, calibrated and documented.
- Ensure all equipments are grounded and should be attached GFCI / ELCB.
- Inspect electrical equipments before use.
- Electrical Panel, Junction boxes, pull boxes and fitting must have approved covers.
- Unused openings in cabinets, boxes and fittings must be closed.
- Don't overload on a circuit.
- Maintain the distance from overhead power lines during the Crane activity and scaffolding erection and other activities.
- All cable of power tools / portable tools should be double insulated.
- Don't use damage extension cords and don't touch live wire and another wire at a different voltage.
- Damaged equipment must not be touched until the isolated.
- Disconnect the power when not in use and when changing accessories.
- Use the appropriate PPE for the job.
- Competent, qualified and approved personnel should be carry out testing & energizing of the equipment.
- Electrical lock-out and tag-out system should be used when working on electrical equipments.
- In the event of fire on electrical panel or equipment, the electrical power supply must be isolated and suitable Fire Extinguisher shall be used to extinguish the fire.

Q. What are safety precautions you will take for a temporary electrical connection?

- Temporary wiring shall be guarded or isolated by elevating to prevent accident contact with workmen or equipment.
- Vertical clearance above walkways shall not be less than 3m (10feet) for circuits carrying 600V or less.
- Wires shall be insulated from their support.
- Temporary festoon lighting strings shall be made up with cords having lamp sockets and connections protected by insulating coverings.
- Extension cord shall be of approved types and used for the purpose for which they are made.
- Exposed empty light sockets and broken bulbs shall be prohibited.

Q. Explain Fire Triangle?

- Fire Triangle is a diagram which represents the three components that creates a fire such as **Oxygen or Air, Fuel** and **Heat** (source of ignition).
- Absence of any of the components, fire would not occur.



Fig. Fire Triangle

Q. What is the different class of fire/types of fire?

Class of Fire: (As Per KOC)

Class A - Carbon based combustible materials (wood, rubber, paper, fabric, etc.)

Class B - Liquid (petrol, oil, thinners etc.)

Class C - Gases (acetylene, propane, LPG, Butane etc.)

Class D - Metals (Sodium, potassium, magnesium) require special extinguishing agent.

Class E – Fire involving energized electrical equipment as electrical cable, electrical motor etc.

Q. Which type of fire extinguisher is used for each class of fire?

TYPES OF EXTINGUISHERS & THEIR USE: (As Per KOC)

Symbol	Types/Class of fire	Type of Fire Extinguisher		
		Water	DCP (Dry Chemical Powder)	CO2 (Carbon Dioxide)
Class "A"	Carbon based (wood, rubber, paper, fabric etc.)	Most suitable	May be used	May be used
Class "B"	Liquid (Petrol, oil, thinners etc.)	Not Suitable	Most suitable	May be used
Class "C"	Gases (Acetylene, propane, LPG, Butane etc.)	Not Suitable	Most Suitable	May be used
Class "D"	Metals (Sodium, potassium, magnesium) require special extinguishing agent	Not Suitable	Only Special DPC	Not Suitable
Class "E"	Energized electrical equipment as electrical cable, electrical	Not Suitable	Suitable	Most Suitable

Q. What is fire extinguishing principle?

Fire extinguishment principle involves elimination one or more of the components forming a Fire Triangle.

Starving: The removal of fuel to the point so that nothing remains to burn.
Example: turn off valves.

Smothering: The removal of air or oxygen to point the so that combustion ceases.
Example: fire blanket, foam and sand.

Cooling: Cooling of fuel to the point so that combustion vapours are no longer produced, and temperature is dropped below ignition point.
Example: water spray etc.

Inhibiting the Flame Chain Reaction:

It is represented by fire tetrahedron shown below. In this method by arresting the chemical chain reaction in the flame zone, combustion process is terminated, e.g. introduce a Dry Chemical Extinguisher, inert agent etc.



Fig. Fire Tetrahedron

Q. What is transmission of heat?

OR

What are the methods / modes for fire can spread?

Transfer of heat is responsible for initiation, continuation, and extinguishment of most fires.

Fire can spread by one or more of the following modes:-

Conduction: Heat from one body is transferred to another by direct contact.

Convection: Heat is transferred by a circulating medium either a gas or liquid.

Radiation: Heat is transferred from one body to another by heat rays a medium in between.

Q. Define Near Miss, Incident & accident? What is different between Incident & Accident?

Near Miss: Near miss is an incident, which resulted in no injury or illness and / or damage (loss) to people, asset, the environment or Company reputation.

Example: A water tanker tilted.

Incident: Incident is any unwanted and unplanned occurrence/event which resulted or could have resulted to physical injury or death to person or damage to property or environment.

Or

An undesired event that has caused or could have potentially caused personal injury, illness and / or damage (loss) to assets, production or harm to environment or third party.

Example:

Accident: Accident is an undesired unplanned occurrence which resulted to an injury or death to person or damage to property or environment.

It is occurring due to unsafe acts or unsafe condition or combination of both.

OR

Accident is an unexpected, unplanned and unwanted occurrence which is occurred by unsafe act and unsafe condition or combination of both, which can be resulted in injury to person and damage to property and environment.

Example: A car collided with another vehicle.

Comparison between Incident & Accident:

All accidents are incidents but not all incidents are accidents.

Q. What are Unsafe Acts & Unsafe Conditions?

Unsafe Acts: Working without safety precaution or the act which can be create accidents.

OR

It is a violation of an accepted safety procedure which could have permitted to occurrence of an accident.

Example: Working at height without any fall protection.

Unsafe Conditions: The place where hazardous is hiding.

OR

It is a physical condition which could have permitted to occurrence of an accident.

Example: Working inside the deep trench without slopping or shoring.

Q. What is the different Hazardous Area Classification? (as per KOC)

What you mean by Hazardous Area? What is Zone 0, 1 and 2.

Hazardous Area:

Hazardous area is the zone in which a flammable atmosphere may be present during normal operation or under abnormal conditions.

Classification of Hazardous Area:

Zone - 0: Zone in which a flammable atmosphere is continuously present or present for a long period. (Typically more than 1000 hours/year.)

Zone - 1: Zone in which a flammable atmosphere is likely to occur in normal operations. (Typically 10 to 1000 hours/year)

Zone- 2: Zone in which a flammable atmosphere is not likely to occur under normal operations and if it occurs, it will only exist for a short time. (Typically less than 10 hours/year)

Q. Incase of Fire, Accident, Gas leak or Explosion what you will do?

How you will safeguard your people at the site incase of any leak?

Whom & How do you communicate this emergency.

- Inform to nearest fire station / Burgan fire station with clear details about the incident and emergency evacuation plan will be following up.
- All running equipment must put off.
- All people have to evacuate in the cross wind direction and calmly walk to the assembly area there on instructions will mount on the available transport, the transport will take all to a safe area.
- Every section will have a head count by section head or time keeper or check that any one missing or not.
- If anyone get hurt during explosion, gas leak, fire or accident, will be evacuated to the nearest medical center after giving first aid by qualified first aider or doctor.
- Emergency officer will give clear instructions of situation improved or all will be evacuated to a safe area.
- All work permits will become nullified during emergency automatically.
- During emergency an appointed Sr. staff/Sr. safety officer will take charge as an emergency officer.
- All will wait in the safe area until further instruction come from the emergency officer/KOC for either to return back to the work or to a safe area.

Q. Enlist precaution to be taken prior to start the WELDING and GRINDING works on the pipeline inside GC & why it is required?

OR

Explain Safety Precaution for a Hot Work? OR

What are the safety precautions you will take for a hot work?

Following precaution should be taken during **Welding / Hot Work**.

- Hot Work will start with a valid hot work permit.
- If it is inside GC or Refinery then need to cover the welding point with proper fire blanket.
- Frequent gas test to be carried out
- Wet the area with water and pressurized firewater hose to be kept near the hot work area.
- Combustible materials to be removed from welding point.
- Keep the certified and valid fire extinguisher near the hot work area.
- Trained and certified fire watcher should be present.
- Equipment, which will be used for hot work to be inspected before starting up the job.
- All welding machine must be connected with GFCI (Ground Fault Circuit Interrupter) or ELCB (Earth Leakage Circuit Breaker) and approved spark arrester.
- All welding machines must be ground with static-earthing device.
- All cable must be properly insulated and electrode holder, plugs and sockets must be in good condition.
- The equipment or pipe, spool should be supported on a secured and firm base during welding or grinding.
- All valves, flanges, drains, canals etc. where gas leaks or presence of flammable atmosphere is possible should be covered.

Q. What are the Safety Precautions taken GAS WELDING & CUTTING?

- Any hot work will start with a valid hot work permit.
- Frequent gas test to be carried out.
- In a gas welding or cutting operations, the oxyacetylene flames shall be ignited by the lighter specially designed.
- The pressure regulators and gauges shall be suitable and in good working condition.
- The cylinder valve must be closed before the regulator is removed.
- Flash back arrestors should be fitted both end with the hoses to prevent flash back.
- The adequate ventilation must be provided to expel toxic gases/fumes, if activities carried out inside a tank / vessel / any confined space.

- All valves, flanges, drains, canals etc. where gas leaks or presence of flammable atmosphere is possible should be covered.
- Combustible materials to be removed from welding point.
- Valid Fire Extinguishers and Fire Watcher should be provided.
- When need to cover the welding point with proper fire blanket.
- When necessary, wet the area with water and pressurized firewater hose shall be provided.
- Equipment, which will be used for hot work to be inspected before starting up the job.
- All hose and cable, plugs and sockets must be in good condition.

Q. What are the welding and cutting hazards?

Welding & Cutting HAZARDS:

- Risk due to toxic gas & fumes generated while welding or cutting.
- Fire or explosion started by flame, sparks and hot material from the activities.
- Electrical shock from arc welding equipment.
- Burn hazard due to heat generated while welding or cutting.
- Weld bead particulars or slag entering unprotected eyes during chipping.
- Inhalation of welding fumes.
- Falling Gas cylinders.
- Radiation from UV and Infra-Red (flash eye).

Q. What will be your action if someone informs you about accident?

- Ask him the location of the accident and the details.
- After reached the location analyze the situation, if someone get hurt during accident must be evacuated to the nearest medical center after giving first aid by a qualified first aider or doctor.
- Report to near fire station / Burgan fire station with clear location and details of the accident.
- Report to client HSE Specialist and concerned project manager.
- Investigate the accident and prepared an accident report with attached sketch and supporting documents and submit to client HSE Dept.

If the accident is major like Explosion / heavy fire / heavy gas leak then seek help from nearest fire station / Burgan fire station and follow up the evacuation procedure

Q. What is the Pyrophoric Scale?

- Pyrophoric scale is actually Iron Sulphide (FeS_2) which develops inside pipeline or piping system. It will readily ignite when exposed air/oxygen (Exothermic Reaction – i.e. heat releasing).
- Hydrogen Sulphide (H_2S) or any Sulphur compound when it is react with iron it will form PyrophoricIron Sulphide.
- It is highly flammable even exposure to the air. The best way to handle is to douse it with water and keep it thoroughly wetted until safe disposal.
- In pipelines or equipments which carry gas or liquid and which contains Hydrogen Sulphide (H_2S), Pyrophoric Scale or Iron Sulphide (FeS_2) may be present.

Q. What is the MSDS?

Material Safety Data Sheet is detailed information about the physical and chemical characteristics of the chemicals as well as the health, safety, fire, reactivity and environmental hazards and its precautions. It is provided by manufacturer.

Q. What is the JSA?

- JSA stand for Job Safety Analysis.
- It is to be completed before start of any new job.
- It clearly defines the specific job, equipments and tools to be used, specific hazards of the job and preventive measures to be taken.
- It is to be filled by supervisory staff and discussed with HSE Dept.
- It is to be signed by all concerned to confirm that everyone involved does know about the job and how to do it in safe way.

Q. What is EOD and what will be your responsibility if an EOD identified?

EOD is Stand for Explosive Ordinance Disposal. Incase of an EOD identified or an unidentified object find, mark the area so as to relocate it, keep away all workers from the particular area. If possible detail a watchman and inform respective area fire station with clear details. Stop all activities at the location until cleared by KOC Ordinance Disposal Squad.

Q. Define Lock out Tag out (LOTO) System?

- Lock out & Tag out is a process to block the flow of energy from the source and it will be locked with a lock system or padlock so that the energy is not restored and these should be tagged on it, the tag will be a warning 'do not operate'.
- Locks and tags will normally be removed only by the person who installed them whenever possible.
- Before lockout and tag out, make sure that a valid isolation permit has been obtained.

Q. Define Chemical Hazard Identification Tag?

- Chemical hazard Identification Tag or Hazardous Material Classification Tag is a warning tag to inform how much hazardous the material contains, e.g. fire, health, reactivity or specific hazard.
- It is color-coded, **Red for fire**, **Blue for health**, **Yellow for reactivity** and **White for specific hazard** like oxidizer, alkali, acid and corrosive etc.

Q. What are the general precautions to be taken before and during using an ABRASIVE WHEEL?

Precautions - Abrasive Wheel:

- Ensure the spindle speed doesn't exceed the maximum speed marked on the wheel.
- Ensure the wheel fits on the spindle freely.
- Tighten the spindle nut enough to hold the wheel in place without distorting the flange.
- Do not stand in front of the rotating wheel.
- Provide a protective guard for a moving abrasive wheel and maintain proper alignment with the wheel.
- For any bench-mounted abrasive wheel, the wheel rest should be adjusted as close as practicable to the abrasive wheel, which shall be firmly secured.
- Before mounting, inspect closely for damage, perform a sound-test or ring-test to ensure it is free from cracks/defects.
- Don't adjust the wheel while it's rotating and disconnect tools when changing the wheel.
- Don't use an expired abrasive wheel or a damaged/cracked wheel and tag it "do not use".
- Must be used with eye and face protective devices (goggles, face shield etc.).

- Wear the suitable respiratory protection also in case abrasive wheel generates dust.
- A sign shall be posted near all fixed abrasive wheel.

Q. What is safety precaution to be taken prior to start & during the WORK AT HEIGHT & why it is required?

- The work is properly planned, organized. Appropriately supervised and carried out ensuring safety of workers and integrity of worksite.
- The worksite including its access as well exit is safe with necessary protection against fall from height.
- Similarly the workers to be deployed for work at height are trained and aware of potential hazards.
- PPE, appropriate fall arrest system such as Safety Harness, Safety Nets etc. shall be used to protect the person from fall.
- The personnel working at height must use appropriate & approved Full Body Safety Harness and attached to a secure anchorage.
- All the straps of safety harness shall be securely tightened to the body parts.
- The tools and equipment to be used at height must be kept properly secured to prevent its accidental fall or tripping hazard.
- The area in the vicinity of work at height should be barricaded and danger notice posted to alert the personnel.
- **Man Basket:** Workers should keep all body parts inside the man basket while it is being lifted or positioned. Workers must wear a personal fall arrest system, and Helmet with chin strap must be worn at all times.
- **Sloping Roofs:** Employee worked in roofing activities on slope roofs with unprotected sides and edges 6 feet (1.8 meters) or more above shall be used appropriate Safety Harness, Safety Net and Guardrail or a combination of these.

Q. What are the safety PRECAUTIONS to be taken while performing LIFTING OPERATION?

- The load is clear of any obstruction
- The load is securely slung (use tie ropes)
- The security of the load is to be reconfirmed once the load is raised a few inches.
- The crane is not used to drag the load or pull the slings beneath a few inches.
- No movement is allowed under the suspended load.
- Barricade the swing radius of the crane.
- Never sling different size of tubular together

- The crane hook is in central position over the load.
- All equipment must be inspected by third party and validity of inspection must be checked.
- Daily inspection sheet of cranes must be always available with crane operated.
- SWL of the crane and hook shall be marked and highlighted.
- Fire extinguisher of approved type & capacity.
- Crane hook secured prevent swinging action in transit .
- A calibrated SWL indicator & crane capacity chart prominently displayed in the cabin.
- All loose material is to be removed from the top of the load.
- Slings is protected from sharp edges by using suitable packing
- Hooks used on lifting equipment should be fitted with safety device to prevent the load or sling displacement for hook.
- Do not used wire rope slings if it is kinked, crushed, frayed or corroded.
- Slings must never shortened by tying knots in them or by wrapping round a crane hook.

Q. What are the Potential HAZARDS while performing LIFTING OPERATION?

- Accidents hit or crush by hanging load.
- Falling objects
- Collapse of lifting equipment due to overload.
- Overturning of the crane.
- Failure of lifting gears such as wire ropes, hooks, shackle, eyebolts, chain etc.

Q. What is Rigging & Slinging?

Rigging and Slinging is a part of mechanical handling activity which involves lifting and shifting of heavy material through the safe use of equipment, machinery or devices such as crane, wire rope, hooks, shackles, chain pulleys etc.

Q. Explain about Compress Gas Cylinders?

Cylinders testing:

Contractors may be required to provide proof that compresses gas cylinders have been tested in excess of their normal maximum pressure when filled.

Cylinder connections:

Compresses gas cylinders shell is equipped with connections complying with compresses gas cylinders valve outlet and inlet connections –ANSI B 57.1-1975, or an equivalent standard (copy available for examination at the technical library).

Storage of cylinders- general:

The following requirements apply to the storage of compressed gas cylinders; i.e. cylinders which do not have a gauge in place.

Cylinders shall be shaded, if stored outside.

Cylinders stored inside:

- a) Well –protected, well-ventilated, dry location.
- b) At least 6m (20ft) away from combustible

Q. What is dead man switch and what is the use of it?

Dead man switch is a control switch, which is connected with sand blasting nozzle (gun) to control the flow from sand blasting nozzle (gun) while sand blasting. In case the hose nozzle loss from the sand blaster hands automatically the system will cut off and the individual and the property will be safe.

- The nozzle shell is electrically grounded to prevent static electrical discharge or shocks to the operator.
- Air line spray guns: airline spray gun operates at very high pressures: 140.6 to 170Kg/Sq Cm (2,000 to 2,500 Psi). They are extremely hazardous, since the jet is strong enough to slice through human flesh. The control switch or lever may have a catch device to hold switch or lever in the ON position; however, it shall be so adjusted that if it is dropped from height of 61 Cm (2Ft.) to a soil surface the device will immediately disengage, thereby shutting of the gun.
- The spray gun shall also be equipped with a safety catch that shall be activated when the gun is not in use.

Q. Explain PPE?

- Personal Protective Equipment is intended to protect employees from hazards. There are specific protective equipments for specific job. PPE will protect you only if used it in the intended way.
- PPE is working barrier between harm and human body.

Q. What is Housekeeping?

- A place for everything and everything in its place. Before start the job, during the job and after completion of the job housekeeping should be done.
- Waste materials and rubbish are a fire and accident hazard.

Q. What is Non-Hazardous Waste?

Unwanted materials / substances other than the hazardous. They could be in the form of a solid, sludge, slurry and liquid.

The exceptions are:-

- Materials sold for reuse/reprocessing
- Surplus/Expired materials that are returned to the manufacturer or supplier

Q. What is Hazardous Waste?

Any waste (solid, sludge, slurry and liquid) which is either: combustible, explosive, inflammable, corrosive, reactive or toxic.

Q. What is Reduction Minimization?

Process of reducing the quantity of waste produced through the review of operational practices, better inventory control and optimal use of raw materials.

a. Re-use :

The reuse of a material on more than one occasion

b. Recycling :

The reprocessing of waste into the same or a different product. Typical recyclable wastes include oils, glass, paper, plastics, etc.

c. Recovery :

The process of obtaining materials or energy values from collected waste for use or reuse.

Q. What is defensive driving?

Defensive driving is

- Driving to prevent accidents, in spite of the incorrect actions or others or adverse weather conditions.
- Anticipate driving hazards and know how to protect yourself from them.
- Be alert while driving by keeping your mind free of distractions and your attention focused on driving. Alertness involves watching and recognizing accident – causing factors instantly.
- The professional has foresight and ability to recognize the traffic situations as far ahead as possible.
- The driver must anticipate traffic problems that are likely to develop and decide whether these developments could be dangerous.
- As a defensive driver every one must operate their vehicle in a manner to avoid contributing to an accident or being involved in a preventable accident.
- To be a good driver you should respect all traffic laws and be courteous to other.

Q. Write in detail about construction waste management and safe disposal.

The HSE officer responsibility as following.

- Good housekeeping is to be maintained during day-to-day operations.
- All waste streams that are generated in the project areas to be identified, classified and entered in a waste register.
- All disposal sites used are to be designed and approved by KOC.
- The subcontractor in charge of waste management and disposal must be licensed and approved.
- All environmental incident and accident spillage or discharges must be properly managed and documented.
- All waste materials must be disposing in a approved area by Kuwait government.

Q. Enlist 5 main responsibilities of PERMIT APPLICANT.

Permit Applicant Responsibilities:

1. All the required information as stipulated in the permit must be entered before the permit is submitted for approval & authorization.
2. Any required preparatory work must be stipulated in the permit application.
3. All personnel under his responsibility must be advised of their responsibility under work permit system.
4. No job can begin until he is satisfied that the worksite supervisor understands his responsibilities under work permit system.
5. The safety gears and appliances required for the work must be available.

Q. Enlist 5 main responsibilities of PERMIT ISSUER.

Permit Issuer Responsibilities:

1. All hazards associated with the proposed work have been identified.
2. Before any work begins the work site is safely prepared, examined and all specified precautions have been taken.
3. Work permit that may interact or effect on another are cross-referred clearly.
4. The work is examined to ensure that it is in safe & acceptable condition:
 - When work is suspended.
 - Before re-starting the work.
 - When retiring to normal operation.
5. The shift change hand-over is properly followed and permit endorsement and transfer of responsibility have been completed.

Q. Enlist 5 main responsibilities of WORK SITE SUPERVISOR.

Permit Work site Supervisor Responsibilities:

1. He was detailed working knowledge of procedures related to his work activity.
2. He does not start any job requiring a work permit until it is authorized and issued.
3. He understands the limitations and restrictions of the work permit in order that the work party may proceed safely.
4. All members of the work party adhere to safe working practices and are fully conversant with the limitations, restrictions and hazards involved.
5. All precautions specified in the work permit are taken.

Q. What is the minimum height of the elevation requires the need of fall protection? (Safety harness, Safety belt etc.)

1.8 Mtr. or 6 ft.

Q. What are the fall protection systems?

- Safety belt
- Safety harness
- Lifeline
- Safety Net
- Guard rail system

Q. In which situation a chin strap for Helmet is compulsory?

High windy times & Working at height.

Q. What is the P.P.E. used for working personnel near or above water?

Life jacket

Q. What are the criteria for selection of the respirators?

- Physical, chemical & Toxic properties of the atmosphere
- Type of contaminant
- TLV
- Respiration hazard
- IDLH (Immediate Dangerous to Life/Health) of Concentration
- Eye irritation potential

Q. What is SCBA?

- Self Contained Breathing Apparatus.

Q. What are the contents of SCBA?

- Compressed air cylinder
- Full face piece
- Air supply hose
- Pressure regulator
- Low pressure alarm
- Pressure gauge

Q. What are the Escape Respirators?

- A. Air Purifying Respirators (Filter/Canister Type)
- B. SCBA(Self contained Breathing Apparatus)

Q. What is SCUBA?

Self Contained Underwater Breathing Apparatus.

Q. What is the function of the Escape Respirators?

Providing sufficient time to a person for escape from a suddenly occurring Respiratory hazards.

Q. What is the function of Air purifying Respirators?

It remove the contaminant from the air by absorbing and or filtering.

Q. What's the normal rating for SCBA?

3 Minutes to 60 Minutes.

Q. Air purifying respirators can be used in Oxygen deficient atmosphere? Say 'Yes or No.

No If ' no ' Ask Why? Ans: It will only cleans the air , so when oxygen deficient atmosphere ,it can't supply the additional air to compensate.

Q. When performing the grinding work by hand grinding M/C ,What are the hazards will u expect?

- Eye injuries due to flying particles(metal chips)
- Wheel bursting
- Electric shock
- Cloth caught

Q. What are the P.P.E. required for fabrication work?

- Cover all
- Helmet
- Safety shoe
- Hand gloves
- Face shield/Goggles.

Q. What is intrinsically safe concept?

- The electrical equipment, which will be used in the hazardous atmosphere. Must be intrinsically safe and certified.
- Intrinsically safe electrical equipment's spark will not expose in the atmosphere it will be confined in the equipment itself.

Q. What are the parameters of Risk management?

1. Identify
2. Evaluate
3. Recover
4. Mitigate
5. Prevent

Q. Describe 2 types of Co₂ system and their applications?

- A. CO₂ is contained in a pressure cylinder and is released by a squeeze trigger mechanism through a horn type applicator, which is using for electrical fire.
- B. Plain water expelled by pressure released from a CO₂ cartridge, which is using for normal fire.

Q. What is flash back arrester?

It is a valve, which is protecting cylinders from backfire. It calls NRV (non-return valve).

Q. Define HAZAN, QRA AND HAZOP.

- | | | |
|---------|---|--------------------------|
| HAZAN | - | Hazardous Analysis |
| QRA | - | Quantified Risk Analysis |
| HAZOP | - | Hazardous Operation |
| HAZCH | - | Hazardous Chemical |
| HAZAMAT | - | Hazardous Material |

Q. What is your understanding about HSE awareness? Write in full details.

Promoting and disseminating the health safety and environment programs.

Q. How do you implement HSE during construction through commissioning of the project and on what basis?

To ensure that all major hazards which can cause harm to people environment or property have been identified, suitable control and recovery measures are implemented.

Basis: - Enforcing safety rules and procedures.

Q. What is your concept of safety review of documents and drawings?

The safety review of documentation is to decrease the system operation and serve as a permanent reference to the implementation to avoiding information – Dependent or Individuals.

Q. What is SHORING?

Shoring is a support to prevent trench collapsing. If side of the trenches is unstable, soft or chances to collapse then shoring is essential. It is to be made by *COMPETENT PERSONS*.

Q. What is Fire?

Fire is a chemical reaction of oxygen, heat, fuel and burning material, met together will start the fire.

Q. What is Hazard?

Hazard is the potential to cause harm.

Q. What is Risk?

Chances of personnel and physical loss.

Q. What is purpose of safety?

To save the life and protect the property.

Q. What is the Isolation?

Temporary disconnect from the sours.

Q. What is the maximum allowable limit for LEL?

For Hot Work less than 1 preferable '0' and for Cold Work up to 20

Q. Flammable range of Ammonia?

- For Ammonia (NH₃) LEL – 15% and UEL – 28% by volume in air.
- Auto Ignition Temperature (AIT) is 651.57C (1204 F) – Gas.
- Threshold Limit Value (TLV) – 25 PPM.
- The Short Time Exposure Limit (STEL) – 35 PPM.

Toxicity of Ammonia:

- It is extremely irritating to the eyes, nose, throat and lungs and all moist parts of the body.

Q. Explosive rang for H₂S?

- LEL-4.5% UEL-45.5%
- Auto Ignition Temperature (AIT) – 260C (500 F)
- Threshold Limit Values (TLV) exposure is 10PPM.

Q. Function of Insulation?

Insulation will keep the heat of product, without insulation oil will be wax.

Q. What is pipeline/ what is the purpose of pipeline?

It is a media to transport oil or gas from one location to another location.

Q. What are welding and cutting?

Welding is a process in which two or more metals are joined together with application of heat whereas cutting is the reverse.

Q. What is the Work at height?

Work at height is an activity at an elevated location of more than 1.8 meters (6 feet) high from the working ground level.

ABBREVIATIONS

RDI	–	Restricted Duty Injury
IDI	–	Industrial Disable Injury
INDI	–	Industrial None Disable Injury
CSM	–	Construction Safety Manual
CSP	–	Construction Safety Plan
AC	-	Alternating Current
DC	-	Direct Current
CFR	-	Code of Federal Regulations (USA)
IFR	-	Inherent Fire Resistant
kPa	-	Kilopascals
Bp	-	Boiling Point
psi	-	pounds per square inch
PPM	-	Parts Per Million
LEL	-	Lower Explosive Limit
BA	-	Breathing Apparatus
CGI	-	Combustible Gas Indicator
UV	-	Ultraviolet
IR	-	Infra Red
CFC	-	Chlorofluorocarbon
CPR	-	Cardio Pulmonary Resuscitation
CSR	-	Chemical Safety Report
MoC	-	Management of Change (in KOC Procedure)
ANSI	-	American National Standards Institute
NFPA	-	National Fire Protection Association
NIOSH	-	National Institute for Occupational Safety & Health
OSHA	-	Occupational Safety and health Administration
BS EN	-	British Standard European Norm
HSEMS	-	HSE Management System
HSE	-	Health, Safety & Environment
JSA	-	Job Safety Analysis
EOT	-	Electrical Overhead Traveling Crane
EWTP	-	Effluent Water Treatment Plants

- GC - Gathering Centre
- BS - Booster Station
- EPF - Early Production Facilities
- HAC - Hazardous Area Classification (as per KOC)
- PMC - Project Management Consultant