# Cochin Shipyard Limited

## Safety & Fire Services Department

# HSE Hand book

**Rev A00 - July 2015**

# Emergency Telephone Numbers

## 1300 or 1333 or 9895788288

### WHILE MAKING AN EMERGENCY CALL!!!

Clearly State;

- The type of emergency (eg. Accident, fire/rescue, sickness, etc)
- Where is the emergency (eg: Repair dock – BY 90 – tank no. 2(p))
- Guide the emergency crew to the location

# INDEX

## 1. INTRODUCTION

Cochin Shipyard Limited (CSL) places outmost importance on the safety of its employees and customers and will do its best to provide and maintain a safe and healthy working environment.

The responsibility for safety does not end with the safety personnel. Every employee in the yard from the Managerial Grade down to the Workman level has a definite role to play to make their work area safe.

This HSE hand book has been complied by Safety & Fire Services (S&F) Department for the use of all personnel working or visiting inside the yard.

This book does not replace the detailed requirements, safety rules in vogue practiced by Cochin Shipyard Limited.

## 2. QHSE POLICY

# COCHIN SHIPYARD LIMITED

## QUALITY, HEALTH, SAFETY AND ENVIRONMENTAL POLICY

We are committed to provide ship building, ship repair services and training of marine engineers to the total satisfaction of customers. We undertake these in healthy & safe working conditions, an eco friendly environment and ensure continual improvement of management systems performance.

**We endeavour to achieve the above by:-**

**M**eeting or exceeding customer requirements.

**A**ssuring quality of the products and services.

**D**eveloping competent marine engineers.

**P**reventing occupational ill health and injuries.

**E**nsuring safe work sites.

**C**onserving natural resources.

**P**reventing / Minimising air, water and land pollution.

**H**andling and disposal of hazardous wastes safely.

**C**omplying with statutory & regulatory and other requirements.

**D**eveloping skills and motivating employees.

August 2011

Chairman & Managing Director

*Issue & Revision No. :A01*

## 3. INTEGRATED MANAGEMENT SYSTEM IN CSL

### 3.1 QHSE Statement

The long-term success of Cochin Shipyard Ltd depends on its ability to continuously improve its performance in providing assured quality of its ships build or repaired and the Marine training services. Enhancing the occupational health environment, by following best practices in safety and ensuring sustainable environmental program for the benefit of the organization and the society at large.

### 3.2 Health & Safety

CSL strive to conduct all its activities so as to prevent injuries and ill health to its employees, contractors and visitors. CSL records and investigate all the incidents occurring in the work place in order to identify the cause and take necessary measures so as to avert any future accidents within the ship yard. CSL achieves this by identifying the high risk hazards, eliminating or if not at least reducing the risk involved to acceptable levels. CSL take necessary measures to educate all people involved in its activities on health and safety practices within the work place and off the job.

### 3.3 Environment

CSL commitment to the Mother Nature is demonstrated through the on going effort to reduce the adverse impact on the environment and reinforcing the positive contribution. This is achieved by identifying the significant environmental aspects related to its activities and products and developing programs and processes to reduce or control them with an aim of protecting the environment.

CSL is certified for:

1. ISO 9001:2008 (Quality Management Systems)
2. ISO 14001:2004 (Environmental Management Systems)
3. OHSAS 18001:2007 (Occupational Health and safety Management Systems)


CSL has adopted the Health, safety and Environment Management system in accordance with the above systems requirements.

## 4. SAFETY INDUCTION

All new entrants in CSL are made aware about basic CSL requirements with respect to Health, Safety, Environment & Emergency Response. This training is imparted to all newly inducted CSL Employee/ Trainees and Contractors workmen, who will be engaged in ship repair/ building, and maintenance/ construction activities on installations. The individual passes will be issued only after attending the training programme.

## 5. WORK AREAS IN CSL

1. Dry dock – Dock-I & Dock-II
2. Quays – Quay-I, Quay-II, Quay-III
3. Shops – Hull Shop, Assembly Shop, Machine Shop, Engine Shop, Electric Shop, Carpentry Shop, Maintenance shop, Pipe Shop, Sheet Metal Shop etc
4. Skids- Open work areas with moving shed & Open work area without moving shed

## 6. RESTRICTED ENTRY AREAS IN CSL

Due to the potential hazards present, entry is restricted only to authorized persons in the following areas.

1. Flammable gases or liquid storage stations
2. Electrical substations

## 7. GENERAL GUIDELINES

1. Smoking is strictly prohibited
2. Unauthorized use of cameras and mobile phones in CSL is forbidden.
3. Parking of vehicle is permitted only in approved parking locations.
4. Priority is for Material Movement and private vehicles shall make way for material movement.
5. The use or possession or under the influence of non-prescription drugs, alcohol and the abuse of substances is strictly prohibited in CSL.
6. Speed Limit of vehicle in the yard is 20km/hr
7. Pedestrains are to ensure they walk inside the marked area on the road
8. Fishing is not permitted in the yard.
9. Everyone should observe and obey regulatory signs.
10. Use of mobile phones is strictly prohibited while at work and driving including while cycling.
11. Horse play is not entertained in CSL. (Example: Direct compressed air or gas on any person)

## 8. HSE GUIDELINES

1. Usage of Safety Helmet with chin strap, safety shoe and cotton working dress are compulsory at CSL work site, in addition suitable PPEs which are job specific are to be used. (refer CSL PPE Matrix)
2. Risk assessment of non routine work are to be done before the work is started and the control measures should be identified before the commencement of work. These measures are to be approved by the CSL officer Incharge and confirmed by S&F Dept. These control measures are to be communicated to the workers involved through tool box talks.
3. Workers and supervisors engaged in the works are to be competent.

4. Supervisor in charge is to brief the hazards and preventive measures related to the work to be carried out during tool box talks.
5. People are to be engaged in work activities in groups only. In case a person has to work alone, the same shall be known to at least two persons who are working nearby.
6. Using of empty paint tin, used CO2 welding cable bobbin and empty oil drums as working platform is strictly prohibited
7. Thinners are not to be stored in beverage bottles
8. Ensure necessary state of mind (eg: lack of proper sleep) by having rest at periodic intervels during extended working hours and during night shift.
9. Adequate precautions should be taken during welding or gas cutting against hazards such as electric shocks, burns, fumes, explosion and arc eyes.
10. Adequate ventilation should be provided while working in confined spaces.
11. Check and ensure that the adjacent areas/compartments are free from flammable hazards and suitable protections are taken before commencing hot work.
12. Never start any hot work at the bottom/side shell of the ship from outside to inside.
13. During hot work at elevated positions, precautions should be taken to prevent sparks or hot metal slag falling on to the people below / nearby areas and suitable barricade is to be placed.
14. Industrial Oxygen are not to be used for ventilation purpose.
15. Simultaneous operations of Hot work and painting are not to be carried out in the same area.
16. Ensure that no hot work should be carried out in the presence of hydrocarbon fumes.
17. All electrial equipments including AC welding machine should be properly earthed.

18. Ensure that ELCB is fitted on all Welding Machines.
19. Ensure cables have sufficient current carrying capacity that is used for all electrical equipments/tools.
20. Voltage Reducing Devices(VRD) (Safety relay) must be fitted on AC welding Machines.
21. Never Bypass Safety Relay on AC welding machines
22. Electrical extension switch boards are to be of metallic construction with ELCB & MCB. Only industrial type plug and socket to be used.
23. Only authorized persons are allowed to operate any machine/equipment / Switch boards. Unauthorized operation is strictly prohibited.
24. Never tamper with machine guards.
25. Ensure that all portable equipments, welding transformers/ rectifiers must be switched off after use.
26. 230 V hand lamps are not permitted in the yard. 110 V hand lamps are to be used in open area and 24 V hand lamps are to be used in confined spaces.
27. Flame proof lamps shall be used inside tanks where there was hydrocarbon presence and during painting in confined spaces.
28. Users are to inspect welding cables, cutting hoses and hand tools daily before the start of the work.
29. For getting temporary electrical connections (welding sets, power plug boards), a Load Centre (LC) number shall be obtained through licensed electrical contractor and submitted to CSL Resident Electrical Engineer (REE).
30. Excavated materials should be put away from the edge of the excavated trench to avoid cave in of the trench.
31. Never enter into tanks without permit.
32. People working in tanks or pits must be acquainted with the hazards present there and the supervisor should advise his employees of the hazards present and precautions that are to be taken.
33. Open manholes and places where people are liable to fall, those areas must be protected by strong barricade

with intermediate railings. Man hole covers should be promptly be replaced when work is suspended.

34. Jumping from moving vehicles is prohibited. They should wait until the vehicle stop before attempting to enter or leave.
35. All lifting tools & tackles, pressure vessels including blasting hoppers are to be tested every year by competent person and valid test certificate is to be obtained. Users are to ensure that items that these items are defect free and in good condition.
36. Any dangerous situation that affects the safety of an employee or his fellow employees must be immediately brought to the notice of the site supervisor and reported to CSL Chief Safety Officer.
37. Standing under suspended loads is dangerous and is to be avoided.
38. Compressed air should not be used to clean dust in the clothing.
39. Air hoses, welding cables, fuel hoses, electric cables should not be allowed to lie across walkways and areas where they can get trampled and they should be suspended from overhead hooks.
40. Inflammable liquids must be handled in cans or containers meant for storing it and is to be stored in space having good ventilation. All such containers must be clearly labeled and warnings exhibited visibly.
41. Material Handling vehicles should enter crane tracks only through the authorized route only.
42. If a threat to any person's life is observed, anybody can clear the threat and wait for authorized rescue persons for further actions. Rescue operations should be done by authorized persons only.
43. Everybody should be responsible for maintaining housekeeping at their work site.
44. Avoid activity/action that leads to air/water/soil pollution.

Note:

If there is any clarifications on the above guidelines or for further details may kindly refer to the CSL HSE manual or contact CSL Chief Safety Officer.

## 9. RESPONSIBILIES OF CONTRACTORS

1. The Contractor before starting any work in the CSL premises will be issued with these CSL HSE guidelines and the firm is expected to give a declaration that he receives one copy of the CSL HSE guidelines and will comply with the guidelines therein.
2. The contractor should convey the HSE guidelines to his workers and make them aware through tool box talks
3. A responsible safety Incharge is to be designated by the firm for their activities. The details of the safety Incharge shall be communicated to S&F dept. He shall take a lead to ensure safe work environment for their work sites.
4. CSL reserves its right to suspend work in the event of the contractor not complying with the HSE guide lines regarding their work activities for which no claim of any kind will be entertained.
5. To ensure the safe conduct of operations, a representative of the contractor should maintain appropriate contact with the CSL officer-in-charge of the work as may be necessary to acquaint himself with any changed conditions of other matters relating to the HSE performance.
6. The Contractor shall ensure that all his employees understand their obligations and they follow all CSL Safety Rules.
7. It is the responsibility of the sub-contractor firm to provide their employees with all the necessary PPE.
8. The contractor is also responsible for controlling the behavior of his personnel and must control their movements to and from the work site.

## 10. REPORTING OF INCIDENTS

All **injury incidents** to employees / trainees / contractors & their workmen / visitors / Ship staff occurring inside CSL premises should be reported by the supervisor / co-worker to the Emergency Control Room (Phone No. 1300 / 1333 / 9895788288).

In case of **property damage incidents/dangerous occurrence, environmental damage and near miss incidents**, the officer in charge of the area shall report to the Emergency Control Room (Phone No. 1300/1333/ 9895788288) immediately and same shall be reported in HSE incident report form (available in CSL Intranet).

For personal injury incident, report to be initiated by Chief of lower most Organizational Unit (OU) mapped in CSL ERP (SAP) system in the incident area and released to next level OU chief for cause and remedial measures. Incidents should be created and approved by next level OU chief within 24 hrs in CSL ERP (SAP) system.

## 11. PERMIT TO WORK SYSTEMS

The following activities must not commence unless obtaining work permits issued by the person incharge of the ship or CSL Officer in charge of installations and work recommended by safety and fire department.

The type of activities required permit to work are:

1. ON BOARD SHIP
    a. **Hot work (Oxy Acetylene cutting/Welding On Board Ships)**
    b. **Painting / Buffing in Confined spaces (Brush/Spray paintings in Tanks/Confined Spaces)**
    c. **Electrical Shut down (Works on Electrical installation/Equipments)**
2. INSTALLATIONS
    a. **Work at Height/fragile roof**
    b. **Excavation/Trenches Opening (any Excavation/Fuel or electrical trench opening)**
    c. **Work on gas lines (New/Repairs on gas line)**
    d. **Works at Crane Tracks (Any works on crane rail/track)**

3. STATUTORY

   i. **Radiography (NDT tests using Radioactive materials, Any Expose of radio Active materials)**

   ii. **Electrical Shut Down (Works on Electrical installations/closed proximity of distribution system)**

## 12. PERSONAL PROTECTIVE EQUIPMENTS

Employees are responsible to wear appropriate PPE associated with hazards they are exposed to. All PPE must comply with approved Indian or international standards e.g: ISI, BS, DIN, ANSI or CE

Basic PPE requirement at CSL Site.

1. Safety Helmet
2. Safety Shoes
3. Cotton Working dress
4. Safety Glasses or face shield or goggles. (appropriate to work)
5. Hand gloves appropriate to work should be worn
6. While welding PPE's like apron, gauntlet, leg guard, face shield should be worn
7. During grinding work, helmet with face shield should be worn

## 13. HOUSE KEEPING

Good housekeeping is an important part of HSE management system; it is the responsibility of all personnel to maintain the highest possible standard of housekeeping in their work area.

This can be maintained by:

1. Ensuring that the work place is tidy before commencing the task and at the end of a work shift or after the completion of the task.
2. There should be obstruction free access to all work places

3. In CSL suitable or coloured pallets for collection of scrap/ waste will be positioned by respective services Department in Ship building or Ship repair division. The pallets are colour coded in order to identify the scrap or waste it is meant to be handled. Blue and yellow colour pallets are used for both steel and industrial waste pallets respectively. Separate pallets are used for collecting waste oil / oil socked cotton wastes.
4. Do not mix various categories of wastes in one pallet
5. In stores, materials are to be stored in racks, were the heavier materials are to be stored at the bottom rack and the lighter materials at the top.
6. Avoid unstable stacking of materials inside stores and shops
7. Items shall be stored in such a way that it is easily identifiable and traceable.
8. while storing flammable materials and chemicals they should be kept in ventilated areas each chemical are to be kept in groups and each group separated between each other by suitable distance to prevent accidental mixing in case of any leakage.
9. The MSDS (Material Safety Data Sheet) of each chemical are to be displayed and known to all working there. Appropraite first aid and fire fighting measures are to be kept stand by in case of spillage on people handling it or during any fire.


## 14. WELDING & CUTTING

All welding and cutting operations must be carried out by qualified personnel while working inside the yard. While

working onboard the vessel the work should be in accordance with the conditions specified in the work permit.

The principal hazards associated with welding and cutting operations are

1. fire
2. explosions
3. burns
4. eye injury
5. respiratory disease.

Additional hazards which may result from arc welding are electric shock, ultra violet radiation.

Whenever, welding or cutting operations are being carried out, flammable materials should be removed from the area, and a wetted fire retardant cloth should be placed in case the flammable materials can not be removed.

### 14.1 Electric Arc welding

Check equipment thoroughly, all welding cables shall be fully insulated and periodically checked for cuts that could accidently get “short” when in contact with an earthed section of any structure. Do not lay cables in water.

When connecting two cables together, it is to be done using only approved and insulated connecters. All cables and connectors must be of adequate current carrying capacity to perform the task.

Avoid lengthy cables if possible and cable should be laid between wooden blocks, or covered. The cables should be hanged on hooks or stands to prevent tripping hazard. Only electrode holders specifically designated and fully insulated, and rated to handle the maximum current required by the task, should be used.

The arc produces Ultra-violet (UV) radiation. Exposure of UV radiation leads to reddening of the skin and irritation. The eyes are very sensitive to UV radiation, the effect varies from temporary to permanent damage of the retina.

Ensure VRDs (Safety Relay) & ELCB are fitted on AC welding transformers

All welders must wear the appropriate protective clothing, Gauntlet type welding gloves, leather aprons, leggings and correct shaded filter glass to suit the type of work.

## 14.2 Gas Cutting

Only proprietary fittings should be used on flexible gas line. Hoses must be fitted to the torch using crimped fasting and **not jubilee clips** which is prohibited by CSL. The colour code for Oxygen and acetylene/LPG hoses are black and red colour respectively. Leaks are to be checked periodically using soapy water solution.

While working with the gas cylinders Flash back arrestors must be fitted between the hose and regulator, and non-return valve must be fitted between the hose and cutting equipment


All cutting equipment must be removed from the vessels or enclosed spaces when not in use even during breaks or end of the shift. This will prevent the build-up of gas, if there are any leaks on the hoses.

If the atmosphere becomes oxygen enriched due to any leakage, the work area must be purged with fresh air and all clothing/flammable materials must be well ventilated to prevent the risk of spontaneous combustion.

### 14.3 Gas Cylinders

Before use, all gas cylinders must be fixed and secured in an upright position, and must be placed at a safe distance from any heat source.

When the cylinders are not in use, the valves must be closed. Prior to fitting the regulator, the valve should be opened slightly to blow away any dust or grit from the valve.

Oxygen regulator valves or fittings should be free of Oil and grease to prevent spontaneous combustion in the case of any oxygen leakage.

Cylinders should be kept and moved in purpose built trolleys, when attempting to move cylinders not mounted on trolleys, the regulators and hose must be detached.

If cylinders are to be lifted by crane, they should be secured in a special carrier. On no account they should be lifted by holding the valve as they are not designed to take the stress and no attempt must be made to lift them with chains, ropes or slings as there are chances for it to slip.

Oxygen cylinders and fuel gas cylinders must be stored well apart, at least 6 meters in open space, to prevent an explosive mixture forming from any leakage.

All fuel gases (Acetylene and LPG) whether full or empty, must be stored upright and not in a lying position.

The cylinders should be shielded from direct sun light, or other heat source, to avoid the buildup of excess internal pressure.

## 15. SURFACE PREPARATION

Surface preparation includes activities such as buffing, grinding etc. The control measures for these activities are discussed in the power tools section in this book.

Surface preparation is also done by blasting using iron shots, copper slag or high pressured water (hydro blasting). Suitable blasting suites, hoods with coolant tubes shall be used while doing such operation.

## 16. PAINTING

Smoking or any hot working (welding/gas cutting etc) in the vicinity of painting activity is prohibited. Electrical equipments and fittings in the vicinity should be flame proof. For maintaining the air current, blowers should be used at one end and exhaust blowers at the other end.

While painting inside confined spaces, workers should wear air lines respirators with close fitting rubber masks and the equipments should be of the type that the user himself is able to regulate the air pressure.

A worker inside the confined space should be aided by one helper who could be contacted in case of an emergency through a suitable arrangement.

## 17. WORKING AT HEIGHTS

A suitable means of access and egress must be provided for all working places which cannot be reached from ground level. All work places that are 2 meters or above and that does not have a proper working platform, temporary platform such as scaffolding are to be made available. All platform structures / scaffolding shall be only erected, altered or dismantled by the authorized scaffolder under the supervision of a CSL scaffolding supervisor. All scaffoldings are to be inspected and certified by CSL Safety and Fire department after the construction of the scaffolding is completed. If it safe to use a green tag will be placed near the access, If it is not safe to use a red tag will be placed.



**Red Tag** **Green tag**

The key points to be observed when erecting scaffolding are.

1. The ground must be firm enough to carry the weight of the scaffold, and the load the scaffold will be carrying.
2. There should not be any gaps in the working platform
3. Hand rails with mid rails at 1 meter and half meter height should be ensured for the working platform
4. Access ladders shall be provided to reach the working platform.
5. Scaffolding materials in CSL shall be made of MS

### 17.1 Full body Harness

When it is necessary to work in temporary work platforms of height more than 2 meters, a full body harness shall be worn. The full body harness should be anchored on a rigid structure, and length of the lanyard should be minimized in such a way that the fall height will be minimal.

## 18. WORKING OVER WATER

Where work takes place over or near water, the following precautions shall be ensured.

1. Suitable hand rails shall be placed to prevent fall of persons into water also full body harness must be worn
2. Safety net shall be used wherever practicable.
3. Buoyancy aids shall be made available near the work area.

## 19. CONFINED SPACE

The term ”Confined spaces” covers a great variety of workplaces which have limited access and inadequate ventilation. Confined spaces are therefore potentially dangerous places to work because workers may get trapped in hazardous concentration of toxic or flammable gases or vapours.

Confined space is also liable to become Oxygen deficient. Very often the dangerous atmosphere can form in confined space as a result of the work being done, for instance, welding, painting, and gas-cutting or the use of adhesives and solvents.

The following guidelines are to be followed while entering into confined spaces.

1. Ensure adequate ventilation prior to entry and constant air circulation while personnel are inside.
2. Use only 24V hand lamps while working in confined spaces.
3. Man Entry and Hot work certificates are to be obtained from Petroleum and Safety Organisation (PESO) for entering or to do hot work inside tanks that had carrried flammable substance.

## 20. HAND TOOLS AND POWER TOOLS

All personnel using hand or power tools shall be made aware of any dangers which may arise during their use. Adequate supervision must be provided to ensure that the use of such tools is correct and safely performed.


### 20.1 Hand tools

Hand tools are among the simplest of our work aids and the hazards associated with them are well understood. As a

results the safety precautions associated with them are often ignored or forgotten, to the users subsequent regret.

The main cause of injury is the general misuse of tools, the use of unsuitable or poorly maintained tool and their improper storage. Injuries can of course be caused by its breakage, it is therefore essential that only tools manufactured from the best materials by reputable tool companies are used.

Misuse of tools causes many problems, the use of screwdrivers as chisels, spanners to hammer nails, and pliers to screw up or unscrew nuts are prime examples of this common misuse.


When working at elevated location, all tools should be placed in a tool box to prevent tools being dropped from the heights. Where there is a risk of injury from flying objects such as striking two hard surfaces together, e.g. hammer, chisel, punch or similar articles, it is better to wear and eye protection such as safety goggles.

### 20.1.1 Hammer

The faces of hammers should be kept clean and free from grease, and be of sound condition (not pitter or broken edged) and in good shape (Not mushroomed)

Wooden shafts must be of the correct size and securely fixed to the hammer head with fitting wedges – They must be kept from oil and grease and free from damages. Crack or split shafts must not be used.

### 20.1.2 Chisels and punches

There are several types of cold chisels and punches. These must be of good quality materials, properly maintained and inspected, for mushrooming of chisel/punch head. All chisels

and punches should be dressed frequently to maintain a safe profile.

Cutting edges should be kept sharp to permit accurate working and to avoid the hazards arising from unnecessary hammer striking.

### 20.1.3 Files

A file must never be used without a correct fitting handle; this is to prevent the tang from causing injury to the hand.

Oil must never be applied to files; they must never be struck by other tools as they are brittle and will shatter. To maintain files when clogged with filings clean out the teeth with a file card or fine wire brush.

### 20.1.4 Screw Drivers

Screwdrivers are probably the most common and abused of all the hand tools. When using a screwdriver, make sure that the blade fits the slot in the screw properly. Too large or too small a blade will damage the screw, and not work efficiently. Screw driver blades must be kept square and have a patter to the end.

The shanks are not designed to withstand twisting strain from pliers or grips, which are often mistakenly applied to obtain additional leverage on a stubborn screw. Never expose the blade to excessive heat as this alters the temper of the steel making it too soft or too brittle for this job.

Do not use screwdrivers as scrapers, chisels or levers and the handles may split if hammered. **Serious puncture wounds can be sustained as the result of carrying screwdrivers in the pocket of clothing or coveralls**.

### 20.1.5 Hacksaws

When using hacksaws, select the correct blades for the work to be carried out. Thick materials require coarse blades to allow chippings to escape. Thin hard materials require a fine blade. Always ensure that at least three consecutive teeth are in contact with the work.

The blade should always be correctly tensioned in the frame, taut but not over tensioned. Use a steady, forward cutting

stroke with just sufficient pressure to cut through the material.

After use when the hacksaw is to be stored, the tension on the blade should be released, and re-tensioned before future use.

### 20.1.6 Spanners and wrenches

Always select a spanner which exactly fits the nut or bolt head, never use packing pieces to make the spanner fit as they may slip, causing injury, and also damage the hexagonal contour of the nut or bolt head.

Open-ended spanners should not be tilted. Ring spanners are probably the strongest if they can be used in a particular situation, less chance of slipping.

Pieces of pipe or similar device must not be placed over the end of spanners as extensions to increase the torque.

When using adjustable wrenches, fit tightly against the faces of the nut or bolt head and apply the torque in the direction of the fixed jaw to prevent the spanner from opening.

Spanners and wrenches should not be exposed to excessive heat, or be ground in order to alter their shape as this may ruin the temper of the working parts.

Periodically inspect all spanners and wrenches for any signs of damage or wear. All worn or damaged tools should be discarded or where necessary, moving parts replaced.

## 20.2 Powered Portable Tools

The efficient and safe use of all powered tools can come only through proper maintenance and from adequate supervision.

The power from this type of equipment is usually supplied from Compressed air or electricity.

### 20.2.1 Pneumatic Tools

All compressed air hose must have standard hose couplings, never use jubilee clips or similar fittings. Tools required clean

air and correct lubrication for smooth functioning of the same.

### 20.2.2 Electrical Tools

All electrical hand tools shall be of double insulated and fiber body type. Portable electric power tools must not be used if any defect is suspected or any damage apparent. Repair and routine maintenance shall be carried out by trained and qualified electricians.

Only chuck keys of the correct type shall be used to operate chucks. Operators shall ensure that the key is removed from the chuck before operating the equipment and ideally, clipped to the cable to avoid improvisation.

### 20.2.3 Powder Disc Grinders

Powered disc grinders can be air or electrically driven. General operation applies equally to both types. The security of the disc and condition must be checked before attempting to use. Care must be taken to avoid knocking or sudden impact of the disc to prevent damage and possible disintegration of the disc. The RPM of the grinding machine should be lower than the RPM of the grinding disk

Disc that are chipped, out of true or out of adjustment must never be used. Apply the disc to the work piece and do not use excessive pressure. Allow the disc to come a stop before laying the grinder down. Impact protection must be worn.

Sparks from the disc may ignite flammable materials, or cause injury to personnel in the area.

### 20.2.4 Compressed Air

Extreme caution must be used when using compressed air, as it is delivered at high pressure. Iron dust and rust particles may be present in compressed air. If it enters the body, it can rupture internal organs and cause serious injury and even death.

**Do not** attempt to clean off coveralls or clothing as it can force harmful particles through the skin.

## 21. WORKING ON MACHINE TOOLS AND MACHINERIES

While working with Machine tools and machineries the following precautions should be taken.

1. Authorized persons should be allowed to use a machine tools and machineries
2. Suitable eye & hand protections shall be worn
3. Ensure sufficient illumination at the point of operation
4. In wood planing machines, Push sticks and push blocks should be used for guiding the wood to the planing machines
5. Stand at a safe distance from the machineries to protect the operator from kick backs, flying materials, moving machinery parts etc.
6. Switch off the machine after use
7. Ensure machinery guards in place
8. Ensure lubrication oil or coolants are not spillover near and on the machines

## 22. HANDLING ELECTRICITY

The main hazards in electrical works are electrocution, burns, fire and explosion.

1. All wires must be treated as live wires until it is positively known that they are dead
2. No repairs are to be made to electrical equipments by anyone except qualified authorized electricians.
3. Never use an electric light extension cord unless it has an approved insulated handle and standard lamp guard.
4. All portable equipments must be grounded
5. Always wear rubber gloves when working around circuits of 110 volts or above
6. Do not overload or overuse circuits

7. Before starting any repair works or resuming the supply after the repair on electrical installations, Clearance from proper authority should be taken.
8. Before resuming the power supply it should be ensured that the grounding of the line or equipment at the work spot has been removed and all men are off the line or equipment
9. If any one comes in contact with live wires or cable and becomes unable to release his grip on the wires, do not attempt to pull him off with bare hands. Shut off the current and protect the hands with rubber gloves or if they are not available, use thick fold of dry clothes to cover hands before attempting to release the victim. If wires are directly on top of the victim use a dry stalk to remove them.

## 23. MANUAL HANDLING

Manual handling is a process where the person is prime source of power in moving material and equipment. It includes lifting, piling, pushing, carrying or moving.

Correct manual lifting and handling can help prevent strains and backaches. Once your back has been injured, that weakness can remain with you for the rest of your life.

To avoid injury, follow these guidelines:

**Asses the weight** of the load, get help if it is beyond your capacity use mechanical or hydraulic equipment.

**Size up the job** make sure you have a clear path way to where the load is going. Look for nails or splitters and wear gloves where appropriate.

**Adopt the correct stance** stand close to the object with your feet apart, giving a balanced position. One foot advance of the other, pointing in the direction you intend to move.

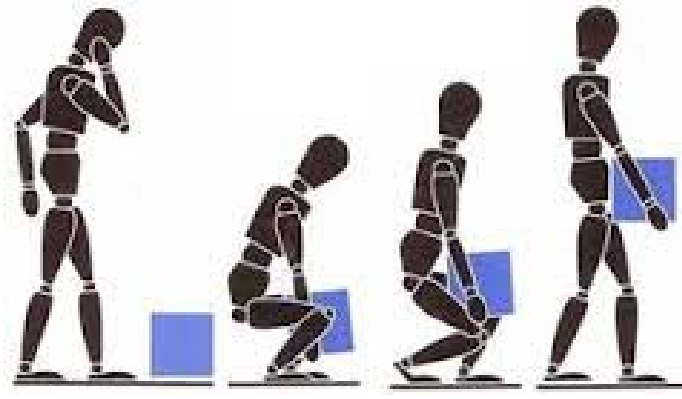
**Bend your knees** to a crouch position, keeping your chin tucked in and your back straight (not necessarily vertical)

**Take a firm grip** with the palm and roots of the fingers and thumb, keeping your arms as close to the body as possible. Keep your shoulders level and face the direction of travel.

**Lift with your leg muscles,** not back muscles. Carry out the lifting movements smoothly, do not jerk or twits.

**Utilize body weight** to create momentum and forward with the load.

**Use the reverse procedure when setting down the load**.



## 24. LIFTING OPERATIONS

Lifting machineries such as cranes, winches hoists and other lifting tools and tackles include (wire rope sling, web sling, D Shackles, eye bolts chain block etc.) are widely being used in CSL.

Lifting must, by its very nature, be regarded as a hazardous operation. The improper usage and inadequate maintanence of lifting tools and machineries may lead to serious consequence to life and property.

**Operational Guide lines are:**

1. Only authorized, competent persons are allowed to operate cranes.
2. Crane operators must only take instruction from designated rigger.
3. At no time should the crane be left unattended, even for short periods, unless all loads have been removed, the power off and brakes are to be applied.

4. Crane and Transporter (Commeto) within CSL area must be accompanied by a rigger or banksmen, theywill guide the movements safely.
5. Do not use rigging and slinging unless you have been trained and instructed to do so.
6. Use only properly tested and colour coded lifting gear of adequate strength for the job.
7. Use correct lifting hooks – fitted with safety latches or shaped to prevent accidental displacement of slings.
8. Position the lifting hook over the load as to prevent the load swinging when it is raised.
9. Do not tie a knot in a chain to make it shorter, or attempt to drag if from under a load.
10. Check wire ropes for kinks, signs of wear and broken wires.
11. All lifting equipment must have valid test certificates issued by competent person.

# Wire rope - Lifting chart

| Wire Rope Diameter | | Single leg Sling | Two legged Sling with different included Angles | | | | |
|---|---|---|---|---|---|---|---|
| Inch | m.m | | 0° | 30° | 40° | 90° | 120° |
| | | Kg. | Kg. | Kg. | Kg | Kg | Kg |
| 5/16 | 8 | 530 | 1060 | 1040 | 930 | 760 | 530 |
| 3/8 | 9 | 770 | 1540 | 1490 | 1340 | 1090 | 770 |
| | 10 | 900 | 1800 | 1750 | 570 | 1280 | 900 |
| 7/16 | 11 | 1030 | 2060 | 2010 | 1800 | 1470 | 1030 |
| | 12 | 1180 | 2360 | 2300 | 2060 | 1680 | 1180 |
| 1/2 | 13 | 1350 | 2700 | 2590 | 2320 | 1900 | 1350 |
| 9/16 | 14 | 1720 | 3440 | 3330 | 2990 | 2420 | 1720 |
| | 15 | 1920 | 3840 | 3720 | 3340 | 2720 | 1920 |
| 5/8 | 16 | 2120 | 4240 | 4110 | 3690 | 3010 | 2120 |
| 11/16 | 17 | 2570 | 5140 | 4980 | 4470 | 3650 | 2570 |
| | 18 | 2820 | 5640 | 5470 | 4900 | 4000 | 2820 |
| 3/4 | 19 | 3050 | 6100 | 5920 | 5310 | 4330 | 3050 |
| 13/16 | 21 | 3570 | 7140 | 6920 | 6210 | 5070 | 3570 |
| 7/8 | 22 | 4100 | 8200 | 7950 | 7140 | 5820 | 4100 |
| | 23 | 4400 | 8800 | 8540 | 7650 | 6240 | 4400 |
| 15/16 | 24 | 4740 | 9480 | 9200 | 8250 | 6720 | 4740 |
| 1 | 25 | 5420 | 10840 | 10520 | 9440 | 7700 | 5420 |
| | 26 | 5850 | 11700 | 11340 | 10180 | 8310 | 5850 |
| 1.1/16 | 27 | 6270 | 12540 | 12170 | 10940 | 8910 | 6270 |
| 1.1/8 | 29 | 6770 | 13540 | 13140 | 11800 | 9610 | 6770 |
| | 30 | 7790 | 15540 | 15100 | 13540 | 11050 | 7790 |
| 1.1/4 | 32 | 8380 | 16760 | 16260 | 14600 | 11900 | 8380 |
| | 33 | 9230 | 18460 | 17900 | 16080 | 13100 | 9230 |
| | 34 | 9650 | 19300 | 18720 | 16800 | 13700 | 9650 |
| 1.3/8 | 35 | 10170 | 20340 | 19720 | 17700 | 14420 | 10170 |
| | 36 | 10730 | 21460 | 20860 | 18700 | 15250 | 10730 |
| | 37 | 11430 | 22860 | 22200 | 19960 | 16230 | 11430 |
| 1.1/2 | 38 | 12100 | 24200 | 23440 | 21000 | 17200 | 12100 |
| | 39 | 12780 | 25560 | 24800 | 22200 | 18150 | 12780 |
| | 40 | 13470 | 26940 | 26160 | 23440 | 19100 | 13470 |
| 1.5/8 | 41 | 14220 | 28440 | 27600 | 24800 | 20200 | 14220 |
| | 42 | 14980 | 29960 | 29000 | 26100 | 21300 | 14980 |
| | 43 | 15750 | 31500 | 30600 | 27400 | 22400 | 15750 |
| 1.3/4 | 44 | 16520 | 33040 | 32000 | 28800 | 23500 | 16520 |
| | 46 | 17620 | 35240 | 34200 | 30600 | 25000 | 17620 |
| 1.7/8 | 48 | 18970 | 37940 | 36800 | 33000 | 26950 | 18970 |
| 2 | 51 | 21520 | 43040 | 41700 | 37400 | 30600 | 21520 |
| | 53 | 22870 | 45740 | 44400 | 39800 | 32500 | 22870 |
| 2.1/8 | 54 | 24400 | 48800 | 47300 | 42500 | 34700 | 24400 |
| 2.1/4 | 57 | 27270 | 54540 | 52800 | 47300 | 38700 | 27270 |
| | 59 | 28280 | 56560 | 54800 | 49300 | 40200 | 28280 |
| 2.3/8 | 61 | 30320 | 60640 | 58800 | 52800 | 43200 | 30320 |
| | 63 | 32520 | 65040 | 63100 | 56600 | 46200 | 32520 |
| 2.1/2 | 64 | 33700 | 67400 | 65300 | 58700 | 47800 | 33700 |
| | 65 | 34700 | 69400 | 67300 | 60400 | 49300 | 34700 |
| 2.5/8 | 67 | 37080 | 74160 | 71800 | 64500 | 52600 | 37080 |
| | 69 | 39450 | 78900 | 76500 | 68700 | 56000 | 39450 |
| 2.3/4 | 70 | 40820 | 81640 | 79200 | 71000 | 58000 | 40820 |
| | 71 | 42000 | 84000 | 81500 | 73100 | 59600 | 42000 |
| 2.7/8 | 73 | 44700 | 89400 | 86600 | 77700 | 63500 | 44700 |
| | 75 | 47250 | 94500 | 91600 | 82200 | 67200 | 47250 |
| 3 | 76 | 48600 | 97200 | 94200 | 84500 | 69000 | 48600 |
| | 77 | 49800 | 99600 | 96600 | 86700 | 70700 | 49800 |
| 3.1/8 | 79 | 52700 | 105400 | 102500 | 91300 | 74800 | 52700 |
| | 81 | 54870 | 109740 | 106500 | 95500 | 78000 | 54370 |
| 3.1/4 | 83 | 56900 | 113800 | 110500 | 99000 | 80800 | 56900 |

## Web sling colour chart

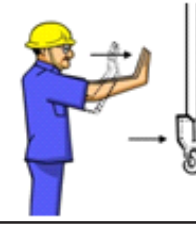
| Color | WLL (Straight lift) |
|---|---|
| Violet | 1 ton |
| Green | 2 tons |
| Yellow | 3 tons |
| Grey | 4 tons |
| Red | 5 tons |
| Brown | 6 tons |
| Blue | 8 tons |
| Orange | 10 tons or above |

## Web sling lifting chart

| | | | SWL IN KG WITH ONE WEBBING SLING | | | | | SWL IN KG WITH TWO WEBBING SLINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lifting method / WLL | | | straight | choke | basket, inclination angle § | | | angle of inclination § | | | |
| | | | | | up to §=7° | up to §=7°-45° | from-to §=45°-60° | straight up to §=45° | choke up to §=45° | straight from-to §=45°-60° | choke from-to §=45°-60° |
| Art. No. | | Factor | 1.0 | 0.8 | 2.0 | 1.4 | 1.0 | 1.4 | 1.12 | 1.0 | 0.8 |
| HFS01 | 1000kg | violet | 1000 | 800 | 2000 | 1400 | 1000 | 1400 | 1120 | 1000 | 800 |
| HFS02 | 2000kg | green | 2000 | 1600 | 4000 | 2800 | 2000 | 2800 | 2240 | 2000 | 1600 |
| HFS03 | 3000kg | yellow | 3000 | 2400 | 6000 | 4200 | 3000 | 4200 | 3360 | 3000 | 2400 |
| HFS04 | 4000kg | grey | 4000 | 3200 | 8000 | 5600 | 4000 | 5600 | 4480 | 4000 | 3200 |
| HFS05 | 5000kg | red | 5000 | 4000 | 10000 | 7000 | 5000 | 7000 | 5600 | 5000 | 4000 |
| HFS06 | 6000kg | brown | 6000 | 4800 | 12000 | 8400 | 6000 | 8400 | 6720 | 6000 | 4800 |
| HFS08 | 8000kg | blue | 8000 | 6400 | 16000 | 11200 | 8000 | 11200 | 8960 | 8000 | 6400 |
| HFS010 | 10000kg | Orange | 10000 | 8000 | 20000 | 14000 | 10000 | 14000 | 11200 | 10000 | 8000 |

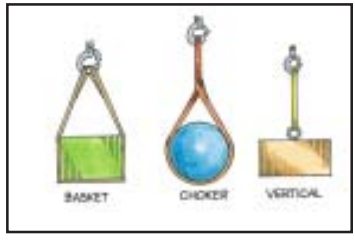
## 25. BASIC RIGGING SIGNALS, TACKLES AND METHODS

<table>
<tr><th colspan="4">COMMON</th></tr>
<tr><td>Hoist up</td><td>  </td><td>Hoist lower</td><td> 
</td></tr>
<tr><td>Hoist up– slow</td><td> 
</td><td>Hoist lower - slow</td><td> 
</td></tr>
<tr><td>Stop – motion is finished</td><td> 
</td><td>DOG every thing – pause the motion</td><td> 
</td></tr>
<tr><td>Emergency stop -</td><td colspan="3"> 
</td></tr>
</table>

| EOT cranes | | | |
|---|---|---|---|
| Long travel - Right |  | Long travel – Left |  |
| Cross travel – Towards operator |  | Cross travel – Away from operator |  |

**Bow and D shackle**

**Wire rope slings with thimble**




**Slinging Methods**

**Web sling**

## 26. DOCKING & UNDOCKING

Docking and undocking of the ship is one of the major activities in the yard. The following precautions are to be taken.

1. Docking and Undocking operations should be done only with the guidance of the dock Master, pilots or authorized person from CSL.
2. Pre requisite checklist to be filled cleared by CSL dock master.
3. Tugs or suitable supports should be ensured
4. Tide level, List and Trim of the vessel level, docking plan and water currents to be taken care of while planning the docking & undocking
5. Gangways shall be placed after the positioning the vessel
6. Good condition of mooring ropes shall be ensured
7. Suitable floating life vest to be worn if any chance of fall into water bodies.

## 27. CANTEEN

The hazards identified in the canteen are slippery floor and splash of hot water/oil on the body of employees.

1. Suitable anti slippery foot wear shall be worn
2. Wearing of caps is compulsory to prevent human hair falling on food materials.
3. Extra care shall be taken during handling the hot water/ liquids.
4. Care shall be exercised while cutting the vegetables to prevent cut injuries.
5. Extra personal hygiene shall be ensured while working in canteen
6. Surrounding of the canteen shall be kept neat and tidy
7. Ensure periodic control measures should be in place to prevent rodent menace in stores and canteens.

## 28. SLIPS, TRIPS AND FALLS

A large portion of injuries at work are caused by slips, trips and falls. Whether on the same level or from height, fall can occur in all kinds of work places and under a range of different conditions.

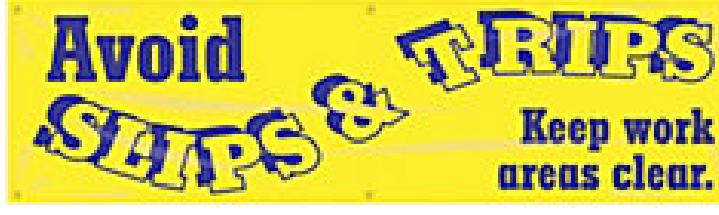
Some of the common reasons for Slips, Trips and fall are:

1. Poor flooring
2. Unsuitable foot wear
3. Slippery surfaces
4. Obstruction in walk ways
5. Poor lighting or restricted vision
6. Undue care and attention.

The biggest contribution you can make in preventing such accidents is by keeping your work-area clean, tidy and free from obstructions.

Also:

1. Use proper routes and walkways. Avoid short cuts
2. Make sure that any temporary opening in walkways is secularly fenced off. On completion of work, replace grating and covers securely.
3. Report to your immediate supervisor whether there are damaged or obstructions on floor surfaces, lack of handrails and fencing as well as inadequate illuminated areas
4. Correct use of ladders – firm level surface, secured at the top and extended beyond the step-off point or adequate separate handhold.



## 29. FIRE

### a. Basic chemistry of fire

Any fire, once it starts, will continue to burn as long as there is something to burn and oxygen is present. There must be reasons for a fire to start and the way it burns. There are reasons for certain substances to be more or less flammable than the others.

### b. The nature of fire (combustion)

The combination of a substance with oxygen is called an oxidation process. It is a chemical process. Energy is given off during this process, usually in the form of heat. The oxidation process in case of a fire or combustion is rapid. The burning substance combines with oxygen at a very fast and high rate. Production of energy in the form, of heat and light is rapid, so we can feel the heat and see the light as flames

### c. Elements of fire

The essential requirements of a sustainable fire (combustion) are the presence of three elements, i.e. FUEL, HEAT and supply of free OXYGEN, usually in air (formation of fire triangle).

### 29.1 Fire Prevention

Prevention is the best form of defense. Fires can be prevented by following some simple rules.

1. **Don't** let rubbish or items accumulate in one area, especially under stairs.
2. **Don't** overload electrical outlet sockets
3. **Don't** use make shift wiring extensions
4. Hot works carried out onboard vessel only through Permit To Work.
5. Lighting of incense and candle is not allowed inside your room.
6. **Don't** store any flammable items inside the room unless it is meant for.

7. **Don't** hang clothes to electrical equipments such as fans, AC and in the corridors. Always keep Entry/exit clear.
8. Suitably designed equipment and its installation (intrinsic safety).
9. Inspection and maintenance of equipment and electric circuits.
10. Maintaining and properly using portable equipment and flexible cables.
11. Adopting safe working practices and procedures

### 29.2 Disscovery of fire

On discovering of fire, your prompt action could save lives:

1. Warn all personal in the area by fire, fire, fire
2. Use first aid fire fighting appliances in that area.
3. If it is not possible, call CSL fire service.

**Remember: - Firefighting equipment must not be tampered with and must be kept clear of all obstruction**

## 30. GENERAL PERSONAL FACTORS LEAD AN INCIDENT

The following personal factors are to be taken care of and they should be more vigilant while on duty, otherwise it may lead to incidents.

1. Ensure sound sleep.
2. Eat sufficient breakfast.
3. Avoid over eating
4. Sickness suffered by any family member or near & dear ones(Frustration)
5. Acute financial crisis
6. Quarrel with others (Emotional disturbance)
7. Over confidence
8. Influence of medications
9. Fatigue due to lack of rest

## 31. OFFICE SAFETY

1. Don't stand and talk in front of closed doors which may open suddenly.

2. Walk cautiously around blind corners

3. Sit squarely on office chairs, and not on the edge of them.

4. Running at any time in an office may result in injury from slipping, tripping or collision. Avoid running in offices.

5. Walk slowly and cautiously up and down stairs. Use hand rail where possible.

6. The gummed strips on envelopes should not be moistened with tongue.

7. Office employees wearing high heeled shoes shall exercise extra caution to prevent falls.

8. Don't use lift in case of fire.

9. While lift break down, shout for help or make call to CSL Emergency number for help

## Desk stretch exercise for continuous use of computers

# DESK STRETCHES

These are stretches to do at your desk.
This program will take 2 1/2 – 3 min.

- Breathe easily
- No bouncing or forcing
- No pain!
- *Feel* the stretch
- Relax

**1**
5 sec, 3 times

**2**
5 sec, 3 times

**3**
5 sec, 2 times

**4**
5 sec, 2 times

**5**
5 sec

**6**
5 sec
each side

**7**
5 sec

**8**
10 sec
each arm

**9**
10 sec

**10**
10 sec

**11**
9 sec
each side

**12**
10 sec

- Prolonged sitting at a desk or computer terminal can cause muscular tension and pain.
- Taking a few minutes to do a series of stretches can make your whole body feel better.
- Learn to stretch spontaneously throughout the day whenever you feel tense.
- Don't just do seated stretches, but do some standing stretches too. Good for circulation.

## 32. WASTE MANAGEMENT

A waste is a material which is discarded or intended to be discarded.

### Waste identification and classification

Waste is classified as either hazardous or Non hazardous. Waste produced in CSL activities are identified and listed in the scrap/waste disposal manual

### Waste segregation and collection

In CSL colour coded pallets are placed in different locations to collect various types of waste. The responsibility of depositing the waste in the appropriate pallets rests with the generator. The category and colour code of waste collection pallets are given below.

| SL. NO | TYPE OF WASTE | CATEGORY | COLOUR OF PALLETS |
|---|---|---|---|
| 1 | Waste oil / Oil sludge | Hazardous | Brown / Black |
| 3 | Oil soaked cotton waste | Hazardous | Black & Yellow stripes |
| 4 | Used Copper slag | Hazardous | White & Red stripes |
| 5 | Empty paint drums | Hazardous | Grey |
| 6 | Zinc Anodes | Hazardous | Yellow & Red stripes |
| 7 | Used Batteries | Hazardous | Light Green |
| 8 | Electronic waste | Hazardous | Light Blue |
| 9 | Steel Scrap | Non Hazardous | Dark Blue |
| 10 | Industrial waste | Non Hazardous | Yellow |
| 11 | Cut cables | Non Hazardous | Dark Orange |

When pallets are filled, the wastes are shifted to common storage location identified in CSL by the service Departments and the pallets are repositioned back to its original position.

## 33. OCCUPATIONAL HEALTH

Occupational health deals with man (both physically and mentally) in relation to his work and work environment.

The employees are exposed to various levels of health hazards, life style diseases and the various physical and chemical hazards. Proper awareness about the health hazards is a required for an employee to lead a healthy life

The various measures to be taken for reducing Health hazards are:

1. Employees who are involved in handling hazardous chemical, gases and other substances should be made aware about its health hazards and the precautions to be taken in handling these hazards.
2. The MSDS of the chemical being handled should be made available to the workers.
3. Statutory Periodical health checkups should be done by the company
4. Non statutory health check up should be done at least once in two years in order to detect Life style diseases such as High Cholesterol, Diabetics, Blood pressure, allergies to any chemical or substances etc
5. Employees should maintain all his medical records and should be made available in case of an emergency.
6. Stress of employees that is either job related or caused by various personal factors also can lead to accidents and subject the victim to various diseases.

## 34. FIRST AID

First aid is the immediate emergency care / treatment given to the victim of an accident or sudden illness, till medical aid is available.

### Aims of first aid

a. To preserve / save life

b. To prevent further injury & worsening of casualty's condition

c. To promote recovery

## Ten Commandments for first aiders

1. **reach the accident spot quickly**
2. **be calm and speedy**
3. **ensure safety of the place**
4. **look for life threatening conditions first**
5. **give FA in the order of priority**
6. **reassure the casualty if conscious**
7. **clear the crowd**
8. **do not leave the casualty alone**
9. **arrange for safe transport**
10. **do not attempt too much / do no harm**

## Look for condition of the victim in the following order

1. **is the victim conscious**
2. **is the victim breathing**
3. **is there severe bleeding**
4. **is the victim in shock**
5. **is the victim in pain**

## 34.1. Control of bleeding

1. **Apply direct pressure over the wound**
2. **Cover wound with sterile dressing and bandage firmly**
3. **Raise the injured part above level of heart**
4. **Apply pressure over pressure points**
5. **Immobilize the injured part**
6. **Look for signs of shock**
7. **Send to hospital in lying down position**

## 34.2 Fracture

Suspect fracture when there is tenderness, swelling, deformity, abnormal movements etc.

1. Control any bleeding and cover any wounds
2. Do not move the casualty unless life is endangered
3. Immobilize the injured area as well as the joints above and below using suitable splints
4. Call for ambulance to send to hospital

### 34.3 Burns

1. If clothing on fire—stop, drop and roll
2. Cool the burnt area by holding under cold running water for at least 10 minutes
3. Do not apply ointments, oils or any other substance
4. Cover the wound with sterile non-sticky dressing
5. Call for ambulance

### 34.4 Eye injuries

1. Removal of foreign body should not be attempted
2. Do not apply ointment or oil
3. Apply sterile pad and loose bandage
4. Send to hospital

### 34. 5 Chemical burns of the eye

1. Immediate washing of the eye with clean water continuously for at least 20 minutes
2. Apply sterile pad and bandage
3. Send to hospital.

### 34.6. Suffocation

1. Remove the casualty from the site of accident to safe area to get fresh air
2. Clear the airway
3. Restore breathing by artificial respiration
4. Send to hospital

### 34.7 Electric shock

1. Do not touch the casualty while he is still in contact with live source
2. Switch off the power immediately
3. Do not attempt first aid until the contact has been broken
4. Check response and breathing
5. Give cardiopulmonary resuscitation(CPR) if the casualty is unconscious and is not breathing

### 34.8 Unconsciousness

1. Check response
2. If no response look for breathing
3. Start giving CPR if unresponsive and is not breathing
4. If breathing is normal , keep the casualty in recovery position till he gets medical attention

### 34.9 Chest pain

1. If casualty is conscious, keep him in half sitting position and advise to take rest
2. If unconscious, check D.R.A.B.C (Dangerous, Response, Airway, Breathing and Circulation) and start giving CPR if necessary

   Call for ambulance and continue CPR till he gets medical help or show signs of life.

### 34. 10 Cardiopulmonary Resuscitation (CPR)

CPR is the emergency first aid procedure done when the casualty is unconscious and not breathing.

CPR maintains flow of oxygenated blood to the brain and the heart, thereby delay tissue damage, so that more definite treatment will be effective

If you see a motionless person, follow the steps below

1. Assess the area for any safety hazards before proceeding
2. Check the response by shaking the shoulders and calling loudly
3. If there is no response, open the airway by head tilt and chin lift
4. Check for breathing by looking rise and fall of chest wall for 5 to 10 seconds
5. If there is no breathing start giving CPR

CPR consists of artificial circulation & artificial respiration given at regular sequence. CPR is effect only if performed within 4-5 minutes of the stoppage of blood flow. CPR sequence of steps is now

# C-A-B

C - Chest compression

A - Airway

B - Breathing

### Chest compression

1. Place the heel of one hand at the centre of lower part of chest and place the other hand on top of the first.
2. Begin chest compression – push hard and push fast
3. The rate of compression should be at least 100 per minute.
4. Depress the chest at least 2 inches(5 cms) and allow full recoil of chest wall before next compression
5. Give 30 compressions at one stretch

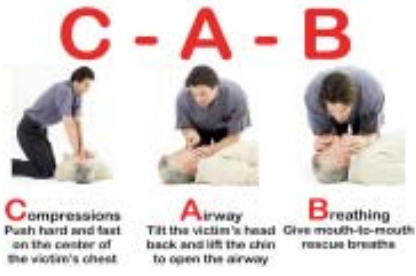
### Air way opening

1. Open airway by head tilt and chin lift
2. Check breathing by watching rise and fall of chest wall for 5 to 10 seconds.

### Breathing

1. If the casualty is not breathing, give two rescue breaths in two seconds.
2. Continue CPR by giving 30 chest compressions followed by 2 rescue breaths

Continue CPR until there are signs of life or until emergency medical personnel take over



## 35. COLOUR CODING WITH TYPES OF SERVICE MANIFOLDS / PIPE LINES & ELECTRICAL DISTRIBUTION BOXES

**Oxygen Manifold / Pipe lines – White band on canary yellow**

**Acetylene Manifold with dry type flash back arrestor / Pipelines – Service brown band on canary yellow**

**LPG Manifold / Pipelines – Signal red band on canary yellow**

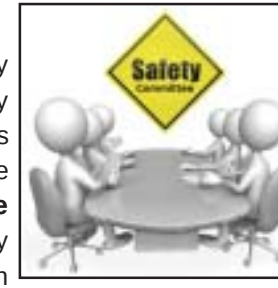
**Compressed air Manifold / Pipelines – Sky blue**

**Co2 or Argon or CO2-Argon Mixture Manifold / pipe lines – light grey band on canary yellow**

### Colour code of Electrical distribution box

## 36. SAFETY COMMITTEE

Safety committees are a platform where workers and management participate in developing HSE systems. Any deficiencies and improvement opportunities in the system are being discussed in a constructive manner and necessary measures needed to improve it. These measures are discussed and implemented along with workers and managements co-operation.




In order to assist the effort on safety management in CSL, various Safety Committees are also in existence, as per the statutory requirements. There is a **Central Safety Committee** headed by Occupier and duly represented by all the operation departments, including representatives of workmen. Also, there are separate Safety Committees in functional areas such as **Ship-building, Ship repair, Services** which are also constituted with due representations on the above lines headed by respective process owners. In addition to the above committees, **Contract work men committee** formed for safety and welfare of the contract work men's in the yard.

## 37. STEPS TO REDUCE ENVIRONMENTAL IMPACTS

1. Continual Improvisation of the system to reduce the use of natural resource (Eg: Electricity, water, paper) in CSL.
2. Continual Improvisation of the system to reduce the pollution resource (Eg: air, water and soil) in CSL.
3. Promotion of use of environment friendly materials in CSL.
4. Action to reduce any leakage of water in CSL. If water leakage is observed in your area, report immediately. For industrial & Ballast water leakage, call Fire pump room(PABX:1450) and fresh water call Civil Maintenance (PABX: 1216/1352)

5. Avoid Improvised connections and use of standard leak proof couplings for getting water.
6. Electrical equipments to be switched off when it is not use.
7. Promote the use of one side paper in offices

## ARIEL VIEW OF CSL & MAJOR FACILITIES

## MAJOR FACILITIES

| Dock | Size | Capacity | Cranage |
|---|---|---|---|
| Dock No.1 | 270x45x12 M | 125,000 DWT | 60t, 40t(2 nos), 10t |
| Dock No.2 | 255x43x9 M | 110,000 DWT | 300t, 150t, 50t |
| Dock No.3 @ ISRF | 66 x 12.5 x4 M | | |
| Land | | 188 Acres | |
| Quay 1 - for repairs | | 290 M | |
| Quay 2 - for repairs | | 208 M | |
| Quay 3 - for out fitting | | 630 M | |
| Total quay Length | | 1128 M | |
| Steel Fabrication Facility | | 2000 TPM | |
| Covered Shop Area | | 67,230Sq.M | |
| Steel Stockyard | | 18,000Sq.M | |
| SSD shop area | | 18,411 Sq.M | |
| Marine Coating Shop | | 2 Nos | |
| CNC Plasma Cutting Machine | | 2 Nos | |
| Plate Rolling Machine | | 1 No | |
| Cranes (Max 300T) | | 90 Nos | |
| Mobile Cranes (Max 150 T) | | 5 Nos | |
| Transporter (Max 150T) | | 1 No | |
| Transporter (Max 100T) | | 1 No | |
| 500 T Bollard Pull test facility | | 1 No | |

Paste your family photo here

“They are waiting you at home”

# “Protect our earth”