



SAFETY GUIDELINES AND EMERGENCY PREPAREDNESS

April 2011

GUIDELINES MANUAL			
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1.0 Business Operations Department Safety Policy and Program

Business Operations Department is committed to prevention of accidents to minimize loss of life or bodily injury to its employees and damage to its physical assets.

In fulfilling this commitment, Business Operations Department will provide and maintain a safe and healthful work environment and protect the public against foreseeable hazards resulting from operations. Employees will be given an adequate safe working procedure and that they are informed of any hazard to their health which is known to be associated with work.

Loss of life and property resulting from accidental occurrences can be minimized through good management. Safety is one aspect of this loss control philosophy and is the direct responsibility of line management.

All management functions will comply with Qatar Government and Company safety requirements applicable to the design, operation, maintenance and construction of facilities and/or equipment. When conformity with any of these requirements is not practicable or cost effective, an amendment to such a requirement will be considered.

Reviews for compliance with these guidelines will be performed on a selective basis.

2. 0 Compliance with Safety Requirements

The application of the best safety practices minimizes risk to personnel and property. The design, construction, modification, operation and maintenance of facilities and equipment and construction as practiced by Business Operations Department (BOD) and/or contractors, will meet Qatar Government and Qatar University safety requirements as covered in this manual and in relevant General Instructions, including the University’s Engineering Standards. When conformity with any of these requirements is impractical or not cost effective, a waiver will be sought from the Director’s Office.

3. 0 Operating Standards and Instructions

Risks that cannot be eliminated through design are controlled by operating standards and instructions. Compliance with safety standards and instructions will be consistently enforced for both BOD operations personnel and contractors alike.

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4.0 Personal Protection

Personal protective equipment, periodic safety monitoring and surveillance will be used to help to protect all employees against exposure to safety and health hazards (e.g., radiation, gas, etc.) which cannot be eliminated.

5.0 Inspection

Inspections to detect and correct unsafe practices and conditions will be conducted periodically by Business Operations Department – Safety Unit and/or contractor.

6.0 Education and Training

All employees shall be provided with on-going safety education and training as well as helping to develop those skills that are required to perform, supervise and manage assigned tasks without accident.

7.0 Motivation and Recognition

Good communications, a viable suggestion system and the recognition of good safety performance, encourages employee participation in safety programs.

8.0 Job Placement

Employees must only be assigned tasks that are consistent with their physical capacities and job skills; these enable employees to work without endangering themselves or others.

9.0 Response to Accidental Occurrences

Site specific effective emergency response plans must be established as per the guidelines of Emergency Preparedness and Response. These should include measures to contain or control an emergency or disaster when an accident occurs to minimize the loss of resources, a reporting and investigation system to determine the cause of the accident, and the adoption of corrective actions to avoid a recurrence.

10.0 Contractor Safety

Business Operations Department will monitor all construction activity to ensure that services are performed in conformity with Qatar University safety policies, principles and practices and do not imperil any person or property.



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11.0 Accountability

All employees and contractors shall be held accountable for personal and functional safety performance. An important factor in an employee's and contractors overall job performance evaluation will be how well the employee meets his safety responsibilities.

12.0 Compliance Reviews

On a selective basis, compliance reviews will be conducted by teams that include people with related expertise to determine compliance with this policy. In order to ensure the credibility and effectiveness of the review, the team members must be detached from the operation being reviewed.

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OBJECTIVE: This guideline is promulgated to uphold the University's values on excellence in everything we do, honesty, integrity, and respect for every individual. It also enables those comprising the University to work together as a cohesive and competent team deeply committed to duty and responsibility. This guideline expresses the belief that self –discipline imposed by the individual on himself is more effective than external coercion or regulation. It is formulated with an understanding that the greatest advantage for both the group as a whole and the individual comes from working cooperatively within established framework of University policies, procedures and rules. It is a guideline intended to be influential rather than coercive, preventive rather than punitive. It is hope that this guideline that this positive approach to discipline will result to willing adherence, where contractors believe, support and understand the University's standard of conduct and performance.		
SCOPE: This guideline covers all contractors working for or on behalf of the Qatar University under the management and/or supervision of Business Operation Department which don't have any consultant for the supervision of safety.		
DEFINITION Non-conformance to safety - relates to failure to meet the requirement of Occupational Safety and Health Standard		
GUIDELINES: 1.0 Disciplinary Action Guide At Business Operation Department, discipline is viewed from the standpoint of education and training rather than enforcement and punishment. This is what we term as Positive Discipline, except for those that are considered major offense. Counseling and written warning shall be the primary forms of correcting deviation from the standards. When infraction persists despite these positive strategies, these disciplinary actions will apply. A disciplinary action is a University initiated action involving contractor who breaches sets of rules and regulations or who has failed to demonstrate desirable behavior toward organizational standards. The objective of disciplinary action is to change the erroneous performance, to deter others from similar actions and to maintain consistent, effective group standard. It should be clear that it is a particular performance that is being criticized and penalized; it is not personal attack on the individual. The imposition of disciplinary action will depend on the gravity of the infraction. The penalties may be waived in favor of more severe penalty.		

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2.0 Code of Conduct Guidelines

CODE	DISCIPLINARY ACTION
1	Counseling with written communication to the contractor for minor infraction that could lead to a more serious infraction.
2	Written warning to the contractor for 2 nd repetition and/ or more serious infraction but not serious enough to stop the work
3	Suspension/ stoppage of work for continuous repetition and very serious infraction or totally unsatisfactory performance

2.0 Schedule of Infraction and Disciplinary Action

Item. No.	Infraction	Disciplinary Action		
		1 st Offense	2 nd Offense	3 rd Offense
1.0	Failure to comply with General Safety and Health Provision (OSHS 1926 Subpart C)			
1.1	Safety Training and education	1	2	3
1.2	Recording and reporting of injuries	1	2	3
1.4	Fire protection and prevention	1	2	3
1.5	Housekeeping	1	2	3
1.7	Access to employee exposure and medical records	1	2	3
1.8	Employee emergency action plans	1	2	3
2.0	Failure to comply with Occupational Health and Environmental Controls (OSHS 1926 Subpart D)			
2.1	Medical services and first aid	1	2	3
2.2	Sanitation	1	2	3
2.3	Occupational noise exposure	1	2	3
2.4	Gases, vapors, fumes, dusts, and mists	1	2	3
2.5	Illumination	1	2	3
2.6	Ventilation	1	2	3
2.7	Hazard Communication	1	2	3
3.0	Failure to comply with Personal Protective Equipment (OSHS 1926 Subpart E)			
3.1	Occupational foot protection	1	2	3
3.2	Head protection	1	2	3
3.3	Hearing protection	1	2	3
3.4	Eye and face protection	1	2	3
3.5	Respiratory protection	1	2	3
3.6	Safety belts, lifelines, and lanyards	1	2	3
3.7	Safety nets	1	2	3

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Item. No.	Infraction	Disciplinary Action		
		1 st Offense	2 nd Offense	3 rd Offense
4.0	Failure to comply with Fire Protection and Prevention (OSHS 1926 Subpart F)			
4.1	Fire Protection	1	2	3
4.2	Fire Prevention	1	2	3
5.0	Failure to comply with Signs, Signals, and Barricades (OSHS 1926 Subpart G)			
5.1	Accident prevention signs and tags	1	2	3
5.2	Signaling	1	2	3
5.4	Barricades	1	2	3
6.0	Failure to comply with Materials Handling, Storage, Use and Disposal (OSHS 1926 Subpart H)			
6.1	General requirements for storage	1	2	3
6.2	Rigging equipment for material handling	1	2	3
6.3	Disposal of waste material	1	2	3
7.0	Failure to comply with Hand and Power Tools (OSHS 1926 Subpart I)			
7.1	Hand tools	1	2	3
7.2	Power operated hand tools	1	2	3
7.3	Abrasive wheels and tools	1	2	3
7.4	Woodworking tools	1	2	3
7.5	Jacks – lever and ratchet, screw and hydraulic	1	2	3
8.0	Failure to comply with Welding and Cutting (OSHS 1926 Subpart J)			
8.1	Gas welding and cutting	1	2	3
8.2	Arc welding and cutting	1	2	3
8.3	Fire prevention	1	2	3
8.4	Ventilation and protection in welding, cutting and heating	1	2	3
9.0	Failure to comply with Electrical (OSHS 1926 Subpart K)			
9.1	Lockout and tagging of circuits	1	2	3
10.0	Failure to comply with Scaffolds (OSHS 1926 Subpart L)	1	2	3
11.0	Failure to comply with Fall Protection (OSHS 1926 Subpart M)	1	2	3
12.0	Failure to comply with Cranes, Derricks, Hoists, Elevators and Conveyors (OSHS 1926 Subpart N)	1	2	3

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Item. No.	Infraction	Disciplinary Action		
		1 st Offense	2 nd Offense	3 rd Offense
13.0	Failure to comply with Motor Vehicle, Mechanized Equipment (OSHS 1926 Subpart O)			
13.1	Equipment	1	2	3
13.2	Motor vehicles	1	2	3
13.3	Material Handling equipment	1	2	3
13.4	Pile driving equipment	1	2	3
13.5	Site clearing	1	2	3
14.0	Failure to comply with Excavation (OSHS 1926 Subpart P)	1	2	3
15.0	Failure to comply with Stairways and Ladders (OSHS 1926 Subpart X)	1	2	3

3.0 Target Completion of Corrective Action

Type of Corrective Action

- 3.1 Elimination is a permanent solution and should be attempted in the first time
- 3.2 Substitution involves replacing the hazard or environmental aspect by one of lower risk
- 3.3 Engineering controls involve physical barriers or structural changes to the environment
- 3.4 Administrative controls reduce hazard by altering procedures and providing instructions.
- 3.5 Personal protective equipment last resort or temporary control

Maximum Period of Completion

- One (1) day from the receipt of written communication from QU
- Two (2) week from the receipt of written communication from QU
- One (1) week from the receipt of written communication from QU
- Three (3) days from the receipt of written communication from QU
- One (1) day from the receipt of written communication from QU

4.0 Completeness/ Effectiveness Verification Criteria

- 4.1 Safety inspection reports are verified as to completeness and effectiveness of the corrective actions/solutions.
- 4.2 Completeness
 - 4.2.1 Implementation: Is it done and completed?
 - 4.2.2 Internalization : Is it practiced as documented?
 - 4.2.3 Traceability to records: Are there records or objective evidences
- 4.3 Effectiveness
 - 4.3.1 Attainment of Goal: Did it eliminate the non-conformity /problem?
 - 4.3.2 Non recurrence of non conformity: Are there no repeat of infraction or similar non conformity /problem found?
 - 4.3.3 Continuous Improvement: Does it improve the system/process/solution? Does it attain the target improvement

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Title:

SAFETY INSPECTION REPORT VERIFICATION- PROJECTS

Document No.	: EHSG-02
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OBJECTIVE:

To ensure that safety inspection report for projects is properly verified.

GUIDELINES:

Completion and effectiveness of corrective action/s on safety report shall be in accordance with EHSG-01: Disciplinary Action for Non-Conformances to Safety-Contractor, item 4.0, Completeness/ Effectiveness Verification Criteria.

- 2.0 A second offense letter for non-conformance to safety shall be forwarded to the Project Manager if the corrective action is not complete and effective during the first verification stage.
- 3.0 A third offense letter for non-conformance to safety shall be forwarded to the Project Manager if the corrective action is not complete and effective during the second verification stage.
- 4.0 Any delay or inability to meet completion deadline for corrective action must be justified by concerned contractor and approved by Project Manager.

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Title:

TARGET COMPLETION OF CORRECTIVE AND PREVENTIVE ACTIONS

Document No. : **EHSG-03**
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OBJECTIVE:

To ensure that completion date for corrective and preventive actions are properly set for timeliness and effectiveness.

GUIDELINES :

1.0 All corrective and preventive actions (except for projects) during safety inspection must be implemented within agreed dates in accordance with the following guidelines:

Type of Corrective/Preventive Actions

Maximum Period of Completion

1.1 Procedures/ policies/ guidelines/
standards/ work instructions/
references creation or revision

1.1.1 Section Level

1.1.2 Department level

•Within two (2) weeks

•Within one (1) month

1.2 Requires causal investigation prior to
correction.

•Ideally one (1) month but not more than three
(3) months

1.3 Requires capital expenditure

•Within one month after the item is acquired/
installed/commissioned

1.4 Others not mentioned above

•As soon as possible but not more than
three (3) months

2.0 Any delay or inability to meet completion deadline must be justified by concerned and approved by respective department head.

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VERIFICATION CRITERIA OF CORRECTIVE AND PREVENTIVE ACTION

Document No.	: EHSG-04
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OBJECTIVE:

To establish criteria on completeness and effectiveness of the corrective taken by concerned on Safety Inspection Report.

GUIDELINES:

1. Safety inspection reports are verified as to completeness and effectiveness of the corrective actions.

CRITERIA

1.1 COMPLETENESS

- 1.1.1 Implementation: Is it done and completed?
- 1.1.2 Internalization : Is it practiced as documented?
- 1.1.3 Traceability to records: Are there records or objective evidences?

1.2 EFFECTIVENESS

- 1.2.1 Attainment of Goal: Did it eliminate the non conformity?
- 1.2.2 Non recurrence of non conformity: Are there no repeat infraction or similar infraction found?
- 1.2.3 Continuous Improvement: Does it improve the system/process?

2. Safety Inspection Reports may be closed if the corrective action has passed these criteria.

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 جامعة قطر QATAR UNIVERSITY	Title: ACCIDENT/ INCIDENT INVESTIGATION	Document No. : EHSG-05
		Revision No. : 0
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OBJECTIVE: To determine and document properly the cause of an accident or incident occurrence and to recommend corrective and preventive action		
SCOPE OF INVESTIGATION: 1. Fire 2. Biohazardous and Chemical Spill 3. Vehicular Accident 4. Equipment Breakdown 5. Occupational Accident 6. Radiation Exposure 7. Environmental Radioactive contamination		
GUIDELINES: 1.0 The Director of Business Operation Department shall initiate / instruct the investigating committee chairman to conduct investigation of the reported accident/ incident. 2.0 The chairman shall convene the members of the investigating committee. 3.0 The investigating committee shall conduct the investigation based on the following method. 3.1 Gather information through 3.1.1 Witness account 3.1.2 Physical evidence 3.1.3 Existing records 3.2 Deliberation of findings 3.3 Analyze the facts 3.3 Provide corrective and preventive action. 4.0 Reporting Format 4.1 Description of accident or incident 4.2. Cause and extent of accident or incident 4.3 Corrective action taken/ response made 4.4 Cost of corrective action 4.5 Status as of the date of this report 4.6 Effect of the accident or incident / result due to the accident or incident. 5.0 Submit report to review committee and to Business Operation Department Director for approval 6.0 Section heads shall implement the recommended corrective and preventive action. 7.0 The composition of the investigating committee and review committee shall be determined by the Business Operation Director. 8. Any member of the investigating committee shall inhibit from conducting an investigation whenever the accident or incident falls in his area of responsibility. In such cases the Director of Business Operation Department shall appoint a replacement.		

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	Title: CONFINED SPACE	Document No. : EHSG-06
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OBJECTIVE: To provide Confined Space Safety guidelines to protect employees and contractors from hazards associated with entry confined spaces.		
DEFINITION: Confined Space - A confined space by design has limited or restricted means for entry and exit and is not intended for continuous employee occupancy. Confined spaces include but are not limited to manholes, pipelines, sewers, tunnels, pressure vessels		
GUIDELINES 1.0 Permit-Required Confined Space (PRCS) A Permit-Required Confined Space is required if one or more of the following characteristics are met: 1.1 Contains or has a known potential to contain a hazardous atmosphere. Three of the most common atmospheric conditions that constitute hazards are oxygen deficiency, presence of combustible gases and vapors, and toxic gases and vapors 1.2 Contains a material with the potential for engulfment of an entrant. 1.3 Contains any other recognized serious safety or health hazard. 2.0 Authorized Personnel 2.1 Authorized Entrant - An employee who is authorized by the employer to enter a permit required space. Only employees who are trained as an entrant and have obtained a permit signed by the entry supervisor may enter a permit required confined space. 2.2 Attendant - An individual who is stationed outside and monitors authorized entrants. At least one individual must be stationed outside the permit required confined space. 2.3 Entry Supervisor – is a supervisor or foreman responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry, for overseeing entry, and for terminating entry. 3.0 Identification of Permit-Required Confined Spaces (PRCS) Each department is to identify all confined spaces and those suspected of being a PRCS. Subsequent to identification, the department should contact the Environment, Health and Safety Office to assist in the evaluation of those spaces. 4.0 Warning Signs PRCSs must be posted with warning signs notifying employees of any hazards that are present, and that only authorized entrants may enter the PRCS. An example warning sign may be:		



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CONFINED SPACEDocument No. : **EHSG-06**

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DANGER
PERMIT- REQUIRED CONFINED SPACE
DO NOT ENTER

5. Evaluation of Permit-Required Confined Space Condition (PRCS)

Each PRCS must be evaluated to identify hazards; determine the severity the hazards; and establish control procedures and practices by which the space may be entered safely. A "Confined Space Hazard Evaluation" form must be completed for each PRCS.

Before entry into a PRCS is authorized, the conditions within the space must be tested to determine if acceptable entry conditions exist. The space must be monitored during the course of entry operations to determine if acceptable entry conditions are being maintained. When testing for atmospheric hazards first test for oxygen deficiency, then for combustible gases and vapors, and then for toxic gases and vapors.

6.0 Pre-Entry and Entry Practices and Procedures

Each department is to develop written entry procedures and practices necessary for safe permit space entry, to be included in the confined space safety plan. Such procedures must be approved by the Health and Safety Office prior to entry. Practices and procedures to be addressed include:

- isolating (locking and tagging) the PRCS;
- ventilation of the PRCS;
- providing vehicle and pedestrian barriers to protect entrants from external hazards; and,
- verifying that conditions are acceptable for entry.

7.0 Locking and Tagging

No work is to be performed until appropriate locking, tagging and/or isolation is accomplished to prevent the inadvertent actuation of operations or processes associated with the space which might expose employees to hazardous conditions.

8.0 Required Equipment

The following equipment is to be provided and maintained to ensure their proper use:

- testing and monitoring equipment
- ventilating equipment
- communications equipment
- personal protective equipment
- lighting equipment
- barriers and shields
- ladders
- rescue equipment
- other equipment necessary for safe entry

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9.0 Permit System

Before entering a PRCS an authorized employee must complete a "Confined Space Entry Permit" for approval by the entry supervisor. A copy must also be sent to the Health and Safety Office. The permit must include: identity of the space; purpose of entry; date and duration of entry; list of authorized entrants; eligible attendants and individuals to be in charge of entry; hazards of the PRCS; measures for isolation of the space; measures to control potential hazards; the acceptable entry conditions; testing and monitoring equipment and procedures; rescue services in the event of an emergency; rescue equipment to be provided on-site, if necessary; communication procedures between authorized entrants and attendants; and personal protective equipment.

10.0 Rescue Team

If an emergency arises that requires a rescue team, the Emergency Medical Service is to be contacted by calling 999. The rescue service is to be provided access to all PRCSs from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations. Non-entry retrieval methods are to be used unless the retrieval equipment would increase the overall risk of entry. Each authorized entrant is to use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level. For vertical type PRCSs more than 5 feet deep, a mechanical device for retrieval is to be available.

11.0 Training

Employees who are assigned duties that may require entry into PRCS must receive training on confined space entry procedures, the permit system, and hazard recognition and control procedures. Authorized entrants, attendants, and supervisors in charge of entry are to receive training in their respective confined space duties and responsibilities. Training is to be provided: before employees are first assigned duties pertaining to PRCSs; whenever there is a change in assigned duties; whenever there is a change in PRCS operations that present a hazard about which an employee has not been trained; and whenever there are deviations from the entry permit procedures or inadequacies in the employees' use or knowledge of these procedures.

12.0 Departmental Confined Space Safety Plan

Each department, shop, or work unit is to complete a Confined Space Safety Plan to:

- identify confined spaces and permit required confined spaces;
- describe procedures and practices necessary for safe permit space entry;
- identify equipment that will be needed;
- designate persons who are authorized as entrants, attendants, or supervisors; and,
- evaluate the hazards of the confined space.

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13.0 Review of PRCS Program Entry operations are to be reviewed when there is reason to believe that the measures taken may not protect the employees and at least annually. The program is to be revised to correct any deficiencies found.		
14.0 Entry into Non-Permit Confined Spaces Precautions must be taken for entry into non-permit required spaces. The space atmosphere must be tested for oxygen concentration, combustible gas or vapor, and potential toxic contaminants. Any hazardous conditions detected must be reported to the supervisor and the Environment, Health and Safety Office. Manholes and confined spaces with limited ventilation must be power ventilated with a blower (minimum capacity 750 cfm) operating at its maximum rated speed for a minimum of 5 minutes. Larger confined spaces (greater than 1000 cubic feet) must be ventilated for at least 10 minutes. The blower must be in continuous operation while anyone is in the confined space.		
15.0 Confined Space and PRCS Recognition Checklist		
15.1 PART I 15.1.1 Is the space large enough so an employee can bodily enter and perform work? 15.1.2 Does the space have limited or restricted means of entry and exit? 15.1.3 Is the space not designed for continuous occupancy? If the answer is yes to all items in Part I, continue to Part II. If the answer is no to any of the items in Part I, the space is not considered a confined space.		
15.2 PART II 15.2.1 Does the space contain or potentially contain a hazardous atmosphere? 15.2.2 Does the space contain any chemicals or chemical residues? 15.2.3 Does the space contain any flammable/combustible substances? 15.2.4 Does the space contain or potentially contain any decomposing organic matter? 15.2.5 Does the space have any pipes which bring chemicals into it? 15.2.6 Does the space have any materials that can trap or potentially trap, engulf, or drown an entrant? 15.2.7 Is vision obscured by dust at 5 feet or less? 15.2.8 Does the space contain any mechanical equipment servicing the space? 15.2.9 Does the space have converging walls, sloped floors or tapered floor to smaller cross-sections which could trap or asphyxiate an entrant? 15.2.10 Does the tank or vessel contains rusted interior surfaces? 15.2.11 Does the space contains thermal hazards (e.g. cold, hot)? 15.2.12 Does the space contain excessive noise levels which could interfere with communication with an attendant? 15.2.13 Does the space presents any slip, trip, or fall hazards? 15.2.14 Are there any operations conducted near the space opening which could present a hazard to the entrant? 15.2.15 Are there any hazards from falling objects? 15.2.16 Are there lines under pressure servicing the space? 15.2.17 Are cleaning solvents or paints going to be used in the space? 15.2.17 Is welding, cutting, brazing, riveting, scraping, or sanding going to be performed in the space?		

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- 15.2.19 Is electrical equipment located in or required to be used in the space?
- 15.2.20 Does the space have poor natural ventilation which would allow an atmospheric hazard to develop?
- 15.2.21 Are there any corrosives which could irritate the eyes in the space?
- 15.2.22 Are there any conditions which could prevent any entrant's self rescue from the space?
- 15.2.23 Are there any substances used in the space which have acute hazards?
- 15.2.24 Is mechanical ventilation needed to maintain a safe environment?
- 15.2.25 Is air monitoring necessary to ensure the space is safe for entry due to a potential hazardous atmosphere?
- 15.2.26 Will the entry be made into a dike area where the dike is 5 feet or more in height?
- 15.2.27 Are residues going to be scraped off the interior surfaces of the vessel?
- 15.2.28 Are non-sparking tools required to remove residues?
- 15.2.29 Does the space restrict mobility to the extent that it could trap an irritant?
- 15.2.30 Is respiratory protection required because of a hazardous atmosphere?
- 15.2.31 Does the space present a hazard other than those noted above which would make it a permit space?

If any other questions in PART II have been checked yes, the confined space is a Permit-Required Confined Space (PRCS). As such, entry into these spaces must be performed under the protection of PRCS program.

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OBJECTIVE:

To provide Electrical Safety guidelines to insure a safe and healthy work environment for Qatar University employees and its contractors who may be exposed to electrical circuits or electrical hazards.

GUIDELINES:

1.0 Before employees and contractors may be exposed to or work on or near live parts or circuits they must be de-energized unless the employer can demonstrate that de-energizing introduces additional or increased hazards or is unfeasible due to equipment design or operational limitations. Live parts that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

2.0 If the exposed live parts are not de-energized (i.e., for reasons of increased or additional hazards or unfeasibility), other safety related work practices shall be used to protect employees and contractors who may be exposed to the electrical hazards involved. Such work practices shall protect employees and contractors against contact with energized circuit parts directly with any part of their body or through some other conductive object. The work practices that are used shall be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electric conductors or circuit parts.

3.0 Employees and contractors working on de-energized parts or near enough to them to expose the employee to any electrical hazard they present, must follow the following safety work practices:

3.1 Conductors and parts of electric equipment that have been de-energized but have not been properly locked out or tagged out shall be treated as energized

3.2 While any employee and contractor are exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits energizing the parts shall be locked out or tagged out or both

4.0 The following procedures shall be followed for de-energizing equipment:

4.1 Safe procedures for de-energizing circuits and equipment shall be determined before circuits or equipment are de-energized.

4.2 The circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, may not be used as the sole means for de-energizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

4.3 Stored electrical energy which might endanger personnel is released such as discharging capacitors and short-circuiting and grounding high capacitance elements, if the stored electrical energy might endanger personnel. If the capacitors or associated equipment are handled in meeting this requirement they are treated as energized.

4.4 Stored non-electrical energy (hydraulic, pneumatic, etc.) in devices that could re-energize electric circuit parts shall be blocked or relieved to the extent that the circuit parts cannot be accidentally energized by the device

5.0 Application of Locks and Tags (see Lock Out Tag Out Guidelines)

6.0 The following requirements shall be met before any circuit or equipment is considered de-energized or worked on as de-energized.

6.1 A qualified person operates the equipment, operating controls or otherwise verifies that the equipment cannot be restarted.

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- 6.2 A qualified person uses test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and verifies that the circuit elements and equipment parts are de-energized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been de-energized and presumed to be safe. When voltage over 600 volts, nominal are tested the test equipment shall be checked for proper operation immediately before and immediately after the test.
- 7.0 The following requirements shall be met, in the order given, before circuits or equipment are re-energized, even temporarily.
- 7.1 A qualified person conducts test and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds and other such devices have been removed, so that circuits and equipment can be safely energized.
- 7.2 Employees and contractors exposed to the hazards associated with re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- 7.3 Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if the person is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that the supervisor ensures the person who applied the lock or tag is not available at the workplace, ensures that the employee is aware that his or her tag has been removed before he or she resumes work at that workplace, and a visual determination is made to ensure that all people are clear of the circuits and equipment.
- 8.0 Only qualified persons may work on electric circuit parts or equipment that have not been de-energized. The qualified person shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.
- 9.0 When work is to be performed near overhead lines, the lines shall be de-energized and grounded or other protective measures shall be provided before work is started. If the lines are to be de-energized, arrangements shall be made with the electric utility company, person or organization that operates or controls the electric circuits involved to de-energize and ground them. If protective measures, such as guarding, isolating, or insulating, are to be provided, these precautions shall prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment. Only qualified persons of the electric utility, power transmission and distribution organizations are allowed to install insulating devices on overhead power transmission and distribution lines.
- 10.0 Employees and contractors shall not enter spaces containing exposed energized parts, unless illumination is provided that enables the employees to perform the work safely. Employees and contractors are not to perform tasks on or near exposed energized parts where there is a lack of illumination or an obstruction which precludes observation of work to be performed.
- 11.0 For confined or enclosed work spaces, prior to entry employees and contractors must be trained in the confined space entry requirements. For employees and contractors working in confined or enclosed spaces such as manholes or vaults that contain exposed energized parts, they shall be provide with protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with these parts. Doors, hinged panels and the like shall be secured to prevent their swinging into an employee and causing the employee and contractor to contact exposed energized parts.
- 12.0 Conductive materials or equipment that is in contact with any part of an employee's or contractor's body shall be handled in a manner that will prevent the employee from contacting exposed energized conductors or circuit parts.
- 13.0 If an employee and contractor must handle long dimensional conductive objects (such as ducts and pipes) in areas with exposed live parts, the employer shall institute work practices (such as the use of insulation, guarding, and material handling techniques) which will minimize the hazard.

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- 14.0 All portable ladders shall be non conductive if to be use by employees and contractors exposed to energized parts.
- 15.0 Employees and contractors are not allowed to wear conductive articles of jewelry and clothing such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear if they might contact exposed energized parts. However, such articles may be worn if rendered non conductive by covering, wrapping, or other insulating means.
- 16.0 Housekeeping duties shall not be performed close enough for possible contact with live parts, unless adequate safeguards such as insulating equipment or barriers are provided.
- 17.0 Electrically conductive cleaning materials including conductive solids such as steel wool, metalized cloth, and silicon carbide, as well as conductive liquid solutions shall not be used near energized parts unless procedures are followed which prevent electrical contact.
- 18.0 Only qualified persons are allowed to defeat an electrical safety interlock following the above specified procedures for working on or near exposed energized parts, and then only temporarily while they are working on the equipment. Also, the interlock system will be returned to its operable condition when this work is completed and verified to be operational.
- 19.0 Use of Equipment
 - 19.1 Portable electrical equipment applies to the use of cord-and-plug connected equipment and flexible cord sets (extension cords).
 - 19.2 Portable equipment shall be handled in a manner which will not cause damage. Flexible electric cords connected to equipment may not be used for raising or lowering the equipment.
 - 19.3 Flexible cords are not to be fastened with staples or otherwise hung in such a fashion as to damage the outer jacket or insulation
 - 19.4 Portable cord-and-plug connected equipment and flexible cord sets (extension cords) shall be visually inspected before use on any shift for external defects such as loose parts, deformed and missing pins, or damage to outer jacket or insulation and for possible internal damage such as pinched or crushed outer jacket.
 - 19.5 When defects or evidence of damage which might expose employees to injury are detected, the defective or damaged item shall be removed from service and no person shall use it until it is repaired and tested to ensure it is safe for use.
- 20.0 Grounding-Type Equipment
 - 20.1 Flexible cords used with grounding-type equipment shall contain an equipment grounding conductor
 - 20.2 Attachment plugs and receptacles may not be connected or altered in any manner which would prevent proper continuity of the equipment grounding conductor at the point where plugs are attached to receptacles. Additionally, these devices may not be altered to allow the grounding pole to be inserted into current connector slots. Clipping the grounding prong from an electrical plug is prohibited.
 - 20.3 Adapters which interrupt the continuity of the equipment grounding connection may not be used.
- 21.0 All portable electric equipment and flexible cords used in highly conductive work locations, such as those with water or other conductive liquids, or in places where employees are likely to contact water or conductive liquids must be approved for those locations
- 22.0 Employees and contractors hands shall not be wet when plugging and unplugging flexible cords and cord-and-plug connected equipment, if energized equipment is involved. If the connection could provide a conducting path to employees hands, (if, for example, a cord connector is wet from being immersed in water) the energized plug and receptacle connections must be handled only with insulating protective equipment. Locking-type connectors shall be properly locked into connector.

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23.0 Electric Power and Lightings Circuits		
23.1 Load rated switches, circuit breakers, or other devices specifically designed as disconnecting means shall be used for the opening, reversing, or closing of circuits under load conditions. Cable connectors not of the load-break type, fuses, terminal lugs, and cable splice connections may not be used for opening, reversing, or closing circuits under load conditions except in an emergency.		
23.2 After a circuit is de-energized by a circuit protective device, the circuit may not be manually re-energized until it has been determined that the equipment and circuit can be safely energized. The repetitive manual re-closing of circuit breakers or re-energizing circuits through replaced fuses is prohibited. When it can be determined from the design of the circuit and over current devices involved that the automatic operation of a device was caused by an overload rather than a fault condition, no examination of the circuit or connected equipment is needed before the circuit is re-energized.		
23.3 Over-current protection of circuits and conductors may not be modified, even on a temporary basis.		
24.0 Test Equipment and Instruments		
24.1 Only qualified persons may perform testing work on electric circuits or equipment.		
24.2 Test instruments and equipment including all associated test leads, cables, power cords, probes and connectors shall be visually inspected for external defects and damage before the equipment is used. If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service, tagged out of service and no employee may use it until repairs and tests necessary to render the equipment safe have been made.		
24.3 Test instruments, equipment, and their accessories shall be rated for the circuits and equipment to which they will be connected and designed for the environment in which they will be used.		
25.0 Where flammable or ignitable materials are present only occasionally, electric equipment capable of igniting them shall not be used unless measures are taken to prevent hazardous conditions from developing. Materials include, but are not limited to; flammable gases, vapors, or liquids; combustible dust; and ignitable fibers or filings.		
26.0 Safeguards for Personnel Protection		
26.1 Use of Personal Protective Equipment		
26.1.1 Employees working in areas where there are potential electrical hazards shall be provided with and shall use electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed.		
26.1.2 Protective equipment shall be maintained in a safe, reliable condition, and periodically inspected or tested.		
26.1.3 If the insulating capability of protective equipment may be subject to damage during use, the insulating material shall be protected by covering with leather or other appropriate materials.		
26.1.4 Nonconductive head protection shall be worn whenever there is danger of head injury from electric shock or burn due to contact with exposed energized parts.		
26.1.5 Protective equipment for the eyes or face shall be worn whenever there is danger of injury to the eyes or face from electric arcs, flashes or flying objects resulting from electrical explosion.		
27.0 General Protective Equipment and Tools		
27.1 Insulated tools or handling equipment shall be used by employees working near exposed energized conductors or circuit parts if the tools or handling equipment might make contact with such conductors or parts.		
27.2. If the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material shall be protected.		

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27.3 Protective shields, protective barriers, or insulating materials must be used to protect each employee from shock, burns, or other electrically related injuries while employees are working near exposed energized parts which might be accidentally contacted or where dangerous electric heating or arcing might occur.

When normally enclosed live parts are exposed for maintenance or repair, they are to be guarded to protect unqualified persons from contact with the live parts.

27.4 Fuse Handling Equipment - insulated for the circuit voltage, shall be used to remove or install fuses when the fuse terminals are energized

27.5 Ropes and Hand-lines - used near exposed energized parts shall be nonconductive

28.0 The following alerting techniques are used to warn and protect employees from electrical shock hazards, burns, or failure of electric equipment parts.

28.1 Safety signs, safety symbols, or accident prevention tags are to be used where necessary to warn employees about electrical hazards which may endanger them

28.2 Barricades - are used in conjunction with safety signs where necessary to prevent or limit employee access to work areas exposing employees to un-insulated energized conductors or circuit parts. Conductive barricades may not be used where they might cause an electrical contact hazard.

28.3 If signs and barricades do not provide sufficient warning from electrical hazards, an attendant is to be stationed to warn and protect employees.

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OBJECTIVE: To provide safety guidelines to all open excavations made in the earth's surface at Qatar University into which employees, contractors are expected to enter.		
Definition: A trench excavation is a narrow excavation made below the surface of the ground where the depth is greater than the width, but the width of a trench (measured at the bottom) is less than 15 feet. A trench is a narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet.		
GUIDELINES: 1. University employees and contractors are to comply fully with the following requirements of excavation safety: 1.1. All materials in proximity to the excavation site must be stored, arranged, or secured in such a manner as to prevent the material from accidentally falling into the trench. 1.2. The Contractor Work Unit Supervisor is to notify the QU EHS Office of the Business Operation Department to request that underground utilities or installations be located prior to commencement of excavation. 1.3. Excavation permit shall be complied prior to the start of excavation. 1.4. Adequate means of egress will be maintained at all times. 1.5. Excavations located near public vehicular traffic shall be barricaded and contractors shall be provided with and wear warning vests. 1.6. In excavations greater than four (4) feet in depth, or where oxygen deficiency or other hazardous atmospheres could reasonably be expected to exist, testing must be performed prior to the entry of employees. 1.7. If a hazardous atmosphere is verified at a trenching site, emergency rescue equipment must be available and attended (SCBA, Lifelines, etc.) as required by the Confined Space Standard (see Confined Space Guidelines). 1.8. Inspection of trenching operations for hazardous conditions must be performed daily or when changing conditions warrant (rain, different soil type, etc.). Upon detection of a hazardous condition employees must be removed from excavation at once. 1.9. Protective systems for excavations are required to be inspected and certified by a registered professional engineer of the appropriate excavation discipline or field. 1.10 Both visual and manual soil testing will be performed by a "competent person" to determine soil type before employees and contractors are allowed to enter a trench.		

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2. Angle of Repose

When the area in which an excavation is being made is large enough to permit it, the sides of the cut shall be sloped at the natural angle of repose, the angle that the sloped surface would develop in weathering. Normally, this angle would be not less than 1-1/2 feet on the horizontal to each foot on the vertical. When it is not possible to slope to the angle of repose, shoring must be erected to prevent a cave-in.

3. Safety in the Area

Proper bracing, barricading, and shoring to create safe working conditions in trenching are necessary.

Workers must be able to get out of trenches quickly in the event of accidents, usually by ladders. OSHA regulations require that, in any trench four feet deep or more, there must be exit ladders from the floor of the trench extending above the top of the excavation. A worker should not be required to travel more than 25 feet to reach the ladder.

When workers are exposed to excavation or trenching operations that are not in compliance with these standards, they shall immediately vacate that hazardous exposure and inform the appropriate supervisor having jurisdiction over such operation of the unsafe conditions. If instructed by a supervisor to enter an excavation or trench not in compliance with standards, the employee shall refuse to enter and shall immediately call the EHS Office 2686.

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OBJECTIVE: To ensure safe work practices in performing laboratory work and reduce the exposure of laboratory employees and students to hazardous chemicals and enable them to handle chemicals in a safe manner.		
GUIDELINES: 1.0 Hazards of Chemicals 1.1 Physical hazards such fire, explosion or reaction with other chemicals. 1.2 Health hazards developing from inhaling, swallowing, or having eyes or skin contact. 2.0 Safety Practices 2.1 Before starting work with hazardous chemicals, read container label information and the material safety data sheet (MSDS) and follow the precautions they contain. 2.2 Pipetting must be done only with mechanical pipetting devices. Mouth pipetting is prohibited. 2.2 Laboratory doors should be kept closed to minimize the spread of chemical vapors, disease organisms, or fugitive emissions (smoke) in case of an accident. 2.3 To comply with "Laboratory Standard" regulations, a person should be assigned by the department to act as a Chemical Hygiene officer for the completion of necessary activities. These activities include the following: 2.3.1 An inventory of all hazardous chemicals being used and/or stored in each laboratory or facility, with approximate quantities on hand, should be kept on file in the department and laboratory. 2.3.2 A file of Material Safety Data Sheets (MSDS) for each hazardous chemical in the department should be assembled. The file is available at all times for employees to review. 2.3.3 The University Chemical Hygiene Plan must be available to all employees. 2.3.4 Labels indicating the name of the material and warning of the health and/or physical hazards are attached to all containers of hazardous materials. 2.3.5 Appropriate warning signs are posted in proper locations, including the emergency information notice posted at the entrance of each lab. 2.3.6 Informational meetings are conducted with all employees; those working with hazardous chemicals are given at least basic and simple training which addresses the specific chemicals used, the associated hazards and the use of safety equipment in each work place. Specific hazardous chemical training is conducted for new employees and for all employees any time a new hazardous chemical is introduced into the workplace. 2.3.7 Written records are kept of the training outline and format and a list of employees receiving the training is on file in the department.		

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2.3.8 The above items are updated as new employees are hired, new chemicals are purchased, laboratory methods are changed, etc. 2.4 All hazardous processes must be performed in an appropriate fume hood or biological safety cabinet. 2.4.1 Fume hoods and biological safety cabinets must be used only for procedures and not for routine storage. 2.4.2 Airflow must be free from obstruction at all times 2.4.3 A trained individual must be in attendance during any hazardous process and working alone is discouraged 2.5 Work surfaces must be decontaminated as needed and when a work process is completed. All spills are cleaned up immediately. 2.6 All contaminated materials must be decontaminated before washing, reuse, or disposal. If infectious agents or organisms containing recombinant DNA molecules are present in the laboratory, an autoclave is available in the same building. 2.7 Containers for hazardous waste must be available and clearly marked. 2.8 A clearly marked and puncture resistant container shall be used for broken glass, and other glass sharp waste. A separate, puncture resistant, tamper proof and leak proof container shall be used for syringes and metal sharps. 2.8 The creation of aerosols must be avoided. This necessitates the use of appropriately designed centrifuges, blenders, and sonicators. 2.9 Eye and/or face protection must be worn at all times where there are corrosives, hot liquids, or other eye irritants, or where there is a possibility of flying materials. 2.10 Closed toe footwear must be worn at all times in the laboratory. 2.11 Laboratory coats or protective aprons must be worn at all times in the laboratory. 2.12 Laboratory coats shall not be worn into food areas or outside of the building where the laboratory is located. If infectious organisms are involved, protective clothing must not be worn outside of the laboratory. 2.13 Other protective clothing (such as gloves and rubber aprons) and equipment (such as explosion shield) must be used where appropriate. Gloves must be worn when handling experimental animals, corrosive chemicals, and when skin contact with infectious agents or organisms containing recombinant DNA molecules could occur. 2.14 Only persons who have received formal training in the nature of the hazards and have the consent of the laboratory supervisor are allowed to enter the laboratory. 2.15 The only animals allowed in the laboratory are those that are essential to the work being done. 2.16 When levels of work of different hazard are carried out in the same laboratory, carefully demarcated area. 2.17 All accidents and hazardous spills must be reported in writing to the laboratory supervisor, and to Business Operation Department – Safety Unit.		

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2.18 Medical evaluation, treatment, and surveillance must be available for each laboratory employee as appropriate under the University's Chemical Hygiene Program. 2.19 An appropriate departmental laboratory safety manual shall be available to each laboratory supervisor. All personnel are advised of the hazards and are required to know and follow recommended practices and procedures specific to that department. This manual should be part of the written Chemical Hygiene Plan. 3.0 General Health Practices 3.1 Eating and drinking are prohibited 3.2 Smoking or the applying of cosmetics is prohibited. 3.3 The storage of personal effects, food, and beverages is prohibited. 3.4 Sink hoses are located above the sink rim and do not create a potential cross-connection between contaminated water and the water supply. 3.5 Hands are washed after working with hazardous material and before working with uncontaminated material or leaving the laboratory. 3.6 All areas are designed for easy cleaning and are kept clean and uncluttered. Storage space is sufficient. Spaces between equipment are accessible for cleaning. 3.7 Bench tops and work surfaces are smooth and easily cleanable, impervious to water, and resistant to chemicals and moderate heat. 4.0 Physical Safety 4.1 All exit doors shall be appropriately marked and unobstructed. 4.2 Aisles shall be unobstructed. 4.3 There shall be no tripping hazards. 4.4 All equipments shall be in good operational condition. 4.5 Eye wash and safety shower access shall be unobstructed. 4.6 Circuit breaker panels shall be accessible 4.7 Heavy objects shall be stored below a level of five feet from the floor unless secured. 4.8 All shelving and cabinets shall be secured to prevent tipping 5.0 Safety Equipment 5.1 Fire extinguishers must be of the appropriate type, easily accessible and appropriate in number. Contact the Fire Section to procure one, or to have it inspected, if last date on tag is greater than one year ago. 5.2 Spill kits shall be available in case of hazardous liquid spills. 5.3 An appropriate first aid kit must be available. 5.4 Nonbreakable, leakproof, and closed containers must be used for transporting hazardous materials outside of the laboratory. 5.5 All belts, pulleys, fans, and other moving parts must be guarded. 5.6 Catch trays shall be used where appropriate. 5.7 Vacuum equipment must be trapped or filtered. 5.8 If hypodermic needles are used, they are of the locking or integral type. They must be disposed of in approved sharps containers, not in regular trash.		

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6.0 Chemical Storage – refer EHS guidelines EHSG-10: Chemical Storage and Handling and EHSG-11: Handling Storage and Use of Compressed Gases.

7.0 Electrical Safety in the Laboratory

7.1 Electrical equipment must be correctly grounded.

7.2 An over-temperature shutoff device must be provided for unattended heating equipment.

7.3 Electrical cords are in a safe condition and of sufficient capacity.

7.4 Multiple plug-ins and extension cords must be avoided, and not to be used in place of permanent wiring. Extension cords must not be in areas of traffic

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OBJECTIVE: To provide guidelines in the proper storage and handling of chemicals		
GUIDELINES:		
1.0 Inventory and Inspection		
1.1 Each laboratory shall maintain an inventory of the chemicals stored in the laboratory.		
1.2 Designate a storage place for each chemical, and return it to that place after each use.		
1.3 Store chemicals by hazard class, not the alphabet, and post storage areas the exact location of the chemical groups.		
1.4 Inspect chemical storage areas at least annually for outdated or unneeded items, illegible labels, leaking containers, etc.		
1.5 Contact Business Operation Department (BOD) - Safety Unit for developing an inventory system.		
2.0 Proper Sealing of Chemical Containers		
2.1 To prevent leakage, odors, or reaction with air, tightly seal all containers of highly toxic, highly volatile, malodorous, carcinogenic or reactive chemicals.		
2.2 Make sure that caps and other closures are tight on all hazardous chemicals.		
2.3 A limited exception is freshly-generated mixtures such as acids and organics that may generate gas pressure sufficient to burst a tightly sealed bottle. Keep the lids loose until sufficient time passes to complete the reactions, and then tightly close the lids.		
2.4 Use a screw-cap with a conical polyethylene or Teflon insert.		
2.5 Seal the caps with tape or Parafilm as further precaution.		
2.6 Additional protection can include wrapping in an absorbent paper and sealing inside a plastic bag, and storing the bag inside a metal can with a friction-fitting lid.		
3.0 Smaller Container Sizes –Less is Better		
The “life-cycle” cost of a chemical includes its initial purchase price plus the ultimate disposal cost. Keep the quantity of accumulated in the laboratory at a minimum to reduce the risk of exposure, fires, and waste disposal problems. Smaller package sizes provide the following advantages:		
• Reduced storage hazards • Reduced storage space • Safety in handling smaller quantities • Reduced losses due to out-of-date chemicals • Minimized cost of disposal of “leftovers”		

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4.0 Segregation of Chemicals

4.1 Do not store unsegregated chemicals in alphabetical order or incompatible chemicals in close proximity to each other. The amount of space that can be placed between different chemical classes depends on the amount of storage area available in the lab suite. Do not segregate chemical classes into separate rooms unless they will only be used in that room. Segregation that disrupts normal work flow or requires more frequent transport of chemicals between labs will increase the probability of a chemical spill. Use common sense in planning chemical storage areas.

4.2 Store dry reagents, liquids reagents and solutions and compressed gases in separate areas. Within each of these chemical forms segregate into hazard classes.

4.3 The following are recommended compatibility groupings and storage of chemicals

4.3.1 Group A – Acids, In-organic

4.3.1.1 Store large bottles of acids in special cabinets or on low shelves.

4.3.1.2 Place acids in plastic tray for secondary containment in case of breakage

4.3.1.3 Segregate inorganic and oxidizing acids from organic compounds including organic acids and other combustible materials.

4.3.1.4 Segregate nitric acid (> 40%) from in organic acids.

4.3.1.5 Store acids separate from bases and other reducing agents.

4.3.1.6 Inorganic salts, except of heavy metals, may be stored in this group.

4.3.1.7 Glacial acetic acid should be stored with flammable and combustible materials since it is combustible

4.3.2 Group B – Bases.

4.3.2.1 Segregate bases from acids and oxidizers on shelves near the floor

4.3.2.2 The preferred storage container for inorganic hydroxides is polyethylene instead of glass.

4.3.2.3 Place containers in trays for secondary containment

4.3.3 Group C – Organic Chemicals

4.3.3.1 Segregate organics compounds from inorganic.

4.3.3.2 Organics and inorganic with NFPA 704 or HMIS reactive rating of two (2) or less may be stored together. Chemicals with a reactive hazard rating of three (3) or four (4) are to be stored separately.

4.3.4 Group D – Flammable and Combustible Organic Liquids

4.3.4.1 No more than 60 gallons of Class 1 flammable liquids (flash point below 100 °F) or Class II Combustible liquids (flash point between 100 to 140 °F) may be stored in flammable liquid storage cabinets. The 60 gallon limit per room is based on two storage cabinets, with a maximum of 30 gallons per cabinet).

4.3.4.2 No more than 120 gallons of a Class III combustible liquid (flash point between 140°F and 200°F) may be stored in a flammable-liquids storage cabinet.

4.3.4.3 Storage cabinets shall be designed and constructed to limit the internal temperature to not more than 325°F when subjected to a 10-minute fire test using the standard time temperature chart set forth in NFPA 251.



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4.3.4.4 All flammable-liquids cabinets shall be labeled in conspicuous letters "Flammable - Keep Fire Away."

4.3.4.5 Storage cabinets shall be constructed of at least No. 18 gauge sheet iron and shall be double walled with 1-1/2 inch air space. Joints shall be riveted, welded, or made tight by some equally effective means. The door shall be provided with a three point lock, and the door sill shall be raised at least 2 inches above the bottom of the cabinet.

4.3.4.6 All flammable liquid storage cabinets must be grounded. A ground cable of 3/8" copper braid or a 12 gauge copper conductor can be used. The ground must be tested and resistance to ground cannot exceed one mega ohm. The grounding cable must be connected to a building structural member or an electrical building ground. Due to increased use of plastic piping, (which breaks the ground) water pipes must not be used for grounding.

4.3.4.7 The NFPA considers that providing vents to storage cabinets reduces the limited fire protection provided by such cabinets because a single walled duct will transmit heat faster than a double-walled cabinet. Ventilation of storage cabinets is recommended only when highly odoriferous conditions exist. Ventilation requires a steel duct and an appropriate exhaust fan discharging to an appropriate location outside the building.

4.3.4.8 Store flammable and combustible materials away from oxidizers

4.3.5 Group E- Inorganic Oxidizers and Salts

4.3.5.1 Store inorganic oxidizer away from combustible alkaline metals, formic acid and other reducing agents.

4.3.5.2 In organic salts may also be stored in this group.

4.3.5.3 Store ammonium nitrate separately

4.3.6 Group F - Organic Peroxides and Explosives

Peroxides contain a double-oxygen bond (R1-O-O-R2) in their molecular structure. They are shock and heat sensitive chemicals, and should be stored in a dedicated cabinet.

4.3.7 Group G - Reactives

4.3.7.1 Water Reactives

4.3.7.1.1 Store water reactives in a cool dry place away from water sources.

4.3.7.1.2 Alkali metals (lithium, Sodium, potassium, rubidium and cesium) should be stored under mineral oil or in waterproof enclosure such as glove boxes.

4.3.7.1.3 Class D – Fire Extinguisher should be available

4.3.7.2 Pyrophorics (Air Reactives)

4.3.7.2.1 Store white or yellow phosphorous under water in glass-stopper bottles inside a metal can for added protection.

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4.3.8 Group H – Cyanides and Sulfides

Cyanides and sulfides react with acids to release highly toxic gases. They must be isolated from acids and other oxidizers.

4.3.9 Group I – Carcinogenic and Highly Toxic Chemicals

4.3.9.1 Provide a dedicated lockable storage cabinet for highly toxic and carcinogenic chemicals

4.3.9.2 Use unbreakable, chemically resistant secondary containers

4.3.9.3 Post the storage cabinet with a sign "HIGHLY TOXIC CHEMICALS" or "CANCER –SUSPECT AGENT"

4.4 Once separated into hazard classes, chemicals may be stored alphabetically.

4.5 Use approved storage containers and safety cans for flammable liquids. Use spill trays under containers of strong corrosive reagents. Do not store liquids above eye level.

4.8 Dispose of old chemicals promptly. See waste disposal section of this manual.

4.9 Ensure that all containers are properly labeled. For more information on chemical storage, contact your supervisor, instructor, or BOD - Safety Unit.

4.10 Flammable Liquids Storage Outside of a Cabinet

Storage of flammable liquids outside of a storage cabinet shall be avoided when possible. Flammable liquids that are not in use should be stored in an appropriate cabinet.

The maximum quantity of flammable liquids permitted to be stored in a laboratory outside of flammable-liquids cabinet varies depending on the design of the research building. The maximum permissible quantity will be determined on a case-by-case basis by the office of BOD – Safety Unit.

Flammable liquids should not be stored in refrigerators unless it is UL approved for flammable liquid storage. Storage of flammable liquids in household grade refrigerators is a fire hazard. Household grade refrigerators should be labeled: "No food or flammable liquid storage".

5.0 Transportation of Hazardous Chemicals

The transportation of hazardous chemicals in laboratory buildings provides the greatest potential for chemical exposure to the building occupants. Spills occurring outside storerooms and laboratories may lead to hazardous concentrations of vapors and gases being distributed throughout the building.

5.1 The following guidelines should be observed when transporting chemicals outside the laboratory:

5.1.1 Elevators

Freight elevators shall be used where available to transport hazardous materials. Under no circumstances are passenger elevators to be used for the transportation of hazardous materials if freight elevators are available.

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5.1.2 Flammable Liquids

- 5.1.2.1 Flammable liquids shall be transported in rugged pressure-resistant safety cans.
- 5.1.2.2 Original containers of flammable liquids shall be placed in an outside container or acid-carrying bucket.
- 5.1.2.3 No more than 5 gallons of flammable liquids in glass containers shall be transported on the freight elevator unless the original shipping carton (box) is used and the materials are on an appropriate cart.

5.1.3 Corrosives or Oxidizing Materials

- 5.1.3.1 Original glass shipping containers holding liquid acids and bases must be placed in an outside container or acid-carrying bucket.
- 5.1.3.2 Incompatible chemicals, for example chromic acid (oxidizing acid) and ethyl acetate (flammable liquid), should not be transported on the same cart unless they are in original shipping cartons and physically separated.

5.1.4 Water Reactive Chemicals

- 5.1.4.1 Wherever possible, use the original outside shipping containers (packaging) when transporting water reactive chemicals.
- 5.1.4.2 Once opened, water reactive chemicals must be placed in a rigid outside container or acid carrying bucket for transporting.

5.1.5 Pyrophoric (spontaneously igniting) Substances

- 5.1.5.1 Whenever possible, the original outside shipping container (packaging) must be used to transport pyrophoric substances
- 5.1.5.2 Once opened, pyrophoric substances must be placed in a rigid outside container or acid carrying bucket for transporting.

5.1.6 Acutely Toxic Compounds

- 5.1.6.1 Whenever possible, the original outside shipping container (packaging) must be used to transport acutely toxic compounds.
- 5.1.6.2 Once opened, acutely toxic compounds must be placed in a rigid outside container or acid carrying bucket for transporting

5.2 Chemicals, substances and research materials must be clearly labeled with the correct chemical name when transported. Hand-written labels are acceptable; chemical formulas and structural formulas are not acceptable (except for small quantities of compounds synthesized in the laboratory).

5.2 Carts used for chemical transport must have sides, on each shelf, that are high enough to retain the containers. Cart wheels must be large enough to prevent the carts from being caught in floor cracks, and door and elevator thresholds.

5.3 Personnel transporting chemicals must wear disposable gloves and safety glasses.

GUIDELINES MANUAL		
	Title: HANDLING, STORAGE AND USE OF COMPRESSED GASES	Document No. : EHSG-11
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guideline in the proper handling, storage and utilization of all compressed gases used in the University.		
GUIDELINES: 1.0 If as a result of a visual inspection a cylinder is obviously damaged, it shall be immediately return to the supplier without attempting any usage. 2.0 Cylinders shall not be subjected to a temperature above 125 °F, nor shall a flame ever be permitted to come in contact with any part of a compressed gas cylinder. 3.0 Individual cylinders or small groups of cylinders must be chained to a fixed object whether in use or in storage unless they are chained in a cylinder cart. 4.0 Store cylinders in definitely assigned places where they will not be knocked over or damaged by passing of falling objects. Where cylinders are stored in the open, they should be protected from the direct rays of the sun. Full cylinders should be used in rotation as received from the supplier. 5.0 Do not drop cylinders or permit them to strike each other violently. 6.0 Do not use a lifting magnet or a sling (rope of chain) when handling cylinders. A crane may be used when a safe cradle or platform carrier is provided to hold cylinders securely in place. 7.0 Do not use cylinders for rollers, supports, or for any purpose other than to carry gas 8.0 Cylinders should stand upright. Caps should always be on cylinders when being transported. 9.0 Make sure that the threads on regulators or other unions are the same as those on cylinder valve outlets. Never force connections that do not fit. 10.0 Regulators and pressure gauges provided for use with a particular gas must not be used on cylinders containing different gases. 11.0 Open cylinder valves slowly. Never use wrenches or tools except those provided or approved by the gas manufacturer. 12.0 Oxygen must be stored at least 20 feet from fuel gases such as acetylene, LPG, propane, etc., or a fire-resistant partition must separate the classes of gases. 13.0 The wrench used for opening the cylinder valve should always be kept on the valve stem when cylinder is in use. 14.0 Caps are provided for valve protections. Such caps are to be kept on cylinders except when cylinder is in use. 15.0 Do not tamper with the safety devices in valves or cylinders. Never attempt to repair or alter cylinders of valves 16.0 Do not attempt to mix gases in cylinders. Close all cylinder valves when the cylinders are discarded as empty. This rule should be strictly enforced, including replacement of cylinder valve caps and marking or otherwise indicating that the cylinders are empty. Empty cylinders should be segregated from full cylinders and promptly returned to the supplier 17.0 Pressure regulators and gauges must be compatible with the cylinder valves, the use of adapters is prohibited. 18.0 All oxygen valves, gauges, regulators, pipes, and fittings must be scrupulously free of oil, grease, graphite, or any other oxidizable substance. Such pipes, gauges, fittings, etc., must at no time be allowed to come to an elevated temperature due to proximity to welding operations, burners, or other heat sources. 19.0 Use Flammable Gases - Acetylene 19.1 Cylinders containing flammable gases are not be stored near highly flammable solvents, combustible waste material, and similar substances, or near unprotected electrical connections, gas flames, or other sources of ignition.		

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- 19.2 Reserve stocks of cylinders containing flammable gases are not be stored with cylinders containing oxygen. Within buildings, sorted oxygen and fuel cylinders shall be separated by a minimum of 20 feet or there must be a fire-resistant partition between the oxygen and fuel gas cylinders.
- 20.0 Large vacuum insulated containers of pressurized liquid oxygen, nitrogen, argon, or helium must be transported, sorted, and used in an upright position. The extreme low temperature of the contents necessitates an upright position of the cylinders to permit venting of vapors periodically to maintain safe internal pressures. The instructions of the supplier with regard to handling and use of these cylinders should be followed.
- 21.0 Transporting of Gas Cylinder
- 21.1 Gas cylinders must have the valve protection cover cylinder cap in place while being transported (inter- and intra-building transport).
- 21.1 Motor vehicles used to haul compressed gas cylinders shall be equipped with racks or other means of securing the cylinders.
- 21.3 Cylinders containing liquefied hydrogen or toxic gases shall be transported in vehicles that are not enclosed.
- 22.0 Handling of Gas Cylinder
- 22.1 Vehicles must have the hand brakes set and precautions taken to prevent movement of the vehicle during loading and unloading of compressed gas cylinders
- 22.2 Smoking is prohibited during loading, unloading, and hand transportation of flammable gases
- 22.3 Dollies or specially designed hand trucks (equipped with safety straps or chains) shall be used for transfer of compressed gas cylinders from loading area to shop or laboratory or other within-building transfers
- 22.4 Compressed gas cylinders must be securely supported at all times. Cylinders must not be left "free-standing" at anytime, e.g., cylinders unloaded from truck to loading dock must be secured until placed on a hand truck for delivery within the building.
- 22.5 Empty cylinders may contain appreciable residual gas and in any event are likely to cause injury if knocked over; therefore, empty cylinders shall be handled and transported in the same manner as charged (full) cylinders
- 23.0 Smoking is not permitted in the area where flammable gases are used or stored.



Title:

LABORATORY FUME HOOD SAFE WORK PRACTICES

Document No. : **EHSG-12**
 Revision No. : 0
 Effectivity Date : April 1, 2011
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OBJECTIVE:

To provide guidelines for safe work practices when using laboratory fume hoods

GUIDELINES:

1.0 Do not work in a malfunctioning fume hood.

2.0 Check the BOD-Safety Unit inspection sticker on the fume hood (usually on the sash) to ensure it has been inspected. Safety Unit measures the face velocity of all fume hoods monthly, notes any deficiency, and refer them to QU Electromechanical Section for correction. Recommended face velocities are between 80 – 120 feet per minutes (fpm)

3.0 Test the airflow alarm prior to use the fume hood to ensure it is operating properly.

4.0 Check the sash height

4.1 EHS affixes stickers to vertical-sash laboratory fume hoods to remind users not to work above the recommended sash height. Try to keep the sash closed unless you are setting up or actively using the fume hood.

4.2 You can raise and lower a correctly operating sash smoothly and with minimal effort. If you have difficulty operating the sash, or you cannot lower it completely, contact BOD-Safety Unit. Do not place equipment, cords, tubing, etc. so that you can lower the sash quickly and completely.

5.0 Work at least 6" into the fume hood to keep chemicals and vapors from exiting

6.0 Do not work with your head breaking the front panel of the fume hood. Sashes at the proper working height generally create a physical barrier between the operator's head and the inside of the fume hood. Working with your head in the fume hood means that the sash is too high.

7.0 Take steps to maximize containment

7.1 Place blocks under large equipment to allow air to flow underneath the equipment

7.2 Keep the work area and bottom baffles clear from clutter.

8.0 Use chemical storage cabinets for long term storage, not your fume hood. Items in a fume hood will impede and disturb the exhaust airflow and potentially reduce or eliminate the safety factor

9.0 Remove electrical units or other spark sources from the fume hood when flammable liquids or gases are present. Do not place power strips or surge protectors in the fume hood. Plug in all electrical equipment outside of the hood.

10. The use of a laboratory fume hood does not negate the University guidelines on eye protection. Eye protection is required for all faculty, staff, students, and visitors in the laboratories during experimental procedures that could produce liquid or solid projectiles.

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11.0 Fume Hood System Testing

11.1 Each fume hood requires annual retesting and recertification. Testing shall occur with HVAC system operating at 100%. Qualified and trained personnel shall conduct testing. At a minimum, EHS will follow these procedures:

11.1.1 Visual inspection for hood damage, modification or congestion.

11.1.2 Face velocity measurement at the designated sash position (To pass, the average velocity must not below 90% or above 150% of criteria)

11.1.3 Fume hood alarm test, if applicable.

11.1.4 Fume hoods that pass the annual testing will have labels affixed stating the following:

11.1.4.1 Test date

11.1.4.2 Initial of inspector

11.1.4.3 Face velocity reading at the standard operating sash opening.

11.2 EHS Office will contact Electromechanical Section to repair fume hoods that fail one of the first test. Fume hoods with face velocities below 80% of the criteria will receive the posting: "OUT OF SERVICE/ DO NOT USE". Fume hoods posted as "OUT OF SERVICE/ DO NOT USE" must be emptied and cleaned immediately, to prevent chemical exposure for laboratory occupants and personnel who will repair the fume hood system.

11.3 Report all fume hood alarms to BOD – Safety Unit (2686) for repair.

11.4 BOD - Safety Unit will test and label the fume hood during the laboratory's annual inspection. If indicated, the inspector will contact Electromechanical Section to initiate repairs based upon their findings. After repairs, BOD-Safety Unit, as appropriate, will perform follow-up testing

12.0 Ventilation System Repair

12.1 Laboratory personnel must call BOD- Safety Unit as soon as they notice a problem with the fume hood, or laboratory ventilation system.

12.2 All system outages (planned or unplanned) require laboratory notification, posting and appropriate shutdown procedures be followed. Maintenance personnel shall follow all applicable Environmental, Health and Safety guidelines and OSHA standards (e.g. hazard communication, lock out tag out, personal protective equipment) depending upon whether or not they have to access the interior of the exhaust system

12.3 Electromechanical Section must notify the Dean of the affected laboratories and Safety Unit of all ventilation outages that will exceed four hours in duration.

12.4 Electromechanical Section will coordinate all responses to request for ventilation system repair.



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12.5 Fume hood users are responsible for contacting Safety Unit if the fume hood alarm or gauge indicates poor fume hood performance. Follow the posted shut down procedures and place a sign on the fume hood: OUT OF SERVICE/ DO NOT USE".

13.0 Frequently Asked Questions?

13.1 What to do if the fume hood alarm activate?

The alarm on the laboratory chemical fume hood notifies you that the fume hood is not performing as desired, which could lead to overexposure to chemicals. If the alarms triggers, take the following steps

- Shutdown the fume hood
- Close the sash
- Call BOD – Safety Unit (2686)

If the alarm sounds due to a schedules power outages and someone turns it off, post the hood as "OUT OF SERVICE" until power is restored. Turn the alarm back on before conducting further work in the fume hood.

13.2 Why does the fume hood alarm always go on when the laboratory door is open?

Please keep in mind that when doors are propped open, the airflow in the laboratory is affected and the fume hood may go into alarm. If you believe the alarm is too sensitive, notify Safety Unit for a calibration assessment. Never tamper with the alarm by taping over openings.

13.3 Can I use radioactive material in the Laboratory fume hood?

The Safety Unit provides the radiation caution signs that indicate which fume hoods it has authorized for use with radioactive materials. Fume hoods must have this posting before you use radioactive materials in them.

13.4 Can I do virology/ bacteriology work in Laboratory fume hood?

In general, virology and bacteria work shall not occur in a laboratory chemical fume hood. When working with cultures, use a biological safety cabinet.

13.5 How do I make modification to the existing fume hood or exhaust system?

Students, faculty, staff must not modify fume hoods by drilling, cutting or removing the hardware originally provided with the fume hoods. Such modifications are likely to degrade fume hood containment performance and result in fume hood leakage. Installing a standard latticework of "monkey" bars at the rear of the fume hood is an exception. The installer must follow the fume hood manufacturer's recommendation when installing these support bars in the fume hood. Safety Unit must review and approve in advance any other proposed fume hood modifications, and post-test following modification.

Do not add shelving to the fume hood, nor block the rear slots or frontal airfoil at any time. Ensure the sash and panels are in place before operating.

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	Title: MATERIAL SAFETY DATA SHEET (MSDS)	Document No. : EHSG-13
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OBJECTIVE:

To ensure that Material Safety Data Sheet (MSDS) are properly used and updated.

DEFINITION:

Material Safety Data Sheet - a report prepared by manufacturers containing useful information to ensure their chemicals are handled and stored properly and identifying the types of precaution, protective equipment, emergency preparedness that must be used for employees and students safety.

GUIDELINES:

1. Material Safety Data Sheet (MSDS) is required for all type of chemicals (liquid, solid, gases) in the University
2. Authorize copyholders of Material Safety Data Sheet (MSDS)
 - Original Copy - Chemical Store
 - Photo copy - Concerned Laboratory
3. Storage area for chemicals will be provided with Material Safety Data Sheet (MSDS).
4. Material Safety Data Sheet (MSDS) is updated annually every first quarter of the year or as needed by the Safety Unit and replace obsolete MSDS copies from copyholders.
5. Material Safety Data Sheet (MSDS) is registered with the document data controller as externally generated document.
- 6.0 The OSHA Hazard Communication Standard (29 CFR 1910.1200) requires manufacturers to provide MSDSs at no cost. Information is divided into ten sections
- 6.1 Section I of the MSDS lists information identifying the manufacturer and the product. It includes:
 - manufacturer's name, address and telephone number
 - number to call in case of emergency
 - chemical name and synonyms
 - trade name and synonyms
 - chemical family and formula
 - Chemical Abstract Service (CAS) number that is a unique identification number for chemical reagents.
 - Date of preparation

If your work requires an understanding of this chemical information, contact your supervisor or BOD- Safety Unit.



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6.2 Section II describes the various hazardous ingredient(s) contained in the product, the percentages of ingredient(s), and exposure limits when appropriate. This will include all hazardous chemicals that comprise 1% or greater of the mixture will be identified. Carcinogens must be listed if the concentrations are 0.1% or greater.

6.3 Section III describes the physical properties of the material. Physical properties include:

- boiling point
- specific gravity
- vapor pressure
- percent volatile
- vapor density
- evaporation rate
- solubility in water
- appearance and odor

6.4 Section IV describes the fire and explosion hazard data for the material and other fire and explosion data. The appropriate extinguishing agent for fires involving the material will be listed. Special fire fighting procedures may also be listed.

6.5 Section V describes the known health hazard data for the material and exposure limits. Symptoms or the health effects of an overexposure are listed. This information will help the user and medical personnel recognize if an overexposure has occurred.

- threshold limit value (TLV)
- existing medical conditions that may be aggravated by exposure
- effects of overexposure (e.g., headache, nausea, narcosis, eye irritation, weakness, skin rashes, etc.)
- primary routes of exposure (i.e., inhalation, skin, ingestion)
- cancer or other special health hazards
- emergency and first aid procedures

6.6 Section VI describes reactivity data; that is, the material's ability to react and release energy or heat under special conditions or when it comes in contact with certain substances.

6.6 Section VII gives instructions for the steps to be taken in case of an accidental release or spill. The steps normally include information on containment, evacuation procedures, and waste disposal. The statements on the MSDS are general; more specific information is available from the appropriate Work Instruction.



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6.7 Section VIII describes the protective equipment for the individual who might have to work with the substance. This section normally describes worst case conditions; therefore, the extent to which personal protective equipment is required is task dependent. Always review the appropriate Standard Operating Procedure. Equipment may include:

- respiratory equipment
- ventilation
- protective gloves
- eye protection
- other protective equipment (i.e., special clothing).

6.8 Section IX describes handling and storage procedures to be taken with the material. Information may include statements such as: keep container closed; store in a cool, dry, well ventilated area; keep refrigerated; avoid exposure to sunlight.

6.9 Section X describes any special precautions or miscellaneous information regarding the material. In some cases, manufacturers may choose to withhold certain information on a MSDS provided the information is trade secret. Regardless of the existence of trade secrets, the MSDS must still contain all relevant hazard, protection, and health information.

Some MSDSs may not contain all ten sections or the information may be in a slightly different order. However, the basic information described above must be provided.

Some MSDSs are more complete than others. Do not assume everything you need to know is contained on the MSDS. Do not assume if a section is left blank that there is no risk.

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	Title: HEARING CONSERVATION	Document No. : EHSG-14
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines on the hearing conservation program of Qatar University to reduce, and eventually eliminate hearing loss due to workplace noise exposures.		
Definition: Noise - is an unwanted sound, regardless of its intensity or duration Decibel - is a dimensionless number which relates sound intensity or sound pressure levels to some reference point		
Guidelines: 1.0 General It is the policy of the Qatar University in coordination with the Office of the Environmental Health Safety to provide employees with a safe and healthful working environment. This is accomplished by utilizing facilities and equipment that have all feasible safeguards incorporated into their design. When effective engineering controls are not feasible, or when they are being initiated, administrative controls will be used when and where possible followed by the use for personal protective equipment. The program includes the following elements: • Work environments will be surveyed to identify potentially hazardous noise levels and personnel at risk. • Environments that contain or equipment that produces potentially hazardous noise should, wherever it is technologically and economically feasible, be modified to reduce the noise level to acceptable levels. • Where engineering controls are not feasible, administrative controls and/or the use of hearing protective devices will be employed. • Annual hearing testing will be conducted to monitor the effectiveness of the hearing conservation program. Early detection of temporary threshold shifts will allow further protective action to be taken before permanent hearing loss occurs. • Education is vital to the overall success of a hearing conservation program. Annual training is required and must the employees' and supervisors' responsibilities under the program. When the sound levels listed below are exceeded, reasonable administrative or engineering controls will be instituted. If the controls fail to reduce the noise exposure to within those listed below, hearing protection will be provided and used to reduce the sound levels to an acceptable level. In addition, Occupational Safety and Health Administration (OSHA) requirements dictate that whenever employee noise exposures equal or exceed an 8-hour time-weighted average (TWA) of 85 dBA, slow response, a continuing effective hearing conservation program shall be instituted		

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2.0 Responsibilities

2.1 The office of Business Operations Department (BOD) - Safety Unit

The office of the Business Operations Department – Safety Unit is responsible for developing, implementing, and administering the Qatar University Hearing Conservation Program.

Additional responsibilities include:

- Identification of work areas and equipment within Qatar University facilities where noise levels equal or exceed 85 dBA;
- Identification, through personnel monitoring, of Qatar University employees whose noise exposure level equals or exceeds an 8-hour TWA of 85 dBA. Notification of employee exposure measurements is sent to the employee, the employee's supervisor and to Qatar University Medical Clinic for inclusion in annual audiology program.
- Noise surveys and/or noise dosimetry must be conducted to determine which areas require warning signs;
- Training of employees in the need for, proper use and care of hearing protection devices. The training must include the following topics:
 - Noise induced hearing loss;
 - Recognizing hazardous noise;
 - Symptoms of overexposure to noise;
 - Hearing protection devices (HPD's)- advantages & limitations;
 - Selection, fitting, use and maintenance of HPD's;
 - Explanation of noise measurement procedures;
 - Hearing conservation program requirements.
- Identification of noise control measures (including engineering and administrative controls) and recommendations;

2.2 The Qatar University Medical Clinic

The Qatar University Medical Clinic (QUMC) is responsible for conducting baseline and annual audiograms for new employees who may be assigned to tasks with potential exposure to elevated levels of noise. QUMC also schedules and conducts audiograms on an annual basis for employees exposed to sound levels greater than or equal to 85 dBA. QUMC is responsible for notifying BOD –Safety Unit of all employees who have experienced significant changes in hearing (standard threshold shifts) in order that follow-up investigations may be conducted. The affected employee and his or her supervisor will also be notified. The occupational nurse practitioner sets up appointments and performs the audiogram in accordance with Occupational Safety and Health Administration's noise requirements 29 CFR 1910.95.

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2.3 Supervisors

It is the responsibility of Supervisors to ensure that all of their employees exposed to noise levels equal to or greater than 85 dBA have access to appropriate hearing protective devices in the work area and enroll those employee(s) in the HCP if identified as having an 8-hour TWA equal to or exceeding 85 dBA. Supervisors are responsible for enforcing the use of hearing protective devices and engineering and administrative controls in designated noise hazardous areas and dispensing ear muffs when necessary as well as maintaining a supply of disposable ear plugs.

The supervisor must ensure that the following are maintained:

- Signs posted at the entrance to any work area where noise levels equal or exceed 85 dBA
- Supply hearing protection to his/her employee(s) at no cost to the employee(s)
- Enforcement of the wearing of hearing protection in the designated areas using established disciplinary procedures
- Hearing Protection Devices (HPD) are used and maintained as originally intended and in accordance with instructions provided
- Coordinating and scheduling HCP training for all Qatar University personnel who participate in the HCP with BOD-Safety Unit.

2.4 Employees

Employees are responsible for wearing and maintaining hearing protective devices as instructed. Employees enrolled in the University's Hearing Conservation Program must also participate in annual training programs and the medical surveillance program, which includes baseline and annual audiometric testing.

3.0 Noise Evaluation and Surveillance

3.1 Identification of Hazardous Noise Areas

The office of Business Operations Department – Safety Unit identify work areas within Qatar University facilities where noise levels equal or exceed 85 dBA. Signs will be posted at the entrance to any work area where noise levels exceed 85 dBA, requiring anyone entering the area to wear proper hearing protection. Personnel who work in these areas shall have hearing protection supplied to them, shall be instructed in its proper use, and be required to wear this equipment when in these identified areas. It is the responsibility of the area supervisor to ensure that these precautions are maintained.

3.2 Noise Measurements and Exposure Assessments

All noise monitoring will be conducted by BOD-Safety Unit. The monitoring of employees for noise exposure is made up of two parts, area and personal monitoring. Area measurements are generally obtained first. If noise levels are at or above 80 dBA, personal monitoring using dosimeters is then performed. Sample data sheets will be used to record monitoring data for both area and personal noise monitoring results. BOD - Safety Unit will provide observation of the monitoring to employees who work in the area.



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3.3 Area Measurements

In an area survey, measurements of environmental noise levels are recorded using a sound level meter to identify work areas where employees' exposures may be above hazardous levels, and where more thorough exposure monitoring may be needed. Area monitoring is conducted using a calibrated sound level meter set to the A scale, slow response. Within the area of interest, several different locations will be measured.

Typical measurement locations would include:

- In the hearing zone at the employee's normal work location.
- Next to the noise source(s).
- At the entrance(s) to the work area.
- At other locations within the area where the employee might work.

A rough sketch of the area will be included with the results showing the locations where the noise readings were obtained.

If the noise levels are below 80 dBA on a time-weighted average basis in the area, no further routine monitoring will be required for that area. Should any of the noise measurements equal or exceed 80 dBA, records shall be maintained as to the noise levels recorded, where they were taken, and the source(s) of the noise. These records shall be updated at least once every two years to determine if any changes have occurred that would warrant re-monitoring of exposed personnel. If any of the measurements equal or exceed a noise level of 80 dBA, employees who work in or near the high noise area or equipment shall have their noise exposure determined through personnel monitoring using dosimeters.

3.4 Personnel Monitoring

Determination of the noise exposure level will be accomplished using calibrated noise dosimeters. Each employee to be monitored will have a dosimeter placed on him/her at the beginning of his/her normal work shift with the microphone placed in the "hearing zone". The dosimeter will be worn for the full duration of the work shift while the employee performs his/her normal work routine. At the end of the work shift, the dosimeter will be removed and information printed out as soon as possible. Background information will be collected from each employee detailing job description, unusual job activities, etc., for the time period sampled. Those employees whose noise exposure equal or exceeds 80 dBA on an 8-hour TWA will be referred to the Qatar University Medical Clinic for inclusion in the Hearing Conservation Program.

3.5 Re-monitoring of Hazardous Noise Areas

All areas where noise levels equal or exceed 80 dBA shall be re-monitored at least every two years. Whenever an employee exhibits a standard threshold shift, as determined by Occupational Medical Clinic, the employee's work place shall be re-monitored to identify and rectify the cause.

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3.6 Re-monitoring Due to Changes		
Any area with noise levels that equal or exceed 80 dBA shall also be re-monitored whenever a change in production process, equipment, or controls increase the noise exposure such that additional employees are exposed to noise levels at or above 80 dBA on a time-weighted average basis. Areas where the noise levels have dropped below 80 dBA due to alterations in equipment, controls or process changes may be eliminated from the monitoring program after a period of two months.		
4.0 Noise Control Methods		
4.1 Engineering and Administrative Controls		
The primary means of reducing or eliminating personnel exposure to hazardous noise is through the application of engineering controls. Engineering controls are defined as any modification or replacement of equipment, or related physical change at the noise source or along the transmission path that reduces the noise level at the employee's ear. Engineering controls such as mufflers on heavy equipment exhausts or on air release valves are required where possible. Administrative controls are defined as changes in the work schedule or operations which reduce noise exposure. If engineering solutions cannot reduce the noise, administrative controls such as increasing the distance between the noise source and the worker or rotation of jobs between workers in the high noise area should be used if possible. The use of engineering and administrative controls should reduce noise exposure to the point where the hazard to hearing is eliminated or at least more manageable.		
4.2 Personal Protective Equipment		
Hearing protective devices (ear plugs, muffs, etc.) shall be the permanent solution only when engineering or administrative controls are considered to be infeasible or cost prohibitive. Hearing protective devices are defined as any device that can be worn to reduce the level of sound entering the ear. Hearing protective devices shall be worn by all personnel when they must enter or work in an area where the operations generate noise levels of greater than 85 dBA sound levels and/or 120 dB peak sound pressure level or greater.		
4.3 Types of Hearing Protective Devices		
4.3.1 Insert Type Earplugs: A device designed to provide an air-tight seal with the ear canal. There are three types of insert earplugs – pre-molded, formable, and custom earplugs.		
4.3.1.1 Pre-molded Earplugs: Pre-molded earplugs are pliable devices of fixed proportions. Two standard styles, single flange and triple flange, come in various sizes, and will fit most people. Personnel responsible for fitting and dispensing earplugs will train users on proper insertion, wear, and care. While pre-molded earplugs are reusable, they may deteriorate and should be replaced periodically.		

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4.3.1.2 Formable: Formable earplugs come in just one size. Some are made of material which, after being compressed and inserted, expands to form a seal in the ear canal. When properly inserted, they provide noise attenuation values that are similar to those from correctly fitted pre-molded earplugs. Individual units may procure approved formable earplugs. Supervisors must instruct users in the proper use of these earplugs as part of the annual education program. Each earplug must be held in place while it expands enough to remain firmly seated. A set of earplugs with a cord attached is available. These earplugs may be washed and therefore are reusable, but will have to be replaced after two or three weeks or when they no longer form an airtight seal when properly inserted. 4.3.1.3 Custom Molded Earplugs: A small percentage of the population cannot be fitted with standard pre-molded or formable earplugs. Custom earplugs can be made to fit the exact size and shape of the individual's ear canal. Individuals needing custom earplugs will be referred to an audiologist. 4.3.2 Earmuffs: Earmuffs are devices worn around the ear to reduce the level of noise that reaches the ear. Their effectiveness depends on an air tight seal between the cushion and the head. 4.4 Selection of Hearing Protective Devices Employees will be given the opportunity to select hearing protective devices from a variety of suitable ones provided by BOD – Safety Unit. In all cases the chosen hearing protectors shall have a Noise Reduction Ratio (NRR) high enough to reduce the noise at the ear drum to 80 dBA or lower 4.5 Issuance of Hearing Protective Devices The issuance of hearing protective devices is handled through both BOD – Safety Unit and the Supervisor. BOD – Safety Unit will issue and fit the initial hearing protective devices (foam inserts, disposables). Instruction on the proper use and care of earplugs and earmuffs will be provided whenever HPDs are dispensed. Personnel requiring earmuffs in addition to earplugs will be informed of this requirement and educated on the importance of using proper hearing protection. The Supervisor will dispense ear muffs when necessary and will maintain a supply of disposable earplugs. 4.6 Use of Hearing Protective Devices (HPD) Always use and maintain HPDs as originally intended and in accordance with instructions provided. Earmuff performance may be degraded by anything that compromises the cushion-to-circumaural flesh seal. This includes other pieces of personal protective equipment such as eyewear, masks, face-shields, and helmets. 4.7 Maintenance of Hearing Protective Devices Reusable earplugs, such as the triple flange or formable devices should be washed in lukewarm water using hand soap, rinsed in clean water, and dried thoroughly before use. Wet or damp earplugs should not be placed in their containers. Cleaning should be done after each use and prior to another employee wearing the same HPD. Earmuff cushions should be kept clean. The plastic or foam cushions may be cleaned in the same way as earplugs, but the inside of the muff should not get wet. When not in use, ear muffs should be placed in open air to allow moisture that may have been absorbed into the cups to evaporate.		

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4.8 Hearing Protection Performance Information

The maximum of sound attenuation one gets when wearing hearing protection devices is limited by human body and bone conduction mechanisms. Even though a particular device may provide outstanding values of noise attenuation the actual noise reductions may be less because of the noise surrounding the head and body bypasses the hearing protector and is transmitted through tissue and bone pathways to the inner ear.

Note: The term "double hearing protection" is misleading. The attenuation provided from any combination earplug and earmuff is not equal to the sum of their individual attenuation values.

5.0 Medical Surveillance

5.1 Notification

Upon identification of employees whose 8-hour TWA equals or exceeds 85 dBA, BOD _ Safety Unit will inform the employee(s), Occupational Medical Clinic and the employees' Supervisor, in writing, of the need to enroll certain employee(s) in the Hearing Conservation Program. Information supplied to Occupational Medical Clinic will include the employee(s) name, supervisor's name, telephone number, and the noise levels recorded in the employee's work area, including dosimetry data. It will be the responsibility of the Supervisor to enroll his/her employee in the Hearing Conservation Program.

In work locations where either through administrative or engineering controls, noise levels are found to have fallen such that the employee's 8-hour TWA is below 80 dBA, BOD-Safety Unit shall notify the employees, Occupational Medical Clinic and the employee's Supervisor, by memo, that the employees working in that area are no longer required to be enrolled in the Hearing Conservation Program. The final decision as to an employee's enrollment status will be left with the office of BOD-Safety Unit.

The results of area and personal monitoring shall be forwarded to Occupational Medical Clinic upon completion of the noise surveys.

Any personnel experiencing difficulty in wearing assigned hearing protection (i.e., irritation of the canals, pain) will be advised to immediately report this to their supervisor and make arrangements to go to Occupational Medical Clinic for evaluation as soon as possible.

5.2 Audiometric Testing

The Qatar University Medical Clinic has the responsibility for administering the Audiometric Testing Program portion of the Qatar University Hearing Conservation Program. The object of the audiometric testing program is to identify workers who are beginning to lose their hearing and to intervene before the hearing loss becomes worse. Audiometric testing will be provided to all employees whenever employee noise exposures equal or exceed an 8-hr. time-weighted average (TWA) of 85 dBA. Annual retesting will be performed for all personnel enrolled in the Hearing Conservation Medical Surveillance Program.

6.0 Training

The training and education program will provide information about the adverse effects of noise and how to prevent noise-induced hearing loss. At a minimum, all training will cover the following topics:

- Noise-induced hearing loss
- Recognizing hazardous noise

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- Symptoms of overexposure to hazardous noise
- Hearing protection devices - advantages and limitations
- Selection, fitting, use, and maintenance of HPDs
- Explanation of noise measurement procedures
- Hearing conservation program requirements

Employees will also be provided with copies of the OSHA noise standard (29 CFR 1910.95) and other handouts describing the Qatar University Hearing Conservation Program.

The office of Business Operations Department – Safety Unit will provide annual refresher training. Supervisors must contact BOD-Safety Unit to schedule training for new personnel assigned to work in noisy environments and for retraining of current personnel.

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7.0 Recordkeeping

Hearing Conservation Program records will include the following:

Record	Location
Medical Evaluation and Audiograms	QU Medical Clinic
Training Records	BOD- Safety Unit
Hearing Conservation Program	BOD- Safety Unit
Hazard Evaluation	BOD- Safety Unit

All non-medical records (ex., work area and equipment surveys) will be maintained for a period of five years. Results of hearing tests and medical evaluations performed for hearing conservation purposes as well as noise exposure documentation shall be recorded and shall be a permanent part of an employee's health record.

All personnel who routinely work in designated hazardous noise areas shall be identified and a current roster of such personnel shall be maintained by BOD-Safety Unit and Medical Clinic, and updated periodically.

GUIDELINES MANUAL		
	Title: LOCK OUT TAG OUT	Document No. : EHSG-15
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: This guideline establishes the requirements for the lockout or tagout of energy isolating devices. It will ensure that machines and/or equipment are isolated from all potentially hazardous energy, and locked out or tagged out before employees and/ or contractors perform any servicing or maintenance during which an unexpected energization, start-up or release of stored energy could cause an injury.		
GUIDELINES 1.0 General Lockout is the preferred method of isolating machines or equipment from energy sources. All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device when it is locked or tagged out. A tagout system is to be used only if an isolating device cannot be locked out; or, it is demonstrated that a tagout system does provide full employee and contractor protection 2.0 Responsibility and Requirements 2.1 The QU Electrical Engineer is responsible for the implementation of the lockout/tagout procedures. Employees and contractors shall be trained to understand the safety significance of their responsibilities in implementing the procedures. The lockout/tagout procedures shall be complied with when work is performed on or near de-energized circuit parts or equipment in any situation where there is a danger of injury due to unexpected energization of the circuit parts or unexpected start-up of the equipment 2.2 Training is to be provided to ensure that the purpose and function of the program are understood by employees and contractors (knowledge, skills, application, use, removal). Training shall include: 2.2.1 Recognition of hazardous energy sources, type and magnitude of energy available, the methods and means for isolation and control. 2.2.2 Purpose and use of the procedure 2.2.3 Other employees whose work is in or may be in an area where lockouts/tagouts are used. Instruct about procedure, and prohibition concerning starting locked and/or tagged equipment. 3.0 When tagout systems are used, training should include the following limitations of tags: 3.1 Tags are essentially warning devices and do not provide physical restraint. 3.2 Tags must not be removed without authorization of the authorized person using it, and never be bypassed, ignored, or otherwise defeated. 3.3 Tags must be legible and understandable to be effective. 3.4 Tags and their means of attachment must withstand environment 3.5 Tags may evoke a false sense of security and must be understood as part of an overall program		

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3.6 Tags must be securely attached.

4.0 Employee Retraining

4.1 Retraining shall be provided annually or when there is a change in job assignments, or change in machines, equipment, or process that present a new hazard, or a change in energy control procedures.

4.2 Retrain when inspections reveal a need, or whenever the employer sees a need.

4.3 Retraining shall reestablish proficiency and introduce new or revised control methods.

5.0 Coordination with Other Procedures

The electrical lockout/ tagout procedure is to be implemented in coordination with appropriate procedures for safely isolating other energy systems such as hydraulic, pneumatic, thermal, process gases and fluids, chemical, and mechanical, in order to provide for the isolation of all energy sources that could endanger employees

6.0 Identifiable

Lockout/ tagout devices must indicate the identity of the employee and tagout devices must warn against hazardous conditions. Messages must include:

- 6.1 DO NOT START
- 6.2 DO NOT OPEN,
- 6.3 DO NOT CLOSE
- 6.4 DO NOT ENERGIZE
- 6.5 DO NOT OPERATE

7.0 Procedural Requirements

7.1 The lockout/tagout procedure shall be documented by the Electromechanical Section and shall contain requirements to safeguard employees while they are working on or near de-energized circuits, parts or equipment in any situation where there is danger of injury due to unexpected energization of the circuits parts or unexpected start-up of the equipment. Procedures shall require preplanning to determine where and how electric energy sources can be disconnected to safely de-energize circuits and equipment that are to be worked on.

7.2 Equipment shutdown procedures shall be included so that the electric equipment involved is safely shut down before circuits are de-energized.

7.3 Employees shall be instructed in the safety significance of the lockout/tagout procedure (Name/Job Title of employees authorized to lockout/tagout). Each new or transferred affected employee and other employees whose work operations are or may be in the area shall be instructed in the purpose and use of the lockout or tagout procedure (Names/Job Title of affected employees and how to notify).

7.4 Contractor shall secure logout/ tagout permit for works that need de-energization or energization of equipment.

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8.0 Preparation for Lockout or Tagout

Inspect carefully and locate and identify all isolating devices. Be certain which switch(s), valves(s) or other energy isolating devices control the equipment to be locked or tagged out. More than one energy source (electrical, mechanical, or others) may be involved. All type(s) and location(s) of energy isolating means must be found and managed.

GUIDELINES MANUAL		
	Title: OFFICE SAFETY	Document No. : EHSG-16
		Revision No. : 0
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OBJECTIVE: To provide safety guidelines for personnel working in office.		
GUIDELINES: 1.0 Slips, Trips, and Falls 1.1 Do not stand on office furniture or boxes either to retrieve or store items on shelving over-shoulder height or other high location. Instead use a ladder or step stool. 1.2 Do not leave objects such as boxes or packages where they can block access. 1.3 Immediately report to respective Section Heads all worn, broken or loose treads for job order repair or replacement. 1.4 Immediately clean all spillages such as oil or grease or other wet spot. 1.5 Keep floor clear from all items such as pencils, paper clips, tacks or staples and other objects that can cause hazard slip. 1.6 Keep all four (4) legs of your chair on the floor. Tilting back a chair often results in over-balancing and can cause a fall. 1.7 Do not lean sideways in a chair to pick up objects on the floor. 1.8 Watch out for recently waxed floor, loose carpeting, floorboards, tiles and uneven floors. 2.0 Falling Objects 2.1 Store all records and equipment properly in the assigned storage areas. Heavy or breakable items should be placed in the lower shelves. 2.2 Stack or pile materials in stable configurations. Frequently used materials should be kept within easy reach. 2.3 Load heavy material on the bottom drawer, place note that lateral files are top heavy. 2.4 Open only one file cabinet drawer at a time to prevent toppling over. 3.0 Striking Against Object 3.1 Immediately close file drawers and cabinet doors after use. 3.2 Situate file cabinets properly to prevent obstruction to doorways and walkways. 3.3 Be sure that your vision is not blocked when carrying loads. 3.4 Approach solid doors in the side away from the hinges. This will enable you to step out of the way if someone comes through. 4.0 Other Office Safe Practices 4.1 Use cabinet handles when closing doors, drawers to avoid pinching fingers. 4.2 Keep fingers out of file drawers when closing. 4.3 Report immediately all electrical hazards such as frayed or bare wires, overloaded outlets or improperly grounded wires to prevent electrocution or fire incident. 4.4 Only extension cords with UL approved surge suppressors is allowed to be used. 4.5 Store flatly sharp objects such as letter openers, scissors, and pencils inside drawers or point down in a container to prevent cuts and puncture wounds. 4.6 Do not mix pushpins with paper clips; store it separately. 4.7 Wear finger guards when handling stacks of paper. Moisten stamps and envelopes with a sponge or sealing device. 4.8 Keep fingers away from paper cutter blade and avoid cutting too many sheets at a time. 5.0 Lifting When it is necessary to lift objects, observe the safe lifting practice described in Safe Lifting and Back Safety guidelines.		

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	Title: PERSONAL PROTECTIVE EQUIPMENT	Document No. : EHSG-17
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OBJECTIVE: To provide guidelines on the proper use and maintenance of Personal Protective Equipment to employees, visitors and contractors.		
SCOPE: The University and contractor shall at his expense furnish his workers with protective equipment for the eyes, face, hands, head, and feet whenever necessary by reason of the hazardous nature of the process or environment, chemical or radiological or other mechanical irritants or hazards capable of causing injury or impairment in the function of any of the body through absorption, inhalation or physical contact. All personal protective equipment shall be approved, designed and constructed appropriate for the exposure and the work to be performed. The University and contractor shall ensure the adequacy and proper maintenance of personal protective equipment used in the workplace. The employee shall ensure that the personal protective equipment are used and handled in accordance with the University guidelines and policies.		
DEFINITIONS: Threshold Limit Value (TLV) - Airborne concentrations of substance representing conditions under it is believed that nearly all workers may be repeatedly exposed without adverse effect. Oxygen Deficient Atmosphere (ODA) - An atmosphere consisting of less than 19.5 % oxygen. Person may become drowsy, unconscious or may die at levels below 15 %. Immediately Dangerous to Life or Health (IDLH) - A toxic or oxygen deficient atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitating effects on health. Respirator - A device to protect the wearer from the inhalation of harmful atmosphere. Disposable Dust and mist Respirator - A small paper or fabric respirator used to remove small quantities of relatively non-toxic materials such as rust or dirt and which is discarded after use. Negative pressure respirator - Negative pressure is created inside the respirator when the wearer inhales and air is filtered before entry into the mask. Positive pressure respirator - An air-supplied cylinder with regulator allows air to enter the mask and provide air for breathing. The regulated air maintains a positive pressure during inhalation and exhalation. Small leaks in the seal will allow airflow out rather than outside air to enter.		

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GUIDELINES:

1.0 Wearing Apparel

- 1.1 Cover-all shall be worn during operation, maintenance of equipment. Shirt and pants shall be worn for other operational duties and light maintenance.
- 1.2 Trouser legs shall not be rolled above the ankles and shirttails shall be tacked in one's pants.
- 1.3 Cover-all sleeves shall not be tied on body waist.
- 1.4 Employee's shall not wear long, dangling sleeves or other loose clothing when working on or around machinery.
- 1.5 Clothing saturated with oil shall be removed as soon as practical and the affected part of the body shall be washed with soap and water.
- 1.6 Only clean clothing in good condition (free of tears, frays, rips and patches) shall be worn during work.
- 1.7 Clothing saturated with chemicals shall be removed while rinsing with water and the saturated part of the body rinse with water to remove the chemical and residue.
- 1.8 Finger rings, watches, bracelets and other jewelry shall be removed while performing maintenance work.
- 1.9 Wear cover-all under welding aprons and chaps during welding work. Button cover-all to the neck and button pockets to prevent sparks and slag from burning the skin. Do not use clothing to clean torch tips.
- 1.10 Cover-all shall be worn by contractors at all times during his work at the University.
- 1.11 Laboratory gowns preferably white color shall be worn during Laboratory works

2.0 Safety Shoes

- 2.1 Employee's shall wear University issued safety shoes at work site at all times. Exceptions are as follows: offices, meeting rooms, change rooms. Avoid borrowing safety shoes.
- 2.3 Each employee's shall wear protective footwear when working in areas where there is danger of foot injuries due to falling or rolling piercing the sole, or where the feet are exposed to electrical, chemical hazards.
- 2.4 Shoes with toe or metal guards, oil and chemical resistant sole shall be used as foot protection.
- 2.5 If safety shoes are inadvertently destroyed as a result of assigned duties (but not caused by employee's negligence) safety shoes shall be replaced at company's expense.
- 2.6 Contractual workers working inside the University premises shall wear foot protection, provided by the contractors.

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2.7 Visitors shall wear foot protection at areas that require safety shoes and shall be provided by the University and/ or contractors.

2.8 Safety shoes shall comply with Occupational Health and Safety Standard 1910.136 and passed ANSI Z41-1991 and/or European Standard EN-345.

3.0 Hand Protection

3.1 Employees, students, and contractors shall wear hand protection when exposed to potential hand injuries and minimize exposure to hazards such as chemical absorption through the skin, severe lacerations or cut, punctures and chemical or thermal burn.

3.2 Employees, students and contractors shall use protective leather gloves for cutting and welding work.

3.3 The Material Safety Data Sheet shall be used to determine the appropriate gloves to be used during handling of chemicals.

3.4 Contractors working with rigging wire and chains shall use cotton work gloves.

3.5 Employees, students and contractors shall maintain (clean, safe keep) the hand protection equipment to maximize useful life.

3.6. Hand Protection shall comply with Occupational Health and Safety Standard 1910.138 and passed European Standard EN-388.

4.0 Electrical Gloves

4.1 Defective insulating gloves shall not be used.

4.2 Insulating gloves with the following defects shall not be worn: holes; tears; punctures or cuts; imbedded foreign objects; texture changes such as swelling, hardening or becoming stick or inflexible.

4.3 Rubber insulating gloves that have been used without protectors shall not be used without protective gloves.

4.4 Protective gloves shall not be used if they have holes, tears or other defects that affect their ability to give mechanical protection to the insulating glove.

4.5 Protective gloves that have been used for any other purpose shall not be used to protect insulating gloves.

4.6 Gloves that have been rejected and are not suitable for electrical services shall have the fingers removed and the gloves disposed.

4.7 Rubber gloves and protective gloves which have oil, grease or other damaging substance on them, shall be cleaned properly before use.

4.8 Rubber gloves shall be turned inside out and rinsed as necessary to remove perspiration. Excess water shall be removed by shaking and the gloves shall be air-dried.

4.9 Insulating gloves shall be visually inspected by the wearer for defects. Before using, visually inspect the glove especially around the fingers to detect cracks or deterioration.

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4.10 Insulating gloves shall be given an air test by rolling the cuffs tightly toward the palm in such a manner that air is trapped inside the gloves or by using a mechanical inflator. When using the latter care shall be taken to avoid over-inflation.

4.11 Gloves shall be air tested each day before use and time there is cause to suspect damage.

4.12 A periodic inspection of the gloves shall be conducted by the Electrical Engineer to determine that such equipment is being maintained in a satisfactory condition by the user.

4.13 Gloves shall be stored in a designated location (e.g. tool room) as cool, dark and dry as possible with no other material or equipment nearby that could cause damage.

4.15 Gloves when not in use must be inside the protectors and in a bag, box or container designed for and used exclusively for them. These gloves shall be stored in their natural shape.

4.16 The protector gloves shall be sized and shaped so the insulating gloves shall not be deformed from their natural shape.

4.17 Electrical gloves shall comply with Occupational Health and Safety Standard 1910.137.

5.0 Head Protection

5.1 Class C head protection shall be used for protection from minor scalp abrasion and minor bump hazards. Class B head protection shall be used for electrical hazard. Class A head protection shall be used for construction.

5.4 Head protection shall be replaced if cranked, chopped or otherwise damaged.

5.5 Employee's and contractors shall not paint or deface hard hat or bump cap.

5.6 Each employee and contractor shall be issued one head protection according to usage.

5.7 Employees, contractors and visitors shall wear head protection on the following areas: construction site, central service unit, men's and women's activity, energy center those areas when working requires lifting and excavation.

5.8 Operation and Maintenance contractors shall wear head protection at all times while working.

6.0 Respiratory Protection

6.1 Respirator shall be used while working at chemicals with toxic fumes.

6.2 Respirator shall be used during construction where dust accumulation is very heavy.

6.3 Respirator shall be used in confined spaces.

6.4 Refer to Material Safety Data Sheet (MSDS) for proper selection of respirator.

6.5 Respirator fit shall be conducted annually for employees required to wear respirator.

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6.6 Employees with facial hair shall not be given mask respirator as the gas will still penetrate the sealing surface of the respirator. 6.7 Contact lenses shall not be used with respirator. 6.8 Respirator shall be inspected before and after use by employee for tightness of connections; condition of face piece; head band; valves and connecting tubes, pliability and signs of deterioration of rubber parts; proper air pressure and proper functioning. 6.9 Clean and disinfect equipment after each use according to manufacturer recommendation. 6.10 Positive pressure respirator shall be serviced only by experienced person using parts designed for the particular respirator. 6.11 Respirator shall be stored where they are protected from dust, sunlight, heat, extreme cold, excessive moisture and damaging chemicals. Store respirator with the face piece and exhalation valve resting in a normal position to prevent distortion. Do not store respirator in places, such as lockers or toolboxes, unless they are in carrying cases or cartons supplied by the manufacturer. 6.12 Chemical cartridges shall be replaced as necessary to provide complete protection. 6.13 Replacement of cartridge shall be installed by experienced personnel. Change a defective respirator for a new one. 6.14 Respirator located at stations and work areas for emergency use shall be readily accessible at all times. They shall be stored in a specially designed compartment. 6.15 Respirator shall comply with Occupational Safety and Health Standard 1910.134 7.0 Eye and Face Protection 7.1 Employees, students and contractors shall wear approved eye protection at work site where protection to the eyes is needed (e.g. welding, grinding, cooling tower monitoring, laboratory analysis, chipping, polishing, lathe turning work). 7.2 Safety glasses shall be furnished to visitors at the University as needed. 7.3 Employees, students and contractors shall survey first the work areas to determine the eye and face hazards and wear the specific eye and/or face protection necessary. 7.4 Warning signs shall be posted in the immediate vicinity of the hazardous work area stating that wearing the appropriate protective equipment is mandatory while performing the hazardous work. 7.5 Eye and face protection that are already blurred and damaged shall be replaced immediately. 7.6 Eye and Face Protection shall comply with Occupational Safety and Health Standard 1910.133 and passed ANSI Z87.1-1989 and/or EN-166.		



Title:

**PERSONAL PROTECTIVE
EQUIPMENT**Document No. : **EHSG-17**

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8.0 Fall Protection

- 8.1 Safety harness shall be worn at all times while working above 1.8 meters or more above ground unless other adequate protection against falling is provided.
- 8.2 All safety harness shall be regularly inspected for excessive wear or damage that could cause them to fail. Harnesses and lanyards that are worn or damaged to the extent that they could fail shall be discarded and not be used.
- 8.3 Safety harness or lanyards shall be a minimum of 13 mm nylon or the equivalent, with a maximum length of 1.8 meter. They shall have a minimum breaking strength of 2,700 kg.
- 8.4 Lifelines shall be a minimum of 20 mm, or equivalent, with a minimum breaking strength of 2,700 kg. Steel cables are recommended for horizontal anchor lines with a minimum breaking strength of 2,700 kg or five times the load.
- 8.5 Fall protection equipment shall comply with Occupational Health and Safety Standard 1926.104 and passed European Standard EN-361, EN-354, EN-355, EN-353-2 and EN-362.

GUIDELINES MANUAL



Title:

SAFE LIFTING AND BACK SAFETY

Document No.	:	EHSG-18
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OBJECTIVE:

To ensure safe lifting methods and prevent back injury during lifting of materials.

GUIDELINES:

1. Avoid lifting and bending whenever you can.
2. Avoid the following:
 - 2.1 Heavy lifting especially repetitive lifting over a long period of time.
 - 2.2 Twisting at the waist while lifting or holding a heavy load, this frequently happens when using a shovel.
 - 2.3 Reaching and lifting over your head, across over your head, across a table, or out the back of a truck.
 - 2.4 Lifting or carrying objects with awkward or odd shapes.
 - 2.5 Sitting or standing too long in one position, sitting can be very hard on the lower back.
3. Place objects up off the floor.
4. Raise / lower shelves.
5. Use carts.
6. Test the weight of an object before lifting by picking up a corner.
7. Wear Back Support if necessary.
8. Get help if it is too heavy for you to lift it alone.
9. Use the following steps when lifting:
 - 9.1 Take a balanced stance, feet shoulder-width apart.
 - 9.2 Squat down to lift, get as close as you can.
 - 9.3 Get a secure grip; hug the load.
 - 9.4 Lift gradually using your legs, keep load close to you, keep back and neck straight.
 - 9.5 Once standing, change directions by pointing your feet and turn your whole body. Avoid twisting at your waist.
 - 9.6 To put load down. Use item 9.0 in reverse.
10. Use cranes, hoist, forklift, lift tables and other lift-assist devices for lifting heavy objects (e.g. pump, motor, pipes).
11. Exercise regularly.

GUIDELINES MANUAL



Title:

USE OF HAND AND POWER TOOLS

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OBJECTIVE:

To provide safety guidelines to all employees, contractors working at the University where the use of hand or power tools are employed

GUIDELINES

- 1.0 Select the right tool for the job. Examples of unsafe practices are: striking hardened faces of hand tools together (such as using a carpenter's hammer to strike another hammer, hatchet, or metal chisel), using a file for a pry, a wrench for a hammer, and pliers instead of the proper wrench.
- 2.0 Keep tools in good condition. Wrenches with cracked work jaws, screw drivers with broken points or broken handles, hammers with loose heads, dull saws, and extension cords or electric tools with broken plugs, improper or removed grounding lugs, or split insulation are examples of tools in poor conditions. Tools that have deteriorated in this manner must be taken out of service.
- 3.0 Use tools in the right way. Screw drivers applied to objects held in the hand, knives pulled toward the body, and failure to ground electrical equipment are common causes of accidents.
- 4.0 Keep tools in a safe place. Many accidents have been caused by tools falling from overhead and by knives, chisels, and other sharp tools carried in pockets or left in tool boxes with cutting edges exposed.
- 5.0 Steps to be used to control tool accidents.
 - 5.1 Section heads / supervisors are to ensure that employees are trained to select the right tools for each job
 - 5.2 Establish regular tool inspection procedures and provide good repair facilities to ensure that tools will be maintained in safe condition:
 - 5.3 Establish a procedure for control of tools such as a check-out system at tool cribs
 - 5.4 Provide proper storage facilities in the tool room and on the job.
 - 5.5 The employer is responsible for the safe condition of tools and equipment used by employees, contractors but the employees, contractors have the responsibility for properly using and maintaining tools.

Each supervisor is to make a complete check of his/her operations to determine the need for special tools that will do the work more safely than ordinary tools. Special tools should be kept readily available in a centralized tool room if possible

The tool room attendant or craft supervisor should be qualified by training and experience to pass judgment on the condition of tools for further use. Dull or damaged tools shall not be returned to stock.

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Proper maintenance and repair of tools requires adequate facilities, work benches, vises, a forge or furnace for hardening and tempering, tempering baths, safety goggles, repair tools, grinders, and good lighting. Employees, contractors especially trained in the care of tools should be in charge of these facilities, otherwise, tools should be sent out for repairs.

6.0 Carrying Tools

The employee, contractor is to never carry tools, which in any way may interfere with his/her using both hands freely on a ladder or while climbing on a structure. A strong bag, bucket, or similar container is to be used to hoist tools from the ground to the job. Tools are to be returned in the same manner, not brought down by hand, carried in pockets or dropped to the ground.

Mislaidd and loose tools cause a substantial portion of hand tool injuries. Tools should not be left where employees, contractors are moving or walking.

Chisels, screwdrivers, and pointed tools shall never be carried in a worker's pocket. They are to be carried in a tool box or cart, in a carrying belt (sharp or pointed end down) like those used by electricians and steel workers, in a pocket tool pouch, or in the hand with points and cutting edges pointing away from the body.

Employees, contractors carrying tools on their shoulders should pay close attention to clearances when turning around and should handle the tools so that they will not strike other employees.

7.0 Personal Protective Equipment

Appropriate personal protective equipment, e.g. safety goggles, gloves, etc. should be worn due to hazards that may be encountered while using portable power tools and hand tools.

Employees, contractors using hand and power tools and exposed to the hazard of falling, flying, abrasive and splashing objects, or exposed to harmful dusts, fumes, vapors, or gases are to be provided with the particular personal protective equipment necessary to protect them from the hazard

8.0 Use of Hand Tools

Hand tools are non-powered. They include anything from axes to wrenches. The greatest hazards posed by hand tools results from misuse and improper maintenance.

A part of maintenance and construction worker's instruction program shall include detailed training in the proper use of hand tools. So important is this training that considerable attention is given, in the following pages, to those safe practices

8.1 Metal-Cutting Hand Tools

8.1.1 Chisels

Factors determining the selection of cold chisels are the materials to be cut, the size and shape of the tool, and the depth of the cut to be made.

The chisel should be made heavy enough so that they will not buckle or spring when struck.

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A chisel no larger than the job should be selected so that the blade is used rather than the point or corner. Also, a hammer heavy enough to do the job should be used.

Employees, contractors shall wear safety goggles when using a chisel and should set up a shield or screen to prevent injury to other workers from flying chips. If a shield does not afford positive protection to all exposed employees, then glasses with side protection should be worn.

8.1.2 Tap and Die Work

Tap and die work requires certain precautions. The work should be firmly mounted in the vise. Only a T-handle wrench or adjustable tap wrench should be used. When threads are being cut with a hand die, hands and arms should be kept clear of the sharp threads coming through the die, and metal cuttings should be cleared away with a brush.

8.1.3 Hack Saws

Hacksaws should be adjusted in the frame to prevent buckling and breaking, but should not be tight enough to break off the pins that support the blade. Install blade with teeth pointing forward.

Pressure should be applied on the forward stroke not on the back stroke. If the blade is twisted or too much pressure is applied, the blade may break and cause injury to the hands or arms of the user.

8.1.4 Files

Selection of the right kind of file for the job will prevent injuries and lengthen the life of the file. Inasmuch as the extremely hard and brittle steel of the file chips easily, the file should never be cleaned by being struck against a vise or other metal object. A file-cleaning card or brush should be used.

For the same reason, a file is not to be hammered or used as a pry. Such abuse frequently results in the file's chipping or breaking causing injury to the user. A file should not be made into a center punch, chisel, or any other type of tool because the hardened steel may fracture in use.

A file is never to be used without a smooth, crack-free handle; if the file should bind, the tang may puncture the palm of the hand, the wrist, or other part of the body. Under some conditions, a clamp-on raised offset handle may be useful to give extra clearance for the hands. Files are not to be used on lathe stock turning at high speed (faster than three turns per file stroke) because the end of the file may strike the chuck, dog, or face plate and throw the file (or metal chip) back at the operator hard enough to inflict serious injury.

8.1.5 Tin Snips

Tin snips should be heavy enough to cut the material so easily that the worker needs only one hand on the snips and can use the other to hold the material. The material is to be well supported before the last cut is made so that cut edges do not press against the hands.

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Jaws of snips are to be kept tight and well lubricated. Employees shall wear safety goggles when trimming corners or slivers of metal because small particles often fly with considerable force. They shall always wear gloves. 8.1.6 Cutters Cutters used on wire, reinforcing rods, or bolts should have ample capacity for the stock; otherwise, the jaws may be sprung or spread. Also, a chip may fly from the cutting edge and injure the user. Cutters require frequent lubrication. To keep cutting edges from becoming nicked or chipped, cutters are not to be used as nail pullers or pry bars. Cutter jaws should have the hardness specified by the manufacturer for the particular kind of material to be cut. By adjustment of the bumper stop behind the jaws, cutting edges are to be set to have a clearance of 0.003 inch when closed. 8.2 Wood Cutting Tools Edged tools are to be used so that if a slip should occur, the direction of force will be away from the body. For efficient and safe work, edged tools are to be kept sharp and ground to the proper angle. A dull tool does a poor job and may stick or bind. 8.2.1 Wood Chisels Inexperienced employees shall be instructed in the proper method of holding and using chisels. Handles are to be free of splinters. The wood handle of a chisel struck by a mallet is to be protected by a metal or leather cap to prevent it from splitting. The work to be cut must be free of nails to avoid damage to the blade or cause a chip to fly into the user's face or eye. 8.2.2 Saws Saws should be carefully selected for the work they are to do. For crosscut work on green wood, a coarse saw (4 to 5 points per inch) is to be used. A fine saw is better for smooth, accurate cutting in dry wood. Saws are to be kept sharp and well set to prevent binding. 8.2.3 Axes An axe person is to make sure that there is a clear circle in which to swing the axe before starting to chop. Also, all vines, brush, and shrubbery within the range should be removed, especially overhead vines that may catch or deflect the axe. Axe blades shall be protected with a sheath or metal guard wherever possible. When the blade cannot be guarded, it is safer to carry the axe at one's side. The blade on a single-edged axe shall be pointed down.		

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8.2.4 Hatchets

Hatchets shall not be used for striking hard metal surfaces since the tempered head may injure the user or others by flying chips. When using a hatchet in a crowded area, employee shall take special care to prevent injury to themselves and other workers. Using a hatchet to drive nails is prohibited.

8.3 Miscellaneous Cutting Tools

8.3.1 Planes, Scrapers, Bits, and Drawknives

Planes, scrapers, bits, and drawknives are to be used only by experienced employees. These tools are to be kept sharp and in good condition.

The principal hazard in the use of knives is that hands may slip from the handle onto the blade or that the knife may strike the body or the free hand. A handle guard or a finger ring (and swivel) on the handle eliminates these hazards. Adequate guarding is important.

Employees who must carry knives with them on the job shall keep them in sheaths or holders. Never carry a sheathe knife on the front part of a belt. Always carry it over the right or left hip, toward the back. This will prevent severing a leg artery or vein in case of a fall.

Knives must never be left lying on benches or in other places where they may cause hand injuries. Safe placing and storing of knives is important to knife safety.

Supervisors must make certain that employees who handle knives have ample room in which to work so they are not in danger of being bumped by other workers.

Supervisors should be particularly careful about the hazard of employees leaving knives hidden under a product, under scrap paper or wiping rags, or among other tools in work boxes or drawers. Knives are to be kept separate from other tools to protect the cutting edge of the knife as well as to protect the employee.

Horseplay shall be prohibited around knife operations. Throwing, "fencing", trying to cut objects into smaller and smaller pieces, and similar practices are not only dangerous but reflect inadequate supervision. .

Supervisors shall assure that nothing is cut that requires excessive pressure on the knife. Knives shall not be used as a substitute for can openers, screwdrivers, or ice picks

8.4 Torsion Tools.

Socket wrenches are safer to use than adjustable or open-end wrenches

8.4.1 Open-End or Box Wrenches

Open-end or box wrenches shall be inspected to make sure that they fit properly and are never to be used if jaws are sprung or cracked. When defective they shall be taken out of service until repaired

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8.4.2 Socket Wrenches

Socket wrenches give great flexibility in hard-to-reach places. The use of special types shall be encouraged where there is danger of injury.

8.4.3 Adjustable Wrenches

Adjustable wrenches are used for many purposes. They are not intended, however, to take the place of standard open-end, box or socket wrenches. They are used mainly for nuts and bolts that do not fit a standard wrench. Pressure is always applied to the fixed jaw.

8.4.4 Pipe Wrenches

Pipe wrenches, both straight and chain tong, shall have sharp jaws and be kept clean to prevent slipping.

The adjusting nut of the wrench is to be inspected frequently. If it is cracked, the wrench shall be taken out of service. A cracked nut may break under strain, causing complete failure of the wrench and possible injury to the user.

A piece of pipe "cheater" slipped over the handle shall not be used to give added leverage because this can strain a pipe wrench to the breaking point. The handle of every wrench is designed to be long enough for the maximum allowable safe pressure.

A pipe wrench should never be used on nuts or bolts, the corners of which will break the teeth of the wrench, making it unsafe to use on pipe and fittings. Also, a pipe wrench, when used on nuts and bolts, damages their heads. A pipe wrench shall not be used on valves, struck with a hammer, nor used as a hammer.

8.4.5 Pliers

Side-cutting pliers sometimes cause injuries when short ends of wires are cut. A guard over the cutting edge and the use of safety glasses will help prevent eye injuries.

The handles of electricians' pliers are to be insulated. In addition, employees shall wear the proper electrical rated gloves if they are to work on energized lines.

Pliers shall not be used as a substitute for a wrench.

8.4.6 Special Cutters

Special cutters include those for cutting banding wire and strap. Claw hammers and pry bars shall not be used to snap metal banding material.

8.4.7 Pipe Tongs

Employees must neither stand nor jump on the tongs nor place extensions on the handles to obtain more leverage. They should use larger tongs.

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8.4.8 Screwdrivers

The practice of using screwdrivers for punches, wedges, pinch bars, or pries shall not be allowed.

Cross-slot (Phillips-head) screwdrivers are safer than the square bit type, because they have less tendency to slip. The tip must be kept clean and sharp, however, to permit a good grip on the head of the screw.

The part to be worked upon must never be held in the hands; it should be laid on a bench or flat surface or held in a vise.

No screwdriver used for electrical work shall have the blade or rivet extending through the handle. Both blade and handle shall be insulated except at the tip.

8.5 Shock Tools

8.5.1 Hammers

A hammer is to have a securely wedged handle suited to the type of head used. The handle shall be smooth, without cracks or splinters, free of oil, shaped to fit the hand, and of the specified size and length. Employees, contractors shall be warned against using a steel hammer on hardened steel surfaces.

Instead, a soft-head hammer or one with a plastic, wood, or rawhide head should be used. Safety goggles or safety glasses shall be worn to protect against flying chips, nails, or scale.

8.5.2 Riveting Hammers

Riveting hammers, often used by sheet metal workers, must have the same kind of use and care as ball pen hammers and should be watched closely for cracked or chipped faces.

8.5.3 Carpenter's or Claw Hammers

The faces shall be kept well dressed at all times to reduce the hazard of flying nails while they are being started into a piece of wood. A checker-faced head is sometimes used to reduce this hazard.

Eye protection is advisable for all nailers and all employees working in the same area.

8.6 Spark-Resistant Tools

Around flammable substances, sparks produced by iron and steel hand tools can be a dangerous ignition source. Where this hazard exists, spark-resistant tools made from brass, plastic, aluminum, or wood will provide for safety.

9.0 Power Tools

Power tools can be hazardous when improperly used. There are several types of power tools, based on the power source they use: electric, pneumatic, liquid fuel, hydraulic, and powder-actuated.

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Employees should be trained in the use of all tools - not just power tools. They should understand the potential hazards as well as the safety precautions to prevent those hazards from occurring.

9.1 The following general precautions should be observed by power tool users:

9.1.1 Never carry a tool by the cord or hose.

9.1.2 Never yank the cord or the hose to disconnect it from the receptacle.

9.1.3 Keep cords and hoses away from heat, oil, and sharp edges.

9.1.4 Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters.

9.1.5 All observers should be kept at a safe distance away from the work area.

9.1.6 Secure work with clamps or a vise, freeing both hands to operate the tool.

9.1.7 Avoid accidental starting. The worker should not hold a finger on the switch button while carrying a plugged-in tool.

9.1.8 Tools should be maintained with care. They should be kept sharp and clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories.

9.1.8 Be sure to keep good footing and maintain good balance.

9.1.9 The proper apparel should be worn. Loose clothing, ties, or jewelry can become caught in moving parts.

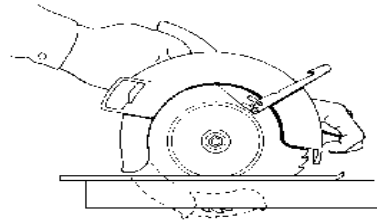
9.1.10 All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use."

10.0 Guards

Hazardous moving parts of a power tool need to be safeguarded. For example, belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded if such parts are exposed to contact by employees.

Guards, as necessary, should be provided to protect the operator and others from the following:

- point of operation
- in-running nip points
- rotating parts
- flying chips and sparks





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Safety guards must never be removed when a tool is being used. For example, portable circular saws must be equipped with guards. An upper guard must cover the entire blade of the saw. A retractable lower guard must cover the teeth of the saw, except when it makes contact with the work material. The lower guard must automatically return to the covering position when the tool is withdrawn from the work.

11.0 Safety Switches

The following hand-held powered tools must be equipped with a momentary contact "on-off" control switch: drills, tappers, fastener drivers, horizontal, vertical and angle grinders with wheels larger than 2 inches in diameter, disc and belt sanders, reciprocating saws, saber saws, and other similar tools. These tools also may be equipped with a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

The following hand-held powered tools may be equipped with only a positive "on-off" control switch: platen sanders, disc sanders with discs 2 inches or less in diameter; grinders with wheels 2 inches or less in diameter; routers, planers, laminate trimmers, nibblers, shears, scroll saws and jigsaws with blade shanks <1-inch wide or less.

Other hand-held powered tools such as circular saws having a blade diameter greater than 2 inches, chain saws, and percussion tools without positive accessory holding means must be equipped with a constant pressure switch that will shut off the power when the pressure is released.

12.0 Electric Tools

Employees, contractors using electric tools must be aware of several dangers; the most serious is the possibility of electrocution.

Among the primary hazards of electric-powered tools are burns and slight shocks which can lead to injuries or even heart failure. Under certain conditions, even a small amount of current can result in fibrillation of the heart and eventual death. A shock also can cause the user to fall off a ladder or other elevated work surface.



To protect the user from shock, tools must either have a three-wire cord with ground and be grounded, be double insulated, or be powered by a low-voltage isolation transformer. Three-wire cords contain two current-carrying conductors and a grounding conductor. One end of the grounding conductor connects to the tool's metal housing. The other end is grounded through a prong on the plug. Anytime an adapter is used to accommodate a two-hole receptacle, the adapter wire must be attached to a known ground. The third prong should never be removed from the plug.

Double insulation is more convenient. The user and the tools are protected in two ways: by normal insulation on the wires inside, and by a housing that cannot conduct electricity to the operator in the event of a malfunction.

12.1 These general practices should be followed when using electric tools

12.1.1 Electric tools should be operated within their design limitations.

12.1.2 Gloves and safety footwear are recommended during use of electric tools.

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12.1.3 When not in use, tools should be stored in a dry place.

12.1.4 Electric tools should not be used in damp or wet locations.

12.1.5 Work areas should be well lighted.

12.1.6 Electric cords shall be inspected periodically and kept in good condition. Heavy-duty plugs that clamp to the cord should be used to prevent strain on the current-carrying parts, if the cord is accidentally pulled.

12.1.7 Although no guards are available for drill bits, some protection is afforded if drill bits are carefully chosen for the work to be done, such as being no longer than necessary to do the work.

12.1.8 Where the operator must guide the drill with the hand, the drill is to be equipped with a sleeve that fits over the drill bit. Oversized bits shall not be ground down to fit small electric drills; instead, an adapter should be used that will fit the large bit and provide extra power through a speed reduction gear; however this again is an indication of improper drill size. When drills are used, the pieces of work are to be clamped or anchored to prevent whipping.

12.1.9 Electric saws are usually well guarded by the manufacturer, but employees must be trained to use the guard as intended. The guard should be checked frequently to be sure that it operates freely and encloses the teeth completely when it is cutting.

12.1.10 Circular saws shall not be jammed or crowded into the work. The saw is to be started and stopped outside the work

13.0 Powered Abrasive Wheel Tools

Powered abrasive grinding, cutting, polishing, and wire buffing wheels create special safety problems because they may throw off flying fragments.

Before an abrasive wheel is mounted, it should be inspected closely and sound- or ring-tested to be sure that it is free from cracks or defects. To test, wheels should be tapped gently with a light non-metallic instrument. If they sound cracked or dead, they could fly apart in operation and so must not be used. A sound and undamaged wheel will give a clear metallic tone or "ring."

To prevent the wheel from cracking, the user should be sure it fits freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place, without distorting the flange. Follow the manufacturer's recommendations. Care must be taken to assure that the spindle wheel will not exceed the abrasive wheel specifications.

Due to the possibility of a wheel disintegrating (exploding) during start-up, the employee should never stand directly in front of the wheel as it accelerates to full operating speed. Portable grinding tools need to be equipped with safety guards to protect workers not only from the moving wheel surface, but also from flying fragments in case of breakage

In addition, when using a powered grinder:

- Always use eye protection.
- Turn off the power when not in use.
- Never clamp a hand-held grinder in a vise.

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13.1 Use of Abrasive Wheels

- 13.1.1 Floor stand and bench mounted abrasive wheels, used for external grinding shall be provided with safety guards (protection hoods). The maximum regular exposure of the grinding wheel periphery and sides shall be not more than 90 degrees except that, when work requires contact with the wheel below the horizontal plane of the spindle, the angular exposure shall not exceed 125 degrees.

Safety guards shall be strong enough to withstand the effect of a bursting wheel.

- 13.1.2 Floor and bench-mounted grinders shall be provided with work rests which are rigidly supported and readily adjustable.

Such work rests shall be kept at a distance not to exceed one-eighth inch from the surface of the wheel.

- 13.1.3 Cup type wheels used for external grinding shall be protected by either a revolving cup guard or a band type guard. All other portable abrasive wheels used for external grinding shall be provided with safety guards (protection hoods), except as follows:

When the work location makes it impossible, a wheel equipped with safety flanges shall be used.

When wheels 2 inches or less in diameter which are securely mounted on the end of a steel mandrel are used.

- 13.1.4 Portable abrasive wheels used for internal grinding shall be provided with safety flanges (protection flanges) except as follows:

When wheels 2 inches or less in diameter which are securely mounted on the end of a steel mandrel are used.

If the wheel is entirely within the work being ground while in use.

- 13.1.5 When safety guards are required, they shall be so mounted as to maintain proper alignment with the wheel, and the guard and its fastenings shall be of sufficient strength to retain fragments of the wheel in case of accidental breakage. The maximum angular exposure of the grinding wheel periphery and sides shall not exceed 180°.

- 13.1.6 When safety flanges are required, they shall be used only with wheels designed to fit the flanges. Only safety flanges, of a type and design and properly assembled so as to ensure that the pieces of the wheel will be retained in case of accidental breakage, shall be used.

- 13.1.7 All abrasive wheels shall be closely inspected and ring-tested before mounting to ensure that they are free from cracks and defects.

- 13.1.8 Grinding wheels shall fit freely on the spindle and shall not be forced on. The spindle nut shall be tightened only enough to hold the wheel in place.

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13.1.9 All employees using abrasive wheels shall be protected by eye protection equipment.

Dust-type safety goggles or plastic face shields should be worn and, if dust is created, a respirator approved by the National Institute for Occupational Safety & Health (NIOSH) for the exposure should be worn.

If a sander is used steadily, it should be dismantled periodically, as well as thoroughly cleaned every day by being blown out with low-pressure air. If compressed air is used the operator shall wear safety goggles or work with a transparent chip guard between his body and the air blast.

Because wood dust presents a fire and explosion hazard, keep dust to a minimum; sanders can be equipped with a dust collection or vacuum bag. Electrical equipment shall be designed to minimize the explosion hazard. Fire extinguishers approved for Class C (electrical) fires should be available

14.0 Pneumatic Tools

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders.

There are several dangers encountered in the use of pneumatic tools. The main one is the danger of getting hit by one of the tool's attachments or by some kind of fastener the worker is using with the tool.

Eye protection is required and face protection is recommended for employees working with pneumatic tools.

Noise is another hazard. Working with noisy tools such as jackhammers requires proper, effective use of hearing protection.

When using pneumatic tools, employees must check to see that they are fastened securely to the hose to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool will serve as an added safeguard.

A safety clip or retainer must be installed to prevent attachments, such as chisels on a chipping hammer, from being unintentionally shot from the barrel.

Screens must be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills.

Compressed air guns should never be pointed toward anyone. Users should never "dead-end" it against themselves or anyone else.

14.1 Use the following safety tips:

14.1.1 The operating trigger on portable hand-operated utilization equipment shall be so located as to minimize the possibility of its accidental operation and shall be arranged to close the air inlet valve automatically when the pressure of the operator's hand is removed.

14.1.2 Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tools from becoming accidentally disconnected.

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14.1.3 Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

14.1.4 All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 p.s.i. pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.

14.1.3 Compressed air shall not be used for cleaning purposes except with an air blow gun limited to 30 p.s.i. static pressure at the outlet nozzle and then only with effective chip guard and personal protective equipment.

14.1.5 The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fitting shall not be exceeded.

14.1.6 The use of hoses for hoisting or lowering tools shall not be permitted.

14.1.7 All hoses exceeding 1/2-inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

14.1.8 Airless spray guns of the type which atomize paints and fluids at high pressures (1,000 pounds or more per square inch) shall be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released.

14.1.9 In lieu of the above, a diffuser net which will prevent high pressure, high velocity release, while the nozzle tip is removed, plus a nozzle tip guard which will prevent the tip from coming in contact with the operator, or other equivalent protection shall be provided

15.0 Fuel Powered Tools

15.1 All fuel powered tools shall be stopped while being refueled, serviced, or maintained, and fuel shall be transported, handled, and stored in approved safety cans.

15.2 Leakage or spillage of flammable or combustible liquids shall be disposed of promptly and safely.

15.3 When fuel powered tools are used in enclosed spaces, the applicable requirement for concentrations of toxic gases and use of personal protective equipment shall apply.

16.0 Hydraulic Power Tools

The fluid used in hydraulic powered tools shall be fire-resistant and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed.

The manufacturer's safe operating pressures for hoses, valves, pipes, filters, and other fittings shall not be exceeded

16.1 Jacks

All jacks – lever and ratchet jacks, screw jacks, and hydraulic jacks - must have a device that stops them from jacking up too high. Also, the manufacturer's load limit must be permanently marked in a prominent place on the jack and should not be exceeded.

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A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up.

Use wooden blocking under the base if necessary to make the jack level and secure. If the lift surface is metal, place a 1-inch-thick hardwood block or equivalent between it and the metal jack head to reduce the danger of slippage.

To set up a jack, make certain of the following:

- the base rests on a firm level surface,
- the jack is correctly centered,
- the jack head bears against a level surface, and
- the lift force is applied evenly.

Proper maintenance of jacks is essential for safety. All jacks must be inspected before each use and lubricated regularly. If a jack is subjected to an abnormal load or shock, it should be thoroughly examined to make sure it has not been damaged.

17.0 Use and Maintenance of Power-Actuated Tools

17.1 These tools should not be used in an explosive or flammable atmosphere.

17.2 Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-activated tool.

17.3 The tool shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.

17.4 Any tool found not in proper working order or one that has developed a defect during use shall be removed from service immediately and not used until properly repaired.

17.5 Adequate eye, head, face and/or personal protective equipment as necessitated by working conditions shall be utilized by the operators and persons working in the area.

17.6 The tool shall be designed so that it cannot be fired unless it is equipped with a standard protective shield or guard or a special shield, guard, fixture, or jib.

17.7 The firing mechanism shall be designed so that the tool cannot fire during loading or preparation to fire or if the tool is dropped while loaded. Firing of the tools shall be dependent upon at least two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into the firing position

17.8 The tool shall be designed so as not to be operable other than against a work surface and unless the operator is holding the tool against the work surface with force at least 5 pounds greater than the weight of the tool.

17.9 The tool shall be designed so that it will not operate when equipped with the standard guard indexed to the center position if any bearing surface of the guard is tilted more than 8 degrees from contact with the work surface.

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- 17.10 The tool shall be designed so that positive means of varying the power are available or can be made available to the operator as part of the tool or as an auxiliary, to facilitate selection of a power level adequate to perform the desired work without excessive force.

- 17.11 The tool shall be designed so that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.

- 17.12 Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any employees. Hands shall be kept clear of the open barrel end.

- 17.13 Loaded tools shall not be left unattended.

- 17.14 Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.

- 17.15 Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side.

- 17.16 Power-assisted, hammer-driven tools are used for the same purposes as powder-actuated tools and generally the same precautions are to be followed.

18.0 Woodworking Tools

- 18.1 Personal Protective Equipment - All employees using woodworking tools shall be protected by eye protection equipment.

- 18.2 Guarding - All portable, power-driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for beveled cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.

- 18.3 Disconnect Switches - All "fixed" power driven wood-working tools shall be provided with a disconnect switch that can either be locked or tagged in the "off" position.

- 18.4 Self-feed - Automatic feeding devices shall be installed on machines whenever the nature of the work will permit. Feeder attachments shall have the feed rolls or other moving parts covered or guarded so as to protect the operator from hazardous points.

- 18.5 Speeds - The operating speed shall be etched or otherwise permanently marked on all circular saws over 20 inches in diameter or operating at over 10,000 peripheral feet per minute. Any saw so marked shall not be operated at a speed other than that marked on the blade. When a marked saw is re-tensioned for a different speed, the marking shall be corrected to show the new speed.

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	Title: USE OF SCAFFOLDING	Document No. : EHSG-20
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OBJECTIVE: To provide guidelines on the proper use of scaffolding to prevent incident and accident associated with scaffolded work surfaces.		
GUIDELINES: 1.0 The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks, shall not be used to support scaffolds or planks. 2.0 No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons or as requested for corrective reasons by the Safety Officer 3.0 Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor, except needle beam scaffolds and floats. Scaffolds 4 feet to 10 feet in height having a minimum horizontal dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends of the platform. 4. 0 Guardrails must be 2 X 4 inches, or the equivalent, approximately 42 inches high, with a mid-rail, when required. Supports must be at intervals not to exceed 8 feet. Toe board and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. standard wire 1/2 inch mesh, or the equivalent. 5.0 Scaffolds and their components must be capable of supporting without failure at least 4 times the maximum intended load. 6.0 Any scaffold including accessories such as braces, brackets, trusses, screw legs, ladders, etc., damaged or weakened from any cause must be immediately repaired or replaced. 7.0 All load-carrying timber members of scaffold framing shall be a minimum of 1,500 fiber (Stress Grade) construction grade lumber. 8.0 All planking must be Scaffold Grades, or equivalent, as recognized by approved grading rules for the species of wood used. The maximum permissible span for 1-1/4 X 9 inch or wider plank of full thickness shall be 4 feet with medium duty loading of 50 psf. 9.0 All planking or platforms must be overlapped (minimum 12 inches), or secured from movement. 10.0 An access ladder or equivalent safe access must be provided. 11.0 Scaffold planks must extend over their end supports not less than 6 inches nor more than 18 inches. 12.0 The poles, legs, or uprights of scaffolds must be plumb, and securely and rigidly braced to prevent swaying and displacement. 13.0 Overhead protection must be provided for men on a scaffold exposed to overhead hazards 14.0 Slippery conditions on scaffolds shall be eliminated immediately after they occur.		

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15.0 No welding, burning, riveting or open flame work shall be performed on any staging suspended by means of fiber or synthetic rope. Only treated or protected fiber or synthetic ropes shall be used for or near any work involving the use of corrosive substances or chemicals

16.0 Wire synthetic, or fiber rope used for scaffold suspension shall be capable of supporting at least 6 times the rated load.

17.0 Wood Scaffolding

17.1 All lumber used in constructing ramps, platforms, staging, scaffolding, etc., must be of good quality, seasoned and straight grained, free of large loose or dead knots and knots in groups, checks, splits and other defects which tend to decrease the structural strength.

17.2 No nail should be subjected to direct pull. A minimum of four nails per joint is recommended. The size of the nail used will depend upon the load that must be carried by the joint and the thickness of the material being joined, one inch stock requiring 8d nails, two inch stock requiring 16d nails, etc

18.0 Tabular Steel Scaffolding

18.1 Steel scaffolding should be erected and used in accordance with manufacturer's recommendations. Proper seating and locking of all connections is of extreme importance

18.2 A light duty tube and coupler scaffold shall have all posts, bearers, runners, and bracing of nominal 2 inch O.D. steel tubing. The posts shall be spaced no more than 6 feet apart by 10 feet along the length of the scaffold. Other structural metals when used must be designed to carry an equivalent load. No dissimilar metals shall be used together on any tube coupler scaffold.

18.3 A medium duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2 inch O.D. steel tubing. Posts spaced not more than 6 feet apart by 8 feet along the length of the scaffold must be bearers of nominal 2 1/2 O.D. steel tubing.

18.4 A heavy duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2 inch O.D. Steel tubing, with the posts spaced not more than 6 feet by 6 feet 6 inches.

18.5 Posts must be accurately spaced, erected on suitable bases, and maintained plumb

18.6 Runners shall be erected along the length of the scaffold, located on both the inside and the outside posts at even heights. Runners shall be interlocked to the inside and the outside posts at even heights. Runners shall be interlocked to form continuous lengths and coupled to each post. The bottom runners must be located as close to the base as possible. Runners must be placed not more than 6 feet-6 inches on centers.

18.7 Bearers must be at least 4 inches but not more than 12 inches longer than the post spacing or running spacing

19.0 Manually Propelled Mobile Scaffolds

19.1 Cross bracing must be installed across the width of the scaffold at least every third set of posts horizontally and every fourth runner vertically. Such bracing must extend diagonally from the inner and outer runners upward to the next outer and inner runners.

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19.2 Longitudinal diagonal bracing on the inner and outer rows of poles shall be installed at approximately a 45 degree angle from near the base of the first outer post upward to the extreme top of the scaffold. Where the longitudinal length of the scaffold permits, such bracing shall be duplicated beginning at every fifth post. In a similar manner, longitudinal diagonal bracing shall also be installed from the last post extending back and upward toward the first post. Where conditions preclude the attachment of the bracing to the posts, it may be attached to the runners.

19.3 The entire scaffold shall be tied to and securely braced against the building at intervals not to exceed 30 feet horizontally and 26 feet vertically.

19.4 Guardrails made of lumber not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a mid-rail of 1 x 6 inch lumber (or other material providing equivalent protection), and toe boards shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toe boards shall be a minimum of 4 inches in height. Wire mesh shall be installed when needed.

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	Title: USE OF STARIWAYS AND LADDERS	Document No. : EHSG-21
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OBJECTIVE: To provide guidelines for the safe use of stairways and ladders by employees, contractors and visitors and to provide reference for the design and construction of fixed general industrial stairways (interior and exterior), portable extension ladders, stepladders, permanent fixed ladders and ladders used for construction.		
SCOPE: The OSHA rules and minimum requirements apply to stairways and common types of ladders used by employees and contractors in University operations including ladders used in construction, alterations, repair and demolition of worksites. Other types of special ladders combination step and extension ladders, stockroom stepladders, aisleway stepladders, shelf ladders and library ladders are not specifically covered by this section, however, use, maintenance and care sections apply.		
GUIDELINES: 1.0 A stairway or ladder must be provided at all worker points of access where there is a break in elevation of 19 inches (48 cm) or more and no ramp, runway, embankment or personnel hoist is provided. 2.0 Where there is only one point of access between levels, it must be kept clear to permit free passage by workers. If free passage becomes restricted, a second point of access must be provided and used. 3.0 All construction stairway and ladder fall protection systems required by these rules must be installed and all duties required by the stairway and ladder rules must be performed before employees begin work that requires them to use stairways or ladders and their respective fall protective systems. 4.0 Fixed stairs shall be provided for access from one structure to another where operations necessitate regular travel between levels and for access to operating platforms at any equipment which requires attention routinely during operations. Fixed stairs shall also be provided where access to elevations is daily or at each shift for such purposes as gauging, inspection, regular maintenance, etc., where such work may expose employees to acids, caustics, gases, or other harmful substances, or for which purposes the carrying of tools or equipment by hand is normally required. (This does not preclude the use of fixed ladders for access to fixed tanks, towers, and similar structures, overhead traveling cranes, etc. where the use of fixed ladders is a common practice.) Spiral stairways shall not be permitted except for special limited usage and secondary access situations where it is not practical to provide a conventional stairway. Winding stairways may be installed on tanks and similar round structures where the diameter of the structure is not less than five (5) feet. 5.0 The following apply to all stair-rails and handrails 5.1 Stairways having four or more rises, or rising more than 30 inches (76 cm) in height, whichever is less, must have at least one handrail provided on closed stairways preferably on the right side descending. A stair-rail must also be installed along each unprotected side or edge. When the top edge of a stair-rail system also serves as a handrail, the height of the top edge must not be more than 37 inches (94 cm) nor less than 36 inches (91.5 cm) from the upper surface of the stair-rail to the surface of the tread.		

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5.2 Vertical clearance above any stair tread to an overhead obstruction shall be at least 7 feet measured from the leading edge of the tread.

5.3 Employees should always use handrails whenever ascending or descending stairs

6.0 The following safety precautions shall be observed in the use of all ladders:

6.1 When portable ladders are used for access to an upper landing surface, the side rails must extend at least 3 feet (.9 m) above the upper landing surface. The ladder must be secured and a grasping device, such as a grab rail, must be provided to assist workers in mounting and dismounting the ladder. A ladder extension must not deflect under a load that would cause the ladder to slip off its support.

6.2 Ladders must be maintained free of oil, grease and other slipping hazards.

6.3 Ladders must not be loaded beyond the maximum intended load for which they were built beyond their manufacturers' rated capacity.

6.4 Ladders must be used only for the purpose for which they were designed.

6.5 Non self-supporting ladders must be used at an angle where the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder. Wood job-made ladders with spliced side rails must be used at an angle where the horizontal distance is one-eighth the working length of the ladder.

6.6. Fixed ladders must be used at a pitch no greater than 90 degrees from the horizontal, measured from the back side of the ladder.

6.7 Ladders must be used only on stable and level surfaces unless secured to prevent accidental movement.

6.8 Ladders must not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental movement. Slip-resistant feet must not be used as a substitute for care in placing, lashing, or holding a ladder upon slippery surfaces.

6.9 Ladders placed in areas such as passageways, doorways, driveways or where they can be displaced by workplace activities or traffic, must be secured to prevent accidental movement, or a barricade must be used to keep traffic or activities away from the ladder.

6.10 The area around the top and bottom of the ladders must be kept clear.

6.11 The top of a non self-supporting ladder must be placed with two rails supported equally unless it is equipped with a single support attachment.

6.12 Ladders must not be moved, shifted or extended while in use.

6.13 Ladders must have non conductive side-rails if they are used where the worker or the ladder could contact exposed energized electrical equipment.

6.14 Users are cautioned to take proper safety measures when metal ladders are used in areas containing electrical circuits to prevent short circuits or electrical shock.

6.15 The top or top step of a step-ladder must not be used as a step.

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6.16 Cross-bracing on the rear section of step-ladder must not be used for climbing unless the ladders are designed and provided with steps for climbing on both front and rear sections. 6.17 Ladders must be inspected by a competent person for visible defects on a periodic basis and after any incident that could affect their safe use. 6.18 Single-rail ladders must not be used. 6.19 When ascending or descending a ladder, employees must face the ladder. 6.20 Employee, contractors must use at least one hand to grasp the ladder when moving up or down the ladder. 6.21 An employee on a ladder must not carry any object or load that could cause the worker to lose balance and fall. 7.0 Structural Defects in Ladders 7.1 Portable ladders with structural defects, such as broken or missing rungs, cleats, or steps, broken or split rails, corroded components, or other faulty or defective components, must immediately be marked defective, or tagged with "DO NOT USE" or similar language and must be withdrawn from service until repaired. 7.2 Fixed ladders with structural defects, such as broken or missing rungs, cleats, or steps, broken or split rails, or corroded components, must be withdrawn from service until repaired. 7.3 Defective fixed ladders are considered withdrawn from use when they are immediately tagged with "DO NOT USE" or similar language; marked in a manner that identifies them as defective; or blocked (such as with a plywood attachment that spans several rungs). 7.4 Ladder repairs must restore the ladder to a condition meeting its original design criteria, before the ladder is returned to use. 8.0 Care and Maintenance of Ladders 8.1 To get maximum serviceability, safety and to eliminate unnecessary damage of equipment, good safe practices in the use and care of ladder equipment must be employed by the users. The following rules and regulations are essential to the life of the equipment and the safety of the user. 8.2 Ladders must be maintained in good usable condition at all times; the joint between the steps and side rails shall be tight, all hardware and fittings securely attached and the moveable parts shall operate freely without binding or undue play. 8.3 Metal bearings of locks, wheel pulleys, etc., shall be frequently lubricated. 8.4 Frayed or badly worn rope shall be replaced. 8.5 Safety feet and other auxiliary equipment shall be kept in good condition to insure proper performance. 8.6 Ladders shall be inspected frequently and those with defects shall be withdrawn from service for repair or destruction and tagged or marked as "DANGEROUS - DO NOT USE".		

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8.7 If ladders tip over, inspect ladder side rails for dents or bends, or excessive dented rungs; check all rung to side rail connections; check hardware connections; check rivets for shear.

8.8 If ladders are exposed to oil and grease, equipment should be cleaned of oil, grease, or slippery materials. This can easily be done with a solvent or steam cleaning.

9.0 Cages for Fixed Ladders

9.1 Horizontal bands must be fastened to the side rail ladders or directly to the structure, building or equipment for individual rung ladders.

9.2 Vertical bars must be on the inside of the horizontal bands and must be fastened to them.

9.3 Cages must not extend less than 27 inches (68 cm) or more than 30 inches (76 cm) from the center line of the step or rung and must not be less than 27 inches (68 cm) wide.

9.4 The inside of the cage must be clear of projections.

9.5 Horizontal bands must be spaced at intervals not more than 4 feet (1.2m) apart measured from center line to center line.

9.6 Vertical bars must be spaced at intervals not more than 9 1/2 inches (24 cm) apart measured from center line to center line.

9.7 The bottom of the cage must be between 7 feet (2.1 m) and 8 feet (2.4m) above the point of access to the bottom of the ladder. The bottom of the cage must be flared not less than 4 inches (10 cm) between the bottom horizontal band and next higher band.

9.8 The top of the cage must be a minimum of 42 inches (1.1 m) above the top of the platform or the point of access at the top of the ladder. Provisions must be made for access to the platform or the point of access.

10.0 Wells for Fixed Ladders

10.1 Wells must completely encircle the ladder

10.2 Wells must be free of projections.

10.3 The inside face of the well on the climbing side of the ladder must extend between 27 inches (68 cm) and 30 inches (76 cm) from the center line of the step or rung.

10.4 The inside width of the well must be at least 30 inches (76 cm).

10.5 The bottom of the well above the point of access to the bottom of the ladder, must be between 7 feet (2.1 m) and 8 feet (2.4 m).

11.0 Ladder Safety Devices and Related Support Systems for Fixed Ladders

11.1 All safety devices must be capable of withstanding, without failure, a drop test consisting of a 500 pound weight (226 kg) dropping 18 inches (41 cm).

11.2 All safety devices must permit the worker to ascend or descend without continually having to hold, push or pull any part of the device, leaving both hands free for climbing..

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11.3 All safety devices must be activated within 2 feet (.61 m) after a fall occurs and limit the descending velocity of an employee to 7 feet/sec (2.1 m/sec or less).

11.4 The connection between the carrier or lifeline and the point of attachment to the body belt or harness must not exceed 9 inches (23 cm) in length.

12.0 Training Requirements

A training program must be provided for each employee using ladders and stairways. The program must enable each employee to recognize hazards related to ladders and stairways and to use proper procedures to minimize these hazards. For construction operations, additional employee training is required.

Employees must be trained by a competent person in the following areas, as applicable

12.1 The nature of fall hazards in the work area.

12.2 The correct procedure for erecting, maintaining and disassembling the fall protection systems to be used.

12.3 The proper construction, use, placement and care in handling of all stairways and ladders.

12.4 The maximum intended load-carry capacities of ladders used.

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	Title: WELDING AND CUTTING MATERIALS	Document No. : EHSG-22
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OBJECTIVE: To provide safety guideline on proper welding, cutting materials by Qatar University employees and contractors.		
DEFINITION: Gas – Slower and easier to control than electric arc. Uses gas flame over metals until molten puddle is formed. Most popular fuels used with oxygen include acetylene. Arc – Two metals are joined by generating an electric arc between a covered metal electrode and the base metal. Oxygen Cutting - Metal is heated by gas flame and an oxygen jet does the cutting. Arc Cutting - Intense heat of electric arc melts away the metal.		
GUIDELINES: 1.0 General Requirement 1.1 When combustibles cannot be moved from the welding/cutting area, the requirements of NFPA 51B shall be followed. No cutting and welding operation will be permitted without authorization from the EHS Office. 1.2 Suitable fire extinguishers shall be available. 1.3 Fire watches are required if welding of cutting and combustibles in the area could be easily ignited by sparks. This could be greater than or less than 35 feet (10.67 meters) from point of operation. 1.4 Cutting or welding shall not be conducted in areas not specifically authorized by the EHS Office, in the presence of explosive atmospheres which exist or may develop, and where quantities of combustibles are store. 1.5 Contractor's Maintenance Engineer is responsible for the safe handling and use of the cutting and welding equipment. 1.6 Areas shall be made fire safe before cutting or welding is conducted. 1.7 No welding or cutting shall be done on used drums, barrels, tanks, or containers until they have been cleaned thoroughly. 1.8 All welding cables shall be placed so they are clear of passageways, ladders and stairways. 2.0 Oxygen-Fuel, Gas Welding and Cutting 2.1 Transporting, Moving, and Storing Compressed Gas Cylinders 2.1.1 Valve protection caps shall be in place. 2.1.2 Cylinders shall not be intentionally dropped, struck, or permitted to strike each other violently.		

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2.1.3 Cylinders shall be secured in an upright position by a chain or other suitable means.

2.1.4 Cylinder valves shall be closed when work is finished and when cylinders are empty or are moved.

2.1.5 When transporting cylinders by cranes, a cradle or suitable platform shall be used.

2.1.6 Valve protection caps shall not be used for lifting.

2.1.7 Cylinders shall not be moved unless the regulators are removed and valve protection caps are in place, unless they are secured on a special truck.

2.1.8 Cylinders shall not be placed so close to work that sparks, hot slag, or flame will reach them.

2.1.9 Cylinders shall be placed so that they will not become part of an electrical circuit.

2.1.10 Cylinders shall be placed in an upright position, chained or otherwise restrained to prevent falling.

2.2 Use of Fuel Gases

2.2.1 Only properly instructed and qualified employees, contractors will operate equipment using fuel gases.

2.2.2 Fuel gas shall not be taken into confined spaces.

2.2.3 Fuel gas and oxygen manifolds must be clearly identified and placed in well-ventilated area. The manifold hose connections must be such that the hose cannot be interchanged between fuel gas and oxygen manifolds. Header connections will be supplied.

2.2.4 Oxygen and fuel gas hoses must be easily distinguished from each other by color or surface characteristics. Torches must be inspected at the beginning of each shift for leaking valves, couplings, and connections. Pressure regulators must be in proper working order while in use.

2.2.5 Cylinders not having fixed hand wheels shall have keys, handles or non-adjustable wrenches on valves stems while in service.

2.2.6 Valves shall be closed before moving cylinders.

2.2.7 Valves shall be closed when work is finished.

2.2.8 Empty cylinder valves shall be closed.

2.2.9 Before connecting the regulator, the valve shall be opened slightly and closed immediately while the operator stands to one side of the outlet.

2.2.10 Acetylene cylinder valves shall be opened as little as one-half turn of the spindle - preferably no more than three-fourths of a turn.

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2.2.11 When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use.

2.2.12 Acetylene shall never be utilized at a pressure in excess of 15 pounds per square inch gage (p.s.i.g.) (1.06 kilograms per square centimeter).

2.3 Arc Welding and Cutting

2.3.1 Oxygen cylinders and fitting shall be kept away from combustible material, especially oil and grease, as oxygen is not compatible with these products.

2.3.2 Only the correct manual electrode holders shall be used. If the portion gripped by the hand contains current, it must be fully insulated against the maximum voltage encountered to ground.

2.3.3 Proper welding cables and connectors must be used and must be completely insulated. Splicing, if used, shall be equal to the insulating quality of the cable and shall not be located within 3.05 meters (10 feet) of the electrode holder.

2.3.4 Ground return cables must have a safe current-carrying capacity equal to or greater than the specified maximum output capacity of the units serviced. When a structure or pipeline is employed as a ground circuit, a determination must be made that the required electric contact exists at all joints.

2.3.5 The frames of all arc welding and cutting machines shall be grounded with a third wire or a separate wire which is grounded at the source of the current.

2.3.6 Arc welding or cutting operations shall be shielded by noncombustible or flameproof screens to protect employees and other persons in the vicinity from the direct rays of the arc.

2.3.7 Employees performing any type of welding, cutting or heating shall be protected by suitable eye protection equipment.

2.4 Resistance Welding

2.4.1 All equipment shall be installed by a qualified electrician.

2.4.2 A safety type disconnecting switch, circuit breaker or circuit interrupter shall be provided near the machine.

2.4.3 Operators shall be properly trained and judged competent to operate the equipment before being designated to do so.

2.4.4 Controls of all automatic air and hydraulic chargers shall be guarded against accidental activation.

2.4.5 All doors and panels shall be kept blocked on the resistance welding machines.

2.4.6 Appropriate shields shall be provided to protect workers and passing employees from the sparks.

2.4.7 Fire curtains shall be provided.

2.4.8 For spot and seam welding, voltage shall not exceed 480 volts during operation.

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2.5 Welding, Cutting, and Heating Relative to Preservation Coatings

2.5.1 The flammability of protective coatings must be determined before welding, cutting, or heating is commenced on such surfaces.

2.5.2 When coatings are highly flammable, they shall be stripped from the area to prevent ignition. Protective measures must be taken when the preservative coating is toxic.

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	Title: WALKING AND WORKING SURFACES, FLOOR OPENINGS	Document No. : EHSG-23
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines on working surfaces, floor openings and stairways to prevent trips and falls.		
GUIDELINES: 1.0 Walking-Working Surfaces 1.1 All shop areas, utility rooms, halls, and storerooms shall be kept clean and orderly. 1.2 All floors shall be kept clean and dry as possible. 1.3 Aisles used by material handling equipment shall be appropriately marked on the floor. 1.4 Aisles, passageways and floors shall be kept free of any obstructions such as protruding rails, splinters, holes or loose boards. 1.5 Covers or guardrails shall be provided to protect employees from open holes, ditches, etc. 2.0 Guarding Floor Openings, Wall Openings And Holes 2.1 Floor opening is any opening measuring at least 12 inches (30.48 cm) or more in any floor, roof, or platform through which a person may fall. 2.2 Every stairway floor opening shall be guarded by a standard railing. All exposed sides (except entrance) shall be guarded. 2.3 All ladder-way floor openings shall be guarded by a railing with toe boards and a swinging gate. 2.4 Every hatchway and chute floor opening shall be guarded by either a hinged floor opening with standard railing or a removable railing with toe board on two sides and fixed railings opening with standard railing or a removable railing with toe board on two sides and fixed railings with toe boards on all other exposed sides. 2.5 All pit and trap door openings infrequently used when the cover is not in place shall either be constantly attended by an employee or protected on all exposed sides by removable railings. 2.6 Every temporary floor opening including manholes, when the cover is not in place shall be constantly attended by an employee until the work requiring the opening has ended or protected by removable railings if posting of an employee is ineffective or not feasible. 3.0 Wall Openings 3.1 All wall openings where there is a drop of more than 4 feet (1.22 meters) shall be protected by a rail, roller, picket fence, half door or equivalent barrier.		

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3.2 Every temporary wall opening shall have adequate guards.

4.0 Open sided Floors, Platforms and Runways

4.1 Every open sided floor or platform 4 feet (1.22 meters) or more above the adjacent floor or ground level shall be guarded by standard railings.

4.2 Toe boards shall be provided when employees can pass beneath the open sides or falling materials could cause a hazard.

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 جامعة قطر QATAR UNIVERSITY	Title: HEAT STRESS	Document No. : EHSG-24
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines that will minimize the detrimental effects of excessive heat on employees who are required to work outdoors or within indoor environments with elevated temperatures.		
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2.0 Signs and Symptoms of Heat-Related Disorders

Heat related disorders may occur when there is an exposure to heat risk factors. The chart below illustrates some of the signs and symptoms associated with heat stress. If the employee is experiencing any of these symptoms, the employee should be taken to the medical clinic for treatment immediately

DISORDER	SIGNS	SYMPTOMS
Dehydration	Loss of work capacity Delayed response to stimuli	Fatigue Weakness Dry mouth
Heat Exhaustion	High pulse rate, confusion, anxiety Profuse sweating Low blood pressure Pale face, or flushing Body temperature increased but below 104 degrees F. Excessive thirst, decreased urine output	Fatigue, malaise Weakness Blurred vision Dizziness Headache Nausea Loss of appetite
Heat rash	Skin eruptions	Itching skin, prickly sensation
Heat Stroke	Red face Mental status changes such as Disorientation, Confusion or Irritability Hot, dry skin Erratic behavior Collapse Shivering Body temperature >104 F	May be same as those for heat exhaustion (see above)
Heat Cramps	Incapacitating pain in muscle	Muscle cramps (abdominal and lower extremities) Fatigued muscles
Heat Syncope	Brief fainting or near fainting behavior	Blurred vision

3.0 Preventive Controls

A control is a mechanism used to minimize or eliminate an exposure to a hazard, such as heat. There are three types of controls (e.g. engineering, administrative and personal protective equipment) that can be implemented to reduce exposure to excessive heat. Each person and situation is unique, so controls and their application will vary. Suggested controls are given in Suggested Measures to Prevent Heat Stress. Contact EHS Office for help in selecting the most appropriate preventive measures for your work.

Administrative controls, also known as work strategy controls, are strategies used by supervisors to limit exposure to a hazard. For example, changes to the work schedule (i.e., when and how the job is performed) can limit the amount of time an employee is exposed to elevated temperatures.

Engineering controls are physical changes made to the work environment, such as adding fans or air conditioning to an indoor environment.

Other than hats and loose-fitting clothing, there is a limited selection of personal protective equipment to reduce the risk of heat stress. Contact EHS office for help in evaluating the effectiveness of available personal protective equipment.

In some cases, personal protective equipment—such as impermeable protective clothing and respirators—may increase the risk of developing a heat-related disorder. If such PPE is truly necessary, administrative and engineering controls may be necessary to allow work in heat risk environments. Contact EHS for help with these decisions.

Supervisors, coworkers and employees themselves are responsible for monitoring for the signs and symptoms of heat-related disorders. See the above table for information on recognizing the signs and symptoms of impending heat stress. A supervisor or coworker is often in the best position to observe the onset of a heat-related disorder.

- 4.1 When heat stress risks are present, supervisors should regularly check workers (by observation and questions) for signs and symptoms of heat stress.
- 4.2 Take extra care to monitor those at high risk, such as employees who are older or overweight, employees who overexert themselves, and employees with chronic medical conditions including diabetes, heart or lung disease, thyroid disease or high blood pressure. Employees who take certain medications may also be at increased risk and need to check with their physician.
- 4.3 If you need to work outdoors or within indoor environments with elevated temperatures, monitor yourself for the signs and symptoms of heat-related illness, such as taking your own pulse.
- 4.4 Use a buddy system. When working in the heat, monitor the condition of your coworkers and have someone do the same for you.
- 4.5 Supervisors should check to ensure that employees are self-monitoring, and ask for their determinations.

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5.4 Employee’s Responsibility

Employees who work outdoors or within indoor environments with elevated temperatures have the following responsibilities.

- 5.4.1 Participate in your work unit’s heat stress training. Learn the signs and symptoms of heat stress, as well as risk factors.
- 5.4.2 Take extra care if you are at high risk. You may be at increased risk if you are older or overweight, you overexert, you have a chronic medical condition including diabetes, heart or lung disease, thyroid disease or high blood pressure. If you take medications, you should check with your doctor to see if you are at increased risk because of the effects of these medications.
- 5.4.3 Follow the preventive measures listed in your work unit’s HMP Job Safety Analysis.
- 5.4.4 Take time to acclimate to heat and humidity. A heat wave is stressful to your body. You will have a greater tolerance for heat if you limit physical activity until you become accustomed to it.
- 5.4.5 Stay hydrated by drinking small amounts of cool water frequently, to relieve thirst and maintain adequate urine output.
- 5.4.6 Wear appropriate clothing. Choose lightweight, light-colored, loose-fitting clothing.
- 5.4.7 Pace yourself. Start slowly and pick up the pace gradually.
- 5.4.8 Monitor yourself for the signs and symptoms of heat-related illness, described above.
- 5.4.9 When working in the heat, monitor the condition of your co-workers. Ask your coworker to do the same for you.
- 5.4.10 Promptly report to your supervisor any known or suspected unsafe conditions, or unsafe procedures.

6.0 Exposure Monitoring

Upon request, EHS Office will evaluate the workplace for heat stress risk and recommend ways to manage exposure to heat. Temperature exposure, the demands of the work, and protective equipment will be evaluated. Recommendations will address controls and safe exposure times and for a given level of heat stress.

7.0 Suggested Measures to Prevent Heat Stress

- 7.1 Slow down in hot weather. Your body’s temperature regulating system faces a much greater workload when temperature and humidity are high.
- 7.2 Heed early warnings of heat stress, such as headache, heavy perspiration, high pulse rate and shallow breathing. Take a break immediately and get to a cooler location. Watch for heat stress signs among your co-workers.
- 7.3 Dress lightweight, light colored clothing, such clothing reflects heat.
- 7.4 Drink plenty of water. Don’t let yourself “dry out”.
- 7.5 Increase your salt intake, preferably by adding salt to your food.
- 7.6 Try to get used to warm weather gradually. Take it easy for those first two or three hot days. Your body will have a better chance to adjust if you take it slow.

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7.7 Get out of the heat occasionally. Physical stress increase with time in hot weather. Take breaks in a cool, shady location.

7.8 Don't try to get sunburn while you are working. It's harder for your internal cooling system to work through sunburned skin. Wear a hat and long-sleeved shirt to prevent burning which we know can increase the risk of skin cancer.

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	Title: EFFECTIVE 5'S	Document No. : EHSG-25
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To ensure effective and standard practice of 5S at Qatar University		
Definition: "5 S" stands for 5 Japanese words all starting with S, this was translated into 5 English words also starting with S. 5 S is not only a matter of good housekeeping. It is a process to create more productive people and more productive University through motivation, education and practice of 5 S. It is a creation of a strong corporate filled with spirit of high productivity.		
GUIDELINES 1. Set at least 3 minutes each day doing 5S. 2. Maintain 5S as follows: 2.1 DESKS/WORKTABLES 2.1.1 Wipe your desk every morning. (<i>SEISO- Sweep</i>) 2.1.2 Clear your desk every after work. (<i>SEISO- Sweep</i>) 2.1.3 Dispose unnecessary items in your desk drawers. (<i>SEIRI- Sort</i>) 2.1.4 Do not place anything under your desks. (<i>SEITON- Systematize</i>) 2.1.5 Arrange items in your desk drawers neatly for easy retrieval. (<i>SEITON- Systematize</i>) 2.1.6 Do not pile up documents on your desk top. (<i>SEITON- Systematize</i>) 2.1.7 Clear your incoming/outgoing trays. (<i>SEISO- Sweep</i>) 2.1.8 Clean front and sides of your desks at least once a year. (<i>SEISO- Sweep</i>) 2.1.9 Do not place your personal belonging on your desk/table. (<i>SEITON- Systematize</i>) 2.1.10 Fix your desk/table when it is out of order. (<i>SHITSUKE-Self-discipline</i>) 2.2 CHAIRS 2.2.1 Place your chair under the desks after work. (<i>SEITON-Systematize</i>) 2.2.2 Return chair under table every after meeting. (<i>SEITON-Systematize</i>) 2.2.3 Do not hang coats, bags, etc. on your chair. (<i>SEITON-Systematize</i>) 2.2.4 Clean your chair regularly. (<i>SEISO-Sweep</i>) 2.2.5 Fix your chair when it is unstable or noisy. (<i>SHITSUKE-Self-discipline</i>) 2.3 CABINETS 2.3.1 Label contents in each cabinet at outer space. (<i>SEITON- Systematize</i>) 2.3.2 Divide cabinet drawers by partition for smaller items. (<i>SEITON-Systematize</i>) 2.3.3 Label each file for easy retrieval. (<i>SEITON- Systematize</i>) 2.3.4 Unless specified or necessary, do not place anything on top of cabinets. (<i>SEIKETSU- Standardize</i>) 2.4 TELEPHONES 2.4.1 Regularly clean your telephone body and dial with soft detergent. (<i>SEISO- Sweep</i>) 2.4.2 Set telephone wires neatly around your desk. (<i>SEITON- Systematize</i>) 2.4.3 Place your telephone at most convenient location for easy use. (<i>SEITON Systematize</i>) 2.5 OFFICE EQUIPMENT 2.5.1 Regularly clean your office machines with soft detergent. (<i>SEISO- Sweep</i>) 2.5.2 Neatly set electric wiring for safety and good appearance. (<i>SEITON- Systematize</i>) 2.5.3 Place expendable papers neatly at designated locations by type and size. (<i>SEITON- Systematize</i>) 2.5.4 Inspect machines regularly and take actions for required services. (<i>SHITSUKE- Self-discipline</i>) 2.5.5 Assign ownership/accountability to each office equipment. (<i>SEIKETSU- Standardize</i>)		

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2.6 NOTICE BOARD (BULLETIN BOARD)

2.6.1 Ensure that notices or information that are out of date are removed. (*SEIRI- Sort*)

2.6.2 Ensure that all information, data and graphs are regularly updated. (*SHITSUKE- Self-discipline*)

2.6.3 Items should be neatly arranged and properly secured. (*SEITON- Systematize*)

2.6.4 Pins must be readily available. (*SEITON- Systematize*)

2.6.5 Check that location of notice board is appropriate. (*SEIKETSU- Standardize*)

2.7 BOOK SHELVES

2.7.1 Classify books by category for easy retrieval. (*SEITON- Systematize*)

2.7.2 Always return books to their designated locations after use. (*SHITSUKE- Self-discipline*)

2.7.3 Keep books shelves clean and tidy. (*SEISO- Sweep / SEIKETSU- Standardize*)

2.7.4 Do not place anything other than books and reference materials in book shelves. (*SEITON- Systematize/ SHITSUKE- Self-discipline*)

2.7.5 Dispose outdated books and reference materials. (*SEIRI- Sort*)

2.8 BLACKBOARDS/WHITEBOARDS

2.8.1 Always clean the blackboards/whiteboards completely after each use. (*SEISO- Sweep*)

2.8.2 Check chalks or markers for replenishment. (*SEIRI- Sort / SEITON- Systematize*)

2.8.3 Clean erasers from time to time. (*SEISO- Sweep*)

2.9 CONFERENCE ROOMS

2.9.1 Do not allow any items other than those used for each meeting. (*SEIKETSU- Standardize*)

2.9.2 Replace all conference room equipment and materials to original locations after each use. (*SEITON- Systematize*)

2.9.3 Replace tables and chairs to original locations after use (*SEITON- Systematize*)

2.9.4 Switch off lights and air conditioners after use. (*SHITSUKE- Self-discipline*)

2.9.5 Be punctual at meetings. (*SHITSUKE-Self-discipline*)

2.10 GUEST/RECEIVING ROOMS

2.10.1 Immediately put all cups and saucers away after use. (*SEISO- Sweep, / SEIKETSU- Standardize*)

2.10.2 Clean up ash trays after use. (*SEISO- Sweep / SEIKETSU- Standardize*)

2.10.3 Clean up table tops and floor once a day. (*SEISO- Sweep / SEIKETSU- Standardize*)

2.10.4 Return tables and chairs to their original locations after use. (*SEITON- Systematize*)

2.11 HALLWAYS

2.11.1 Clean your shoes before entering the office. (*SEIKETSU- Standardize*)

2.11.2 Smoking is not allowed inside offices and hallways. Smoke in designated areas. (*SHITSUKE- Self-discipline*)

2.11.3 Do not place anything in hallways without prior permission. (*SEIRI- Sort,/ SEITON-Systematize, / SHITSUKE-Self-discipline*)

2.11.4 Avoid talking loudly along hallways. (*SHITSUKE- Self-discipline*)

3. Sort files, office equipment by frequency of use. Decide which of the items you use *frequently* and those you use *infrequently*, and then find appropriate storage places for them.

FREQUENCY OF USE	HOW TO STORE
• Less than once a year	Store within premises but outside work area
• Once every 2 – 6 months	Store within premises but outside work area
• Once a month	Store within premises but outside work area
• Once a week	Store within work area
• Once a day	Store within work area

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		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guideline and requirements involving material handling, whether performed manually or through automation to eliminate or reduce injuries.		
GUIDELINES 1.0 Materials Handling Methods 1.1. Inspect materials for slivers, jagged edges or slippery surfaces. 1.2 Get a firm grip on the object. 1.3 Keep fingers away from pinch points, especially when setting down materials. 1.4 When handling lumber, pipe, or other long objects, keep hands away from the ends to prevent them from being pinched. 1.5 Wipe off greasy, wet, slippery, or dirty objects before trying to handle them 1.6 Keep hands free of oil and grease. 1.7 Handles and holders should be attached to loads to reduce the chances of getting fingers pinched or smashed. 1.8 When the loads are heavy or bulky, the mover should wear steel-toed safety shoes or boots to prevent foot injuries if the worker slips or accidentally drops a load. 1.9 Use gloves, or other hand protectors to prevent hand injuries. 1.10 When opening a wire-bound bale or box, wear eye protection as well as stout gloves, and take special care to prevent the ends of the bindings from flying loose and striking their face or body. The same precaution applies to coils of wire, strapping, or cable. Use cutters that clamp ends when cut. 1.11 If material is dusty or toxic, follow Qatar University guidelines for hazardous substances. 2.0 Lifting and Carrying 2.1 Before employees are assigned to jobs requiring heavy and/or frequent lifting, make sure they are physically suited for the job. If a load is thought to be more than one employee can handle, assign two employees to the operation or supply materials handling equipment. Instruct all employees in the proper way to lift. 2.2. Proper Way to Lift Follow guidelines EHSG-18: Safe Lifting and Back Safety for proper lifting		

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3.0 Handling Barrels and Drums

When possible, when moving barrels and drums they should be moved by using a dolly or other mechanical devices.

If two employees are assigned to up-end a full drum, they should use the following procedures:

3.1 Stand on opposite sides of the drum and face each other;

3.2. Grasp both chimes (rolled edges at both ends of the barrel) near their high points, lift one end; press down on the other;

3.3. As the drum is up-ended and brought to balance on the bottom chime, release the grip on the bottom chime and straighten the drum.

3.4. When two employees are to overturn a full drum, they should use this procedure:

3.4.1 Make sure they have enough room. Cramped quarters can result in badly injured hands.

3.4.2 Both stand near each other, facing the drum. They grip the closest point of the top chime with both hands. Resting their palms against the side of the drum, they push until the drum balances on the lower chime.

3.4.3 They step forward a short distance, and each employee releases one hand from the top chime in order to grip the bottom chime. They ease the drum down to a horizontal position until it rests solidly on its side.

To roll a barrel or drum, an employee should push against the sides with his/her hands. To change direction of the roll, he/she should grip the chime, not kick the drum with his/her feet.

To lower a drum or barrel down a skid, turn it and slide it end-wise. Do not roll it. To raise a drum or barrel up a skid, two employees stand on opposite sides of the skid (outside the rails, not inside, and not below the object being raised). They roll the object up the incline. Handling drums and barrels can be hazardous, even when using utmost care. Special handling equipment and tools must be made available to make the job safer and easier.

4.0 Equipment and Handling

4.1 Hand Trucks

A truck designed for a specific purpose should be used only for that purpose. A curved bed truck should be used only for handling drums or other circular materials.

Foot brakes can be installed on wheels of two-wheeled trucks so that operators need not place their feet on the wheel or axle to hold the truck.

Handles should have knuckle guards.

Four-wheeled truck operations follow rules similar to those for two-wheeled trucks. Extra emphasis must be placed on proper loading. Four-wheeled trucks must be evenly loaded to prevent tipping. They are to be pushed rather than pulled, except for a truck that has a fifth wheel and a handle for pulling. Trucks shall not be loaded so high that operators cannot see where they are going.

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4.2 Powered Hand Trucks The truck should be equipped with a dead-man control, wheel guards, and an ignition key that can be taken out when the operator leaves the truck. No employees are to use powered hand trucks unless they have been trained. Training should include the operating instructions given in the truck manufacturer's manual. General instruction include: 4.2.1 Do not operate the truck with wet or greasy hands. 4.2.2 Lead the truck from right or left of the handle. Face direction of travel. Keep one hand on the handle. 4.2.3 Always give pedestrians the right of way. 4.2.4 Stop at blind corners, doorways, and aisle intersections to prevent collisions. 4.2.5 Never operate the truck faster than normal walking pace. 4.2.6 Only handle flammable or corrosive liquids when they are in approved containers. 4.2.7 Never allow additional employees to ride the truck, unless it is specifically designed for such purposes. 4.2.8 Do not indulge in horseplay. 5.0 Warehouse Storage 5.1 Make sure that materials do not obstruct fire, alarm boxes, sprinkler system controls, fire extinguishers, first-aid equipment, lights, and electric switches. 5.2 All exits and aisles must be kept clear at all times and shall be appropriately marked. 5.3 No Smoking signs must be posted where necessary throughout the warehouses. 5.4 Maximum safe load limits of floors within buildings and structures, in pounds per square foot, shall be conspicuously posted in all storage areas, except for floors or slabs on grade. Maximum safe loads shall no be exceeded. 5.5 Stored materials must not create a hazard. Storage areas must be kept free from accumulated materials that may cause tripping, fires, or explosions, or that may contribute to the harboring of rats and other pests. When stacking and piling materials, it is important to be aware of such factors as the materials' height and weight, how accessible the stored materials are to the user, and the condition of the containers where the materials are being stored. 6.0 Handling of Chemicals Refer to guidelines EHSG-10: Chemical Storage and Handling 7.0 Handling of Compressed Gases Refer to guidelines EHSG-11: Handling Storage and Use of Compressed Gases		

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OBJECTIVE:

To provide guidelines to improve your workstation or job to prevent injuries from occurring and to enhance the worker's comfort, health and productivity through ergonomics.

DEFINITION:

Ergonomics is fitting the job to the worker

Repetitive Stress Injuries - may also be referred to as Cumulative Trauma Disorders, injuries that develop gradually over weeks, months or years from repetitive movements, awkward postures, forceful exertions, vibration or compression (pressing against hard surfaces.)

GUIDELINES

1.0 Office Ergonomics

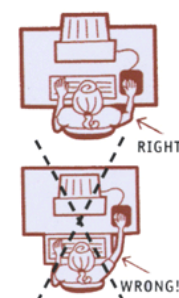
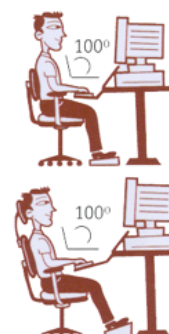
Almost everyone uses a computer in their daily lives. Many of us use computers in our jobs, to correspond with friends and family or to surf the internet. Those who use a computer extensively, either at work or at home, are at an increased risk of repetitive stress injuries. Use the following guidelines for Office Ergonomics

1.1 Maintain good posture when working. Sit all the way back in the chair against the backrest. Keep your knees equal to, or lower, than your hips with your feet supported.

1.2 Keep your elbows in a slightly open angle (100° to 110°) with your wrists in a straight position. The keyboard tilt can help you attain the correct arm position. A negative tilt (front of keyboard higher than back) helps when working in upright sitting positions. If you recline, a positive tilt (front of the keyboard lower than the back) might be necessary.

1.3 Avoid overreaching. Keep the mouse and keyboard within close reach. Center the most frequently used section of the keyboard directly in front of you.

1.4 Center the monitor in front of you at arm's length distance and position the top of the monitor 2" to 3" above seated eye level. You should be able to view the screen without turning or tilting your head up or down.





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1.5 Place source documents on a document folder positioned between your monitor and keyboard. If there is not enough space, place documents on an elevated surface close to your screen.



1.6 Use good typing technique. Float your arms above the keyboard and keep your wrist straight when keying. If you use a wrist-rest, use it to support your palms when pausing, not while keying.



1.7 Hit the keyboard keys with light force. The average user keys four times harder than necessary.



1.8 Keep your wrists straight and hands relaxed when using your pointer. Don't hold the pointer with a tight grip or extend fingers above the activation buttons. Avoid moving the pointer with your thumb or wrist. Movement should originate at your shoulder and elbow.



RIGHT!

1.10 Customize your computer settings. The screen font, contrast, pointer size, speed, and color can be adjusted to maximize comfort and efficiency.



1.11 Reduce glare. Place your monitor away from bright lights and windows. Use an optical glass glare filter when necessary.

RIGHT!

1.12 Take eye breaks and intermittently refocus on distant objects. Try palming your eyes in your hands to reduce eye fatigue.



WRONG!

1.13 Work at a reasonable pace and take frequent stretch breaks. Take 1 or 2 minute breaks every 20-30 minutes, and 5 minute breaks every hour. Every few hours, try to get up and move around.



1.14 Use of non-prescribed medications, or wrist splints, can often be more harmful than helpful. If you begin to develop symptoms, seek help. Early intervention can prevent future problems.



1.15 Your life style and physical fitness affect how you feel at work. Stay in shape by stretching and exercising regularly.

Many tasks performed in laboratories place workers at risk of muscle and joint aches and strains. Activities such as using pipettes, microscopes, and centrifuges can put stress on your body. Use the following guidelines to lower your exposure to risk:

2.1.1 Sit against the back of your chair. If you sit back and your feet dangle, lower the chair or adjust the foot ring or get a footrest.

2.1.2 Try tilting the seat forward or use a seat wedge to work in a forward posture without leaning or jutting your head forward.

2.1.3 Always try to work at a bench cut out. Cut outs can help you get close to your work while sitting against the back of your chair.

2.1.4 Don't jut your chin forward when working. Adjust the position of your work, the work surface, or the chair to sit in an upright, supported position.

2.1.5 Keep frequently used trays and supplies within close reach.

2.1.6 If standing for long periods, use supportive shoes and cushioned mats.

2.2.1 Keep your shoulders relaxed and your elbows close to your sides when working. Avoid reaching out to use instruments and work materials.

2.2.2 Maintain neutral or aligned wrist and arm postures when working. Sit close to your work area, keep objects close, and adjust your chair to match the height of the bench.

2.2.3 Avoid repetitive or forceful twisting and turning motions (i.e. opening valves or adjusting microscopes). Make sure valves and knobs are clean and in good working order.

2.2.4 Work with your wrist in a neutral or straight position as if you were shaking hands with someone.

2.2.5 Use light pressure when performing tasks such as pipetting.

2.2.6 Use electronic pipettes or light touch models whenever possible.

2.2.7 Select equipment and tools that are the right size for your hand.

2.2.8 Use padding and tubing to reduce pressure and force when working. For example, use rubber tubing on forceps to increase diameter and reduce pinch force. Soften sharp edges on work surfaces with padding.

2.2.9 Use thin, flexible gloves that fit properly. Ill fitting and poorly designed gloves increase pinch and grip forces when working.

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2.3 Avoid Static Positions

- 2.3.1 Weight shift often when standing to work. Use a stool or shelf to prop up a foot to relieve pressure on your back.
- 2.3.2 If standing in one spot for long periods, use cushioned floor mats or shoes with good support.
- 2.3.3 Alternate how you hold objects like forceps. Switch holding with the thumb and index finger, and the index and middle fingers to vary the task.
- 2.3.4 Vary activities. Change your position and take breaks every 20 minutes to rest muscles to rest and increase blood flow and circulation.

2.4 Use the following guidelines for using microscope:

- 2.4.1 Use a chair that provides good back support.
- 2.4.2 Sit close to your work surface.
- 2.4.3 Remove false fronts and supplies from under the bench work area.
- 2.4.4 Avoid leaning on hard edges.
- 2.4.5 Pad forearms and edges.
- 2.4.6 Keep elbows close by your sides.
- 2.4.7 Work with wrists in straight, neutral positions.
- 2.4.8 Adjust your chair, workbench, or microscope as needed to maintain an upright head position.
- 2.4.9 Elevate, tilt or move the microscope close to the edge of the counter to avoid bending your neck.
- 2.4.10 Use adjustable eye-pieces or mount your microscope on a 30° angle stand for easier viewing.
- 2.4.11 Keep scopes repaired and clean.
- 2.4.12 Spread microscope work throughout the day and between several people, if possible.
- 2.4.13 Take breaks. Every 15 minutes, close your eyes or focus on something in the distance. Every 30-60 minutes, get up to stretch and move





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2.5 Use the following guidelines for using pipett:

- 2.5.1 Use anti-fatigue floor mats if standing for long periods.
- 2.5.2 Sit supported against the backrest of your chair.
- 2.5.3 Sit or stand close to your work at bench cut outs.
- 2.5.4 Adjust your chair to work height rather than jutting out your chin or bending your neck down when working.
- 2.5.5 Elevate your chair rather than reaching up to pipette.
- 2.5.6 Do not twist or rotate your wrist while pipetting.
- 2.5.7 Alternate or use both hands to pipette.
- 2.5.8 Hold the pipetter with a relaxed grip
- 2.5.9 Use minimal pressure while pipetting.
- 2.5.10 Use light force or two hands to change tips
- 2.5.11 Use low profile tubes, solution containers and waste receptacles.
- 2.5.12 Select a light-weight pipetter sized for your hand.
- 2.5.13 Use pipetters with finger aspirators and thumb dispensers to reduce thumb strain.
- 2.5.14 Use latch-mode or electronic pipetters for repetitive pipetting.
- 2.5.15 Take a 1 to 2 minute break after every 20 minutes of pipetting.



2.6 Use the following guidelines for using fume hood and safety cabinet

- 2.6.1 Remove false fronts and supplies from under the work area.
- 2.6.2 Use anti-fatigue floor mats if standing for long periods.
- 2.6.3 Adjust your chair height and sit back in the seat using the backrest.
- 2.6.4 Use footrests and foot rings for leg support.
- 2.6.5 Avoid resting your forearms on hard edges.



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2.6.6 Pad forearms, elbows or hard edges. (Avoid interference with air flow.)

2.6.7 Position work supplies as close as possible.

2.6.8 Place equipment on approved turntables for easy retrieval.

2.6.9 Use diffused lighting to limit glare.

2.6.10 Take short breaks to stretch muscles and relieve forearm and wrist pressure

3.0 Library Ergonomics

People working in libraries perform numerous manual handling tasks, such as shelving books and maneuvering book carts. These tasks can put stress on the back, shoulders, arms, hands and wrists, and can increase the risk of repetitive stress injuries.

3.1 Use the following guidelines for shelving

3.1.1 Reaching overhead puts stress on your shoulders, arms and upper back. Use foot stool when shelving books on high shelves

3.1.2 Carrying too many books while shelving can put stress on your arms and shoulders. Carry only the book being shelved.

3.1.3 Bending at the waist puts stress on your back. Squat when shelving books on low shelves. Keep your back straight

3.1.4 Lifting heavy books can put stress on your wrists, arms and shoulders. Use two hands to lift heavy books, such as bound volumes of serials. Use two-handed power grip to disperse load and maintain neutral hand positions while shelving

3.1.5 Pinch grip strength is approximately 25% of the strength of using the whole hand, increasing the risk of wrist injury. Avoid use of a pinch grip when shelving

3.1.6 Switch back and forth between using your left and right arms for shelving to lessen the weight and strain on your dominant arm, hand and wrist. If practical, locate heavy books at waist height

3.1.7 Recommended Maximum Weights for Shelving Tasks

Lifting from waist level to top shelf	17.5 pounds
Lifting from floor to top shelf	11.0 pounds
Stand from squat with armload of books	17.0 pounds
Lifting from bottom row on cart to top row	17.0 pounds

These weights are approximate. Individual factors such as age, size and level of physical fitness will affect the amount you can lift

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3.2 Use the following guidelines to prevent accidents while using book carts

- 3.2.1 Walk at a normal or slow pace while pushing a cart
- 3.2.2 Ensure that the book cart allows sufficient foot space for your natural gait
- 3.2.3 Keep the book cart close to your body
- 3.2.4 DO NOT use a damaged cart, particularly one with faulty wheels
- 3.2.5 DO NOT use a cart in which your vision is obstructed, whenever possible
- 3.2.6 Push rather than pull the book cart
- 3.2.7 Pull book carts when exiting elevators
- 3.2.8 Pull carts through swinging doors
- 3.2.9 Push from the end, not the sides
- 3.2.10 Get help when moving a large or fully loaded cart
- 3.2.11 Use carts with handles, whenever possible
- 3.2.12 Prior to using a book cart, check for the following
 - 3.2.12.1 Loose and/or worn out wheels
 - 3.2.12.2 Stability
 - 3.2.12.3 Ease of movement
 - 3.2.12.4 Ease of maneuverability

4.0 Lifting and Carrying

For proper lifting and carrying refer to guidelines EHSg-18: Safe Lifting and Back Safety

GUIDELINES MANUAL		
	Title: SAFETY SIGNS AND TAGS	Document No. : EHSG-28
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines for the specification of safety signs that define specific hazards, and failure to designate them may lead to accidental injury to employees, students, visitors and to property damage.		
DEFINITION: Safety sign -refers to a surface on prepared for the warning of, or safety instructions of, students, workers or visitors who may be exposed to hazards. These specifications are intended to cover all safety signs except those designed for streets, highways, and marine regulations. Excluded from this definition are news releases, displays commonly known as safety posters, and bulletins used for employee education Safety Tag – refers to a device usually made of card, paper, pasteboard, plastic or other material used to identify a hazardous condition.		
GUIDELINES: 1.0 These specifications are intended to cover all safety signs except those designed for streets regulations. These specifications do not apply to University bulletin boards or to safety posters. 2.0 Danger Signs. 2.1 The DANGER header shall be used when there is a hazardous situation which has a high probability of death or severe injury. It should not be considered for property damage unless personal injury risk is present. 2.2 There shall be no variation in the type of design of signs posted to warn of specific dangers and radiation hazards. 2.3 All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary. 2.4 The colors red, black, and white shall be those of opaque glossy.		







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SAFETY SIGNS AND TAGS

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3.0 Caution Signs

3.1 The CAUTION header is used to indicate a hazardous situation which may result in minor or moderate injury. However, Caution should not be used when there is a possibility of death or serious injury. Caution should not be considered for property damage accidents unless personal injury risk is present.

3.1 Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices.

3.2 All employees shall be instructed that caution signs indicate a possible hazard against which proper precaution should be taken.

3.3 Standard color of the background shall be yellow; and the panel, black with yellow letters. Any letters used against the yellow background shall be black.

3.4 The colors shall be those of opaque glossy.

**4.0 Safety Instruction Signs**

4.1 General Safety Signs (SAFETY FIRST, BE CAREFUL, THINK) should indicate general instructions relative to safe work practices, reminders of proper safety procedures, and the location of safety equipment.

4.2 Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.

4.3 Standard color of the background shall be white; and the panel, green with white letters. Any letters used against the white background shall be black.

4.4 The colors shall be those of opaque glossy

**5.0 Notice Signs**

5.1 Notice headers provide information of a general type in order to avoid confusion or misunderstanding.





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6.0 Biological Hazard Signs

6.1 The biological hazard warning shall be used to signify the actual or potential presence of a biohazard and to identify equipment, containers, rooms, materials, experimental animals, or combinations thereof, which contain, or are contaminated with, viable hazardous agents.



6.2 For the purpose of this subparagraph the term "biological hazard," or "biohazard," shall include only those infectious agents presenting a risk or potential risk to the well-being of man.

7.0 Sign Design

7.1 All signs shall be furnished with rounded or blunt corners and shall be free from sharp edges, burrs, splinters, or other sharp projections.

7.2 The ends or heads of bolts or other fastening devices shall be located in such a way that they do not constitute a hazard

8.0 Nature of Wording

8.1 The wording of any sign should be easily read and concise.

8.2 The sign should contain sufficient information to be easily understood.

8.3 The wording should make a positive, rather than negative suggestion and should be accurate in fact.

9.0 Safety Tags

9.1 Safety tags shall be used as a means to prevent accidental injury or illness to employees, students and visitors who are exposed to hazardous or potentially hazardous conditions, equipment or operations which are out of the ordinary, unexpected or not readily apparent.

9.2 Safety tags shall be used until such time as the identified hazard is eliminated or the hazardous operation is completed.

9.3 Safety tags need not be used where signs, guarding or other positive means of protection are being used.



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9.4 Safety Tag Criteria

9.4.1 Tags shall contain a signal word and a major message.

9.4.2 The signal word shall be either "Danger," "Caution," or "Biological Hazard," "BIOHAZARD," or the biological hazard symbol.

9.4.3 The major message shall indicate the specific hazardous condition or the instruction to be communicated to the employee

9.4.4 The signal word shall be readable at a minimum distance of five feet (1.52 m) or such greater distance as warranted by the hazard.

9.4.5 The tag's major message shall be presented in either pictographs, written text or both.

9.4.6 The signal word and the major message shall be understandable to all employees who may be exposed to the identified hazard.

9.4.7 All employees shall be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.

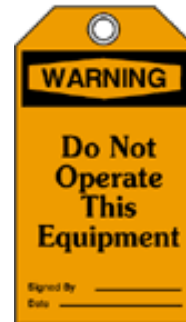
9.4.8 Tags shall be affixed as close as safely possible to their respective hazards by a positive means such as string, wire, or adhesive that prevents their loss or unintentional removal.

9.4.9 Danger tags shall be used in major hazard situations where an immediate hazard presents a threat of death or serious injury to employees. Danger tags shall be used only in these situations.

9.4.10 Caution tags shall be used in minor hazard situations where a non-immediate or potential hazard or unsafe practice presents a lesser threat of employee injury. Caution tags shall be used only in these situations.

9.4.11 Warning tags may be used to represent a hazard level between "Caution" and "Danger," instead of the required "Caution" tag, provided that they have a signal word of "Warning," an appropriate major message.

9.4.12 Biological hazard tags shall be used to identify the actual or potential presence of a biological hazard and to identify equipment, containers, rooms, experimental animals, or combinations thereof, that contain or are contaminated with hazardous biological agents.





Title:

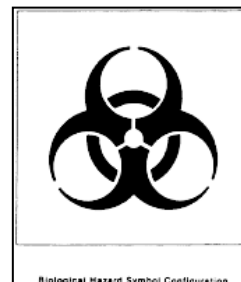
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9.4 12 The symbol design for biological hazard tags shall conform to the design shown in the right.



10.0 Color Coding

While the occupational safety and health standard does not specifically mandate colors to be used on accident prevention tags, the following color scheme is recommended for meeting the requirements.

10.1 "DANGER" TAG -- Red, or predominantly red, with lettering or symbols in a contrasting color



10.2 "CAUTION" TAG -- Yellow, or predominantly yellow, with lettering or symbols in a contrasting color.



10.3 "WARNING" TAG -- Orange, or predominantly orange, with lettering or symbols in a contrasting color.





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10.4 BIOLOGICAL HAZARD TAG -- Fluorescent orange or orange-red, or predominantly so, with lettering or symbols in a contrasting color.



11.0 National Fire Protection Administration (NFPA) 704 Diamond

The NFPA 704 Diamond is a standard placard used to identify the level of chemical hazard at fixed locations, such as warehouses, chemical storage tanks, and storage sheds. The NFPA diamond also is used on some transported containers. It's sometimes called the "fire diamond."



The NFPA 704 diamond (shown at right) is divided into four colored quadrants. Each quadrant provides information about the materials inside:

- Blue represents health hazard.
- Red represents flammability.
- Yellow represents reactivity.
- White provides information about special precautions.

Within the blue, red, and yellow quadrants is a number from 0 to 4. The number indicates the degree of risk associated with the material. The higher the number, the higher the risk. For some materials, the white quadrant contains symbols indicating special hazards

11.1 Interpreting NFPA 704 numbers and symbols

NUMBER	MEANING
HEALTH HAZARD (BLUE QUADRANT)	
4	Too dangerous to enter – vapor or liquid
3	Extremely hazardous – use full protection
2	Hazardous – use breathing apparatus
1	Slightly hazardous
0	Like ordinary material



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NUMBER	MEANING
FLAMABILITY (RED QUADRANT)	
4	Extremely flammable
3	Ignites at normal temperature
2	Ignites when moderately heated
1	Must be preheated to burn
0	Will not burn

NUMBER	MEANING
REACTIVITY (YELLOW QUADRANT)	
4	May detonate – evacuate area if material are exposed
3	Strong shock or heat may detonate – use monitors
2	Violent chemical change possible
1	Unstable if heated – use normal precautions
0	Normally stable

SPECIAL HAZARD (WHITE QUADRANT)	MEANING
W or "No water"	Indicates a material that is unusually reactive with water (e.g., sodium).
OX or "Oxidizer"	Indicates a material that is an oxidizer . A material that can cause or enhance the combustion of other materials, usually by providing oxygen. (e.g., ammonium nitrate).

GUIDELINES MANUAL		
	Title: HAZARD COMMUNICATION	Document No. : EHSG-29
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To develop and maintain a written hazard communication program, a listing of the hazardous chemicals present, provisions for labels on containers of chemicals, a system to make material safety data sheets (MSDS) available to employees, and training and informational programs for employees and students exposed to chemicals.		
GUIDELINES - Qatar University Hazard Communication Program shall use the Occupational Safety & Health Administration's (OSHA) Hazard Communication Standard (HCS) 29 CFR 1910.1200 as reference in our continuing effort to provide a healthy and safe workplace for our employees and students that are exposed to chemicals. - Business Operations Department (BOD) – Safety Unit shall provide the following information and/or training to all employees, students exposed to chemicals: - The hazardous chemicals known to be in the workplace. - The methods that will be employed to protect workers. - The precautionary methods employees, students must follow to protect themselves from hazardous chemicals - The detection of a release of hazardous chemicals. - Emergency procedures to follow should there be a release of hazardous chemicals and/or employee and students exposure to them. - The Head of BOD-Safety Unit is the overall coordinator of the University's program. The program is reviewed annually and is updated as needed. - Each employee, students of the University must be apprised of the content of the Hazard Communication Standard, the hazardous properties of chemicals they work with, and measures to take to protect themselves from these chemicals. - University employees, students working in research laboratories shall use the following guidelines for use and handling information for laboratory chemicals. EHSG-09: Laboratory Safety EHSG-10: Chemical Storage and Handling - Materials Safety Date Sheets (MSDS) - BOD-Safety Unit maintains an MSDS library for hazardous chemicals used or stored at the University. The MSDS Library is located at Business Operation Department (BOD) building. - All University employees may also obtain a copy of a Material Safety Data Sheet via a written request to BOD-Safety Unit. - MSDS's shall be readily available to all employees. Laboratory Supervisor must ensure that MSDS's for hazardous materials used are maintained in the offices where the employees are based.		



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6.5 MSDS's that meet the requirements of HCS shall be fully completed and received at the University either prior to, or at the time of receipt of the first shipment of any potentially hazardous chemical purchased from a vendor. It may be necessary to discontinue procurements from vendors failing to provide approved MSDS's in a timely manner.

6.6 Refer EHSG-13: Materials Safety Data Sheet for proper use of MSDS.

7. Labels

- 7.1 All hazardous chemicals throughout QU must be properly labeled.
- 7.2 Labels shall list the chemical identity, appropriate hazard warnings, and the name and address of the manufacturer, importer or other responsible party.
- 7.3 Transfer containers must be labeled with this information.
- 7.4 Immediate use containers (i.e., small containers into which materials are drained for use on that shift by the employee drawing the material) do not require labeling.
- 7.5 To meet the labeling requirements of HCS for other in-house containers, refer to the label supplied by the manufacturer.
- 7.6 All labels for in-house containers must be approved by BOD Safety Unit prior to their use.
- 7.7 Supervisors must check on a monthly basis to ensure that all containers in the area are labeled and that the labels are complete.

8. Training

8.1 All employees will be provided with information and training on hazardous chemicals in their workplace:

- 8.1.1 At the time of their initial employment.
- 8.1.2 Whenever a new hazardous chemical is brought into their workplace.
- 8.1.3 At least annually.

8.2 All affected employees are required to participate in this training. The training will be provided or arranged by the EHS Office.

8.3 The training will emphasize the following:

- 8.3.1 A summary of the standard and this written program.
- 8.3.2 Hazardous chemical properties including visual appearance, odor and the methods that can be used to detect the presence or release of hazardous chemicals.
- 8.3.3 Physical and health hazards associated with potential exposure to workplace chemicals.
- 8.3.4 Procedures to protect against hazards including the use of personal protective equipment, work practices, and emergency procedures.

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8.3.5 Hazardous chemical spill and leak procedures.

8.3.6 Where MSDS's are located, how to understand their content, and how employees may obtain and use appropriate hazard information.

8.3.7 Supervisors must ensure that training is complete before an employee begins working with a new hazardous substance.

9. Hazard Chemical Release, Spill or Exposure

Use the following guidelines for hazard chemical release, spill or exposure:

9.1 EHS-30: Emergency Preparedness and Response – Biological Spill

9.2 EHS-32: Emergency Preparedness and Response – Chemical Spill.

GUIDELINES MANUAL		
	Title: EMERGENCY PREPAREDNESS AND RESPONSE – TRAPPED PERSON/S IN A LIFT	Document No. : EHS-30
		Revision No. : 0
		Effectivity Date : April 1, 2011
		Page : 1 of 3
OBJECTIVE: To provide guidelines for the systematic response, coordination and reporting of a person trapped in a lift		
GUIDELINES: 1. Introduction The release of passengers should only be carried out by authorized persons (O & M Contractor, QU Fire Section), who have received the necessary instruction from lift manufacturer. It is dangerous for any other person to attempt to do so. Failure to take adequate precautions may render the authorized person concerned guilty of negligence should an accident occur. Central Service Unit Control Room Operator shall establish communication between the passenger trapped within the lift car and persons outside as rapidly as possible in order to reassure passengers. Ensure the release of passenger is conducted by two authorized persons. University nominated authorized persons for implementing release operations telephone number: 1.1 Fire Section (Fireman) - 4403 3999 1.2 Reliant Contractor 1.1 O&M Contractor Office - 4403 3540 1.2 KONE Technician - 55871971		
2. Procedure for Safe Release CSU Control Room Operator should inform the trapped passengers that authorized assistants will be in attendance to conduct rescue. CSU Control Operator shall inform immediately Reliant Contractor and the Fire Section to proceed to the location. 2.1 Manual Movement of Lift ➤ Upon the reaching the site, Reliant or Fireman shall conduct assessment of the situation. ➤ Do not attempt to conduct rescue alone. ➤ Open the door lift using the key provided by the manufacturer. ➤ If the lift is stuck at the floor level, release the passenger. Reliant Contractor shall conduct safety check. Proceed to item 2.3 ➤ If the lift is stuck in the middle of the floor level, move the lift manually. Refer to item 2.2.		

GUIDELINES MANUAL		
	EMERGENCY PREPAREDNESS AND RESPONSE – TRAPPED PERSON/S IN A LIFT	Document No. : EHS-30
		Revision No. : 0
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2.2 Moving the Lift ➤ Switch off the power supply at the main switch. ➤ Warn any passenger in the lift that it is about to be moved and, therefore, to stand clear of the doors and remain in the car until instructed to leave. ➤ Check that all landing doors are closed and locked. ➤ Ensure that the car doors are closed. ➤ Fireman shall position himself where motion of the car can be established and to confirm and communicate the movement and position of the car to Reliant Contractor in the machine room. 2.3 Release of Passengers After Moving the Lift ➤ Release passengers by opening the doors using the release key of the lift at the floor level. ➤ After release, leave the lift switch off and ensure all landings doors are closed and locked. ➤ Reliant Contractor shall conduct the following safety check before putting the lift into service. • Place a sign in the lift "Do Not Use Under Maintenance" in the door lift to warn user. • Test the safety devices. Test alarm bells, stop switches, intercoms, telephone hookups, and emergency lighting systems. • Ride the lift, paying attention to the smoothness of starting and stopping to any unusual sounds (such as squeaks or scrapes), and to any unusual movements, vibrations, or odors. Close your eyes to increase awareness on irregularities. • Conduct maintenance. Call lift manufacturer if necessary. 3. Procedure of BOD-CSU Control Room Operator Attendant 3.1 Inquire from the caller exact details of the relayed information as mention hereunder. ➤ Brief description of concern/condition. ➤ Identify location of the subject concern/condition. ➤ Name of Concerned Caller. ➤ Contact Tel. No. of Concerned Caller: ➤ Date and time of received call. Remind the caller / trapped person by saying: ➤ Our technical personnel is on the way for your rescue. ➤ Do not panic. ➤ Do not touch anything on controller. 3.2 Call Fire and Safety Section (FSS) at telephone number 4403 3999 and relay the information in item 1.		

GUIDELINES MANUAL



Title:

EMERGENCY PREPAREDNESS AND RESPONSE – TRAPPED PERSON/S IN A LIFT

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3.3 Relay the information on item 1 to our O & M representative at the Control Room. Following concurrent O & M contact numbers/ persons.

- O & M Contractor Office - 4403 3540
- KONE Technician - 55871971

3.4 Contact the following personnel for information of the incident to wit:

- QU Safety Officer - 4403 3528

3.5 Monitor the response of FSS at site after a certain period (e.g. 3 to 5 minutes) and extract update of situation. Contact and coordinate with FSS personnel on-site for update of rescue operation.

Notes:

- FSS shall conduct (and/or oversee the O & M technician) for the rescue effort based on the established safety rescue procedure for the trapped personnel in the lift.
- Ensure that FSS have obtain relevant information (e.g. names and contact number of the trapped person/s) upon evacuation of the personnel.

3.6 Update the status of the whole rescue and disseminate the information for further direction from QU Engineer Representative.

3.7 Checked the latest PPM of a particular lift in question for relevant information in the service reports and/or call the concerned O & M Engineer in-charged for submission of the incident/ technical report.

3.8 To follow up update report from the O & M Engineer in-charged for the technical evaluation that should be further submitted by the OEM specialist contractor with the following contacts, to wit:

- Mitsubishi (ETA) - 4442 0940 / 4432 8309
- Sanyo - 4432 1297 / 4432 1298 / 4432 5454
- Otis - 4442 8186
- Jolift / Tyssen Krupp - 4434 1950

GUIDELINES MANUAL		
	Title: EMERGENCY PREPAREDNESS AND RESPONSE - FIRE	Document No. : EHSG-31
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines for systematic response, coordination and reporting of fire accident during fire emergency and to minimize damage to property and prevent injuries.		
GUIDELINES: 1.0 Fire at QU Main Campus 1.1 Employee, student or anyone who witness the fire shall perform the following course of action: 1.1.1 Push the fire alarm button nearest to the fire location. 1.1.2 Call the following emergency numbers and ask for help. ➤ Central Service Unit (CSU) – 4403 3600 ➤ Fire Section – 4403 3999 1.1.3 Report the exact location of the fire. 1.1.4 Inform the nearest security guard about the fire. 1.1.5 Extinguish the fire if it is on early stage and if you are trained to do so. Leave the building by the nearest safe exit. 1.1.6 Do not stop to collect personal belongings. 1.1.7 Do not use the lifts. 1.1.8 Proceed to the designated assembly point indicated in the emergency evacuation plan posted in your location. 1.2 Security personnel shall perform the following course of action: 1.2.1 Security supervisor shall: 1.2.1.1 Mobilize security personnel to the location of fire. 1.2.1.2 Provide instruction to security personnel for securing the area and preventing the entry of unauthorized person. 1.2.1.3 Provide instruction to security personnel for securing the recovered documents and equipments. 1.2.1.4 Coordinate with QU Fire Section and Electromechanical Unit.		

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1.2.2 Security Guard near the location of fire shall: 1.2.2.1 If the employee, student, or witness is not able to notify CSU and/or Fire Section about the fire, the security guard receiving the information from the witness shall call CSU and/or Fire Section. 1.2.2.2 Report the location of fire. 1.2.2.3 Extinguish the fire if it is on early stage and if trained to do so. 1.2.2.4 Inform security supervisor. 1.2.3 Security Personnel shall: 1.2.3.1 Secure and cordon the area to avoid entry of unauthorized person. 1.2.3.2 Secure the evacuation area and assign security member. 1.2.3.3 Secure and cordon designated salvage area for recovered documents, and equipments. 1.2.3.4 Assist the incoming Fire Brigade Team from Civil Defense. 1.2.3.5 Regulate the flow of traffic. 1.2.3.6 Provide directions to employees, students, contractors and visitors to evacuation area 1.3 Fire Section personnel shall perform the following course of action: 1.3.1 The Leading Fireman shall: 1.3.1.1 Mobilize the fire fighting team upon receiving the information and location of fire. 1.3.1.2 Coordinate with Electromechanical Section of BOD to de-energize/isolate electrical equipment or any electrical source from the fire scene. 1.3.1.3 Provide instruction to fire fighting team during rescue and evacuation. 1.3.1.4 Coordinate with Fire Brigade Team of Civil Defense if their presence is needed during fire. 1.3.1.5 Coordinate with the QU Medical Clinic, if their assistance is needed, for treatment of injured personnel. 1.3.1.6 Inform Central Service Unit Control Room to call 999 if the fire cannot be control by QU Fire Section. 1.3.2 Fireman shall: 1.3.2.1 Wear fire fighting suits. 1.3.2.2 Go to the location of fire.		

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1.3.2.3 Bring additional fire extinguisher. 1.3.2.4 Bring Self Contained Breathing Apparatus. 1.3.2.5 Extinguish the fire using fire extinguisher if it is still on early stage. Use hydrant and fire hose if the fire extinguisher is not capable of extinguishing the fire. 1.3.2.6 Conduct rescue and evacuation. 1.3.2.7 If the rescue and evacuation cannot be performed, provide assistance to Fire Brigade Team of Civil Defense in conducting rescue and evacuation. 1.2.3.8 Provide assistance to Fire Brigade Team of Civil Defense in extinguishing the fire if necessary. 1.4 The QU Medical Team shall perform the following course of action: (applicable only during office hours) 1.4.1 Coordinate with Leading Fireman if medical assistance is needed. 1.4.2 Mobilize medical equipments. 1.4.3 Provide treatment to injured personnel. 1.4.4 Coordinate with the nearest hospital for possible medical treatment of injured personnel. 1.4.5 Provide assistance to Emergency Medical Services of Civil Defense if necessary. 1.5 Electromechanical Unit personnel and/or O & M contractor shall perform the following course of action: 1.5.1 De-energize/isolate electrical equipment or any electrical source from the fire scene. 1.5.2 Energize electrical equipment or electrical source after the repair completion of the damage equipment or electrical source. 1.6 The QU Leading Fireman and/ or Fire Brigade Team Leader of Civil Defense shall declare All Clear signal that fire has been stopped. 1.7 The QU Leading Fireman shall prepare fire accident report and submit to Safety Unit office. 1.8 Safety Unit shall submit final report on fire accident to the Electromechanical Section for review. 1.9 Electromechanical Section shall submit report on fire accident to the Director of Business Operations Department. 2.0 Fire at Old University (Environmental Studies Center) 2.1 Employee or anyone who witness the fire shall perform the following course of action: 2.1.1 Push the fire alarm button nearest to the fire location.		

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2.1.2 Inform the nearest security guard about the fire. 2.1.3 Report the exact location of the fire. 2.1.4 Extinguish the fire if it is on early stage and if you are trained to do so. 2.2 Security personnel shall perform the following course of action: 2.2.1 Security Guard near the location of fire shall: 2.2.1.1 Extinguish the fire if it is on early stage and if trained to do so. 2.2.1.2 Call other Security personnel for help. 2.2.1.3 Call 999 for help. 2.2.1.4 Inform security supervisor. 2.2.2 Security Personnel responding to the emergency shall: 2.2.2.1 Extinguish the fire if it is on early stage and if you are trained to do so. 2.2.2.2 Secure and cordon the area to avoid entry of unauthorized person. 2.2.2.3 Secure the evacuation area and assign security member. 2.2.2.4 Secure and cordon designated salvage area for recovered documents, and equipments. 2.2.2.5 Assist the incoming Fire Brigade Team from Civil Defense. 2.2.2.6 Regulate the flow of traffic. 2.2.2.7 Provide directions to employees, students, contractors and visitors to evacuation 2.2.3 Security Supervisor shall perform the following course of action: 2.2.3.1 Assist the Fire Brigade Team from Civil Defense. 2.2.3.2 Inform the Director of Business Operations Department. 2.2.3.3 Inform the QU Fire Section. 2.3 The Fire Brigade Team Leader of Civil Defense shall declare All Clear signal that fire has been stopped. 2.4 The QU Leading Fireman shall prepare fire accident report and submit to Safety Unit. 2.5 Safety Unit shall submit final report on fire accident to Electromechanical Section for review. 2.6 Electromechanical Section shall submit report on fire accident to the Director of Business Operations Department.		

GUIDELINES MANUAL		
	Title: EMERGENCY PREPAREDNESS AND RESPONSE – CHEMICAL SPILL	Document No. : EHSG-32
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines for the effective response during chemical spill.		
GUIDELINES: 1. Chemical spillage at Laboratory 1.1 Leave spill area immediately. 1.2 Remove employees and students from danger of toxic vapors or gases, and direct them to nearest exit. 1.3 Alert neighboring rooms. 1.4 Do not use elevators. 1.5 Block off all entrances to the spill site and prevent people from entering the contaminated area. 1.6 Close fire doors, isolate and post area. 1.7 Never re-enter a chemical spill area without proper protective equipment. You may endanger your life and health. 1.8 Protect floor drains. Use spill socks and absorbent materials if needed. 1.9 Conduct clean-up using chemical spill kit. 1.10 Notify your Laboratory Head. 1.11 Notify BOD – Safety Unit, telephone number 4403 3528. 1.12 Notify QU Medical Clinic in case of injured Laboratory personnel or students, telephone number 4403 3294 / 4403 5050. 1.13 Notify Security Office if securing the area of spill is needed, telephone number 4403 3566/ 4403 3564. 1.14 Notify Fire Section for fire or explosion hazards in the area, telephone number 4403 3999. 1.15 Notify BOD- CSU Control Room , telephone number 4403 3600.		

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1.16 BOD – CSU Control Room Operator shall call 999 if: 1.16.1 Chemical spill cannot be contained and outside resource is needed to contain the spill. 1.16.2 Fire or explosion hazards cannot be contained by QU Fire Section. 1.16.3 There are a potentially life threatening gases and/or vapors. 2. Chemical Spillage at Chemical Store 2.1 Leave spill area immediately. 2.2 Remove employees from danger of toxic vapors or gases, and direct them to nearest exit. 2.3 Block off all entrances to the spill site and prevent people from entering the contaminated area. 2.4 Close fire doors, isolate and post area. 2.5 Never re-enter a chemical spill area without proper protective equipment. You may endanger your life and health. 2.6 Protect floor drains. Use spill socks and absorbent materials if needed. 2.7 Conduct clean-up using chemical spill kit. 2.8 Notify BOD- Safety Unit, telephone number 4403 3528. 2.9 Notify QU Medical Clinic in case of injured employees, telephone number 4403 3294 / 4403 5050. 2.10 Notify Security Office if securing the area of spill is needed, telephone number 4403 3566/ 4403 3564. 2.11 Notify Fire Section for fire or explosion hazards in the area telephone number 4403 3999. 2.12 Notify BOD –CSU Control Room, telephone number 4403 3600. 2.13 BOD –CSU Control Room Operator shall call 999 if: 2.13.1 Chemical spill cannot be contained and outside resource is needed to contain the spill. 2.13.2 Fire or explosion hazards cannot be contained by QU Fire Section 2.13.3 There are a potentially life threatening gases and/or vapors.		

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3. BOD – Safety Unit shall declare All Clear signal that the chemical spill is already contained.
4. Laboratory Supervisor / Chemical Store in-charge shall prepare chemical spill accident report.
5. BOD – Safety Unit shall conduct investigation and recommend corrective actions to prevent recurrence.

GUIDELINES MANUAL		
	Title: EMERGENCY PREPAREDNESS AND RESPONSE – MEDICAL DISTRESS / INJURY	Document No. : EHSG-33
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines for the effective response during medical distress and/or injury to an employee of student.		
GUIDELINES: 1. Do not panic. 2. Don't move the person; call immediately the security guard nearest to your area. Ask him/her to call QU Medical Clinic at telephone number 4403 3294/5050. 3. If the person requires medical treatment, Security shall call BOD-CSU Control Room at telephone number 4403 3600. 4. BOD – CSU Control Room Operator shall call 999 for help. 5. If the incident happened during weekends and holidays, call Security Office at telephone number 4403 3566/ 4403 3564, and tell security to call 999. 6. Do not conduct first aid if you are not an accredited first aider, it may aggravate the situation. Wait for medical assistance. 7. Upon arrival of medical assistance, provide your name and describe the type of emergency you have. 8. Security shall conduct an investigation. Report shall be submitted to the Office of the Director of Business Operation Department.		

GUIDELINES MANUAL		
	Title: EMERGENCY PREPAREDNESS AND RESPONSE - SANDSTORM	Document No. : EHS - 34
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines for the effective response during sandstorm.		
DEFINITION: Sandstorm is a severe meteorological condition commonly observed in desert area. It is characterized by dust storm and violent wind. Sandstorm breaks out when the suspended dust particle in air goes above the normal level. Sandstorm usually happens due to change in air temperature. During summer time, desert surface becomes too hot due to scorching heat. Wind close to the surface level becomes heated and blows fast causing the sand dunes to move. In arid and semi-arid locality high air pressure gradient increases wind velocity and the resulting thunderstorms creates sandstorm. The vertical stretch of sandstorm is determined by extent of stability of the ground level.		
COMMON FEATURES OF SANDSTORM ➤ Sandstorm winds carries huge amount of dust particles. The front face of the storm comes with a dust wall of height of around one mile. ➤ Sandstorm affects the ground level most severely. Its effect decreases as it moves up. ➤ Duration of sandstorm can vary depending upon its severity. It can continue for just few hours or extend for few days. ➤ Sand grains carried by sandstorm wind affects rock surface coming on its way. Softer parts of the rocks area are damaged first. ➤ Sandstorms result in creation of sand dunes. Strong winds make boundary line of the sand dunes narrower and relatively irregular. ➤ Due to huge amount of dust particle, sandstorm causes a decrease in visibility down to the zero level.		
GUIDELINES: 1. When sandstorm comes, close all windows, doors and other opening nearest to your location. 2. Avoid going out of the building. 3. Employees working outside shall take a shelter when the sandstorm comes. 4. Use eye protection if going out of the building.		

GUIDELINES MANUAL



Title:

**EMERGENCY
PREPAREDNESS AND
RESPONSE - SANDSTORM**Document No. : **EHS - 34**

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5. Wash your eyes with continuous flow of water if hit in the eyes by sandstorm.
6. Security shall provide updates on the status of sandstorm, and All Clear signal shall be given to all employees, students, contractors and visitors if safe to go out.
7. Any injuries during sandstorm shall be reported to BOD – CSU Control Room at telephone number 4403 3600. CSU Control Operator shall coordinate with QU Medical Clinic at telephone number 4403 5050 for treatment (only during office hours). CSU Control Operator shall call 999 for help after office hours.

GUIDELINES MANUAL		
	Title: Emergency Preparedness & Response - Bomb Threats	Document No. : EHSG-35
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines on how to receive a bomb threat call. To provide guidelines to be implemented when a bomb attack is threatened To instill confidence and reduce the potential property loss and personnel injury during bomb threat.		
GUIDELINES: 1. 0 How and who may receive a bomb threat? 1.1 A bomb threat may be received by phone, mail or message at any time. 1.2 Phone threats may be received by the security guards, students, employees, faculties. 2. 0 What should be done to obtain information from the caller? 2.1 Every effort should be made to obtain detailed information from the caller such as: 2.1.1 Exact location of the bomb. 2.1.2 Time of detonation. 2.1.3 Description of device or container. 2.1.4 Type of device? Chemical? Biological? Explosive? 2.1.5 Reason for call or threat. 2.2 The person receiving the call should also note such details of the call, such as: 2.2.1 Date and time of call. 2.2.2 Exact language, dialect used. 2.2.3 Sex of caller (male or female). 2.2.4 Estimated age of caller. 2.2.5 Peculiar or identification accent. 2.2.6 Identifiable background noise such as stereo music, trucks, street cars or other conversation. 3.0 What to do when bomb threat call is received? 3.1 Be calm and courteous. 3.2 Listen and do not interrupt the caller. 3.3 Try to keep the caller in line as long as possible. 3.4 Notify your supervisor or nearest co-employee of your activity by a prearranged signal while the caller is on the line. 3.5 Have someone trace the call by calling the operator using another phone. If the line is far-reaching have someone else secretly listen in to the conversation (your witness is corroborated). 4.0 After receiving bomb threat call, report immediately to security at telephone number 4403 3566/ 4403 3564. 5.0 After receiving the report on bomb threat, security officer shall call 999.		

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	Title: Emergency Preparedness & Response - Bomb Threats	Document No. : EHSG-35
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 6.0 Conduct of Search		
6.1 Search the building without evacuation.		
6.1.1 The responding police shall conduct the search of the building without creating panic or apprehension from the employees. They may be assisted by selected Qatar University security personnel.		
6.1.2 Any item or containers that are unusual of foreign to the normal operation of the University shall be reported immediately to the police who shall handle the item under suspicion.		
6.2 Search the buidling with evacuation.		
6.2.1 If the decision is to evacuate the building, the following announcement shall be made over the phone or public address system:		
“ A report has been received that makes it necessary for everyone to leave the building for a few minutes. Please leave your rooms and places of work immediately using available exits towards the designated area for evacuation . Remain at the evacuation area until further instruction. <u>Don't panic.</u>”		
6.2.2 As soon as the police arrived, the search shall be delegated to them and shall assume responsibility of the bomb search, recovery and disposal.		
6.2.3 After the evacuation and return of personnel to the building, an additional message shall be given stating that:		
“ The building has been searched and that business will resume as normal. All personnel will continue their regular daily schedule of work.”		
7.0 Suspicious Object Located		
7.1 Report the location and accurate description of the object to Security Office telephone number 4403 3566/ 4403 3564 . This information shall be relayed immediately to the Security Head which shall notify the police and/or fire department. These officers shall be met and escorted to the scene.		
7.2 Security Officer shall:		
7.2.1 If absolutely necessary, place sandbags or mattresses, never metal shields, around the suspicious object. Do not attempt to cover the object.		
7.2.2 Identify the danger area and block it off with clear zone of at least 300 feet including floors below and above the object.		
7.2.3 Check to see that all doors and windows are open to minimize primary damage from the blast and secondary damage from fragmentation.		
7.2.4 Evacuate the building.		
7.2.5 Prohibit re-entry into the building until the device has been removed/ disarmed and until the area is declared clear.		

GUIDELINES MANUAL		
	Title: EMERGENCY PREPAREDNESS AND RESPONSE – BIOLOGICAL SPILL	Document No. : EHSG-36
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines for the effective response during biological spill.		
DEFINITION: Biological Spill - The release or spill of biohazardous material will require a different response based on several factors including the actual agent and the associated risks, the amount of material spilled, type of spill and the location of the spill. Biological Hazard - Processes of organic origin or those conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Aerosols - biological agents are dispersed into the air, forming a fine mist that may drift for miles. Inhaling the agent may cause disease in people or animals.		
GUIDELINES: 1. Biohazardous Spills in an Open Laboratory. 1.1 Immediate Actions 1.1.1 Get everyone out of the affected area, closing the door and warning others not to enter the contaminated area. 1.1.2 Notify the Laboratory Supervisor/ In-charge and the BOD – Safety Unit at telephone number 4403 3528. 1.1.3 Remove and containerize contaminated garments for autoclaving and thoroughly wash hands and face, or shower if available 1.1.4 Determine the necessity for medical attention for persons exposed to the potentially hazardous materials. 1.2 Decontamination Procedures 1.2.1 Wait 30 minutes to allow dissipation of aerosols created by the spill. 1.2.2 Wear protective clothing when entering the laboratory to clean the spill area (rubber gloves, autoclavable footwear, an outer garment, and a respirator)		

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1.2.2 For spills on the floor, a gown that may trail the floor when bending down should not be worn. 1.2.3 Pour a germicidal solution around the spill and allow to flow into the spill. Paper towels soaked with the germicide may be used to cover the area. To minimize reaerosolization, avoid pouring the germicidal solution directly onto the spill. 1.2.4 Let stand 20 minutes to allow adequate disinfectant contact time. 1.2.5 Using an autoclavable dust pan and squeegee, transfer contaminated materials (paper towels, glass, liquid, gloves, etc.) into a deep autoclave pan. Cover the pan with aluminum foil or other suitable cover and autoclave according to standard directions. 1.2.6 The dust pan and squeegee should be placed in an autoclavable bag and autoclaved according to standard directions. 1.2.7 Remove protective clothing and sterilize by autoclaving. 2. Biohazardous Spill in a Class II Biological Safety Cabinet 2.1 If splash has occurred outside the cabinet resulting in personnel exposure to hazardous material, the Laboratory Supervisor/ In-charge and the BOD Safety Unit should be notified and the need for medical attention determined. 2.2 Contaminated clothing should be removed and containerized for autoclaving. 2.3 Thoroughly wash hands and face, if exposure has occurred. 2.4 Chemical decontamination procedures should be initiated at once while the cabinet continues to operate to prevent escape of contaminants from the cabinet. 2.5 Operator should wear gloves and laboratory coat during this procedure. 2.6 Spray or wipe walls, work surfaces, and equipment with an appropriate disinfectant detergent. 2.7 Flood top tray, drain pans and catch basin below work surfaces with disinfectant and allow to stand 20 minutes. 2.8 Dump excess disinfectant from tray and drain pans into cabinet base. 2.9 Lift out tray and removable exhaust grille work. Wipe off top and bottom (underside) surfaces with disinfectant sponge or cloth. Replace in position.		

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2.10 Gloves, cloth or sponge should be discarded in an autoclave pan and autoclaved. 2.11 Drain disinfectant from cabinet base into an appropriate container and autoclave according to standard procedures. 3. Biohazard Spill Control Inside a Bio Safety Cabinet 3.1 Keep the BSC on. 3.2 Put on protective gloves. 3.3 Spray & wipe walls, work surfaces, and equipment with decontamination solution. 3.4 Flood tray top, drain pans, and catch basins with decontamination solution. 3.5 Allow to stand for 20 minutes. 3.6 Drain excess solution into cabinet base. 3.7 Lift out tray and any removable exhaust grille work. 3.8 Clean top and bottom surfaces with sponge/cloth soaked in decontamination solution. 3.9 Replace tray and grille work. 3.10 Place everything that is contaminated into autoclave pan. 3.11 Drain decontamination solution from cabinet base into AUTOCLAVABLE containers. 3.12 If the entire cabinet is to be decontaminated with gas, contact the BOD-Safety Unit at telephone number 4403 3528. 4. Laboratory Supervisor/ In-charge shall prepare accident report and submit to Department. Provide copy to BOD- Safety Unit. 5. BOD- Safety Unit shall conduct investigation and recommend corrective actions to prevent recurrence.		

GUIDELINES MANUAL		
	Title: EMERGENCY PREPAREDNESS AND RESPONSE – RADIATION	Document No. : EHSG-37
		Revision No. : 0
		Effectivity Date : April 1, 2011
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OBJECTIVE: To provide guidelines for the effective response during radiation exposure and/or radiation material spill. To establish and maintain an effective defense against radiological hazards from sources for the protection of individuals, society and the environment.		
Note: The Radiation Emergency Preparedness and Response shall be approved by the Ministry of Environment prior to implementation.		
GUIDELINES: 1. Operator Minor Injury and No Overexposure ➤ Cease all operations. ➤ Check the dosimeter reading of the Radiation Workers. ➤ Check the radiation intensity with the survey meters. ➤ Call Radiation Protection Office. ➤ Call BOD CSU Control Room, 4403 3600. ➤ Call BOD Safety Unit, 4403 3528. ➤ Call QU Medical . ➤ BOD CSU Control Room Operator shall call Hamad Hospital Emergency, if necessary, 439 2111. 2. Suspected Overexposure ➤ Cease all operations. ➤ Check the dosimeter reading of the Radiation Workers. ➤ Check the radiation intensity with the survey meters. ➤ Prevent access to the surrounding area. ➤ Place lead shots and lead sheets over suspected area. ➤ Check the dose rate barriers. ➤ Call for additional help: ○ To assist in maintaining the integrity of the barriers. ○ To make necessary phone calls. ➤ Call Radiation Protection Office. ➤ Call BOD CSU Control Room, 4403 3600. ➤ Call BOD Safety Unit, 4403 3528. ➤ Record names and location of any personnel involve in the incident. ➤ BOD CSU Control Room Operator shall call Hamad Hospital Emergency, 4439 2111. Send immediately suspected overexposure radiation workers for medical examination. ➤ Inform Ministry of Environment at telephone number 4420 7777. ➤ Take appropriate action, depending on the severity of the exposure.		



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3. Lost Source

- Cease all operation.
- Check the dosimeter reading of the radiation workers.
- Check the radiation intensity with the survey meters.
- Prevent access to the surrounding area.
- Place lead shots and lead sheets over suspected area.
- Check the dose rate at the barriers.
- Call for additional help:
 - To assist in maintaining the integrity of the barriers.
 - To make necessary phone calls.
- Call Radiation Protection Office.
- Call BOD CSU Control Room, 4403 3600.
- Call BOD Safety Unit, 4403 3528.
- Record names and location of any personnel involve in the incident.
- BOD CSU Control Room Operator shall call Hamad Hospital Emergency, 4439 2111. Send immediately suspected overexposure radiation workers for medical examination.
- Inform Ministry of Environment at telephone number 4420 7777.
- Take appropriate action, depending on the severity of the exposure.
- If the source is known to be in projector, then visual search at last known whereabouts, otherwise lost source shall be treated as unshielded.
- Hold sealed source be separated from projector, then a search using survey meters and personal monitoring devices shall be undertaken again starting at the last known whereabouts.
- Survey meter should be on lowest reading scale until nearing source, taking care with regard to persona; care.
- Once located, the Radiation Protection Officer shall decide on the course of action to be taken for recovery.

4. Stuck, Damaged or Unshielded Source

- Cease all operation.
- Check the dosimeter reading of the radiation workers.
- Check the radiation intensity with the survey meters.
- Prevent access to the surrounding area.
- Place lead shots and lead sheets over suspected area.
- Check the dose rate at the barriers.
- Call for additional help:
 - To assist in maintaining the integrity of the barriers.
 - To make necessary phone calls.
- Call Radiation Protection Office.
- Call BOD CSU Control Room, 4403 3600.
- Call BOD Safety Unit, 4403 3528.

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➤ Record names and location of any personnel involve in the incident. ➤ BOD CSU Control Room shall call Hamad Hospital Emergency, 4439 2111. Send immediately suspected overexposure radiation workers for medical examination. ➤ Inform Ministry of Environment at telephone number 4420 7777. ➤ Take appropriate action, depending on the severity of the exposure. ➤ If the source is known to be in projector, then visual search at last known whereabouts, otherwise lost source shall be treated as unshielded. ➤ Should sealed source be separated from projector, then a search using survey meters and personal monitoring devices shall be undertaken again starting at the last known whereabouts. ➤ Survey meter should be on lowest reading scale until nearing source, taking care with regard to personal care. ➤ Once located, the Radiation Protection Officer shall decide on the course of action to be taken for recovery based on calculated dose rates, shielding, time, location and other factors. ➤ Radiation Protection Officer shall then take necessary steps to recover the source with the help of lead apron, tongs, cutters, and lead pot and render the safe area.		
5. Stolen Source ➤ Check the source in the storage pit and the source at all sites and verify with the inventory of sources. ➤ When it is confirmed the source is missing or stolen, inform Radiation Protection Officer. ➤ Take appropriate action in association with Ministry of Environment.		
6. Fire ➤ Cease all operations. ➤ Follow fire emergency preparedness and response. ➤ Call Radiation Protection Office. ➤ Call BOD CSU Control Room, 4403 3600 / 4485 2446 ➤ Call BOD Safety Unit, 4403 3528. ➤ Check the dosimeter reading of the radiation workers. ➤ Check the radiation intensity with the survey meters. ➤ Prevent access to the surrounding area. ➤ Check the dose rate at the barriers. ➤ Call for additional help: ○ To assist in maintaining the integrity of the barriers. ○ To make necessary phone calls.		



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- Record names and location of any personnel involve in the incident.
- Send immediately suspected overexposure radiation workers for medical examination.

7. Suspected Contamination

- Cease all operations.
- Check dosimeter reading of the radiation workers.
- Check the radiation intensity with the survey meters.
- Prevent access to the surrounding area.
- Call for additional help:
 - To assist in maintaining the integrity of the barriers.
 - To make necessary phone calls.
- Call Radiation Protection Office.
- Call BOD CSU Control Room, 4403 3600 / 4485 2446
- Call BOD Safety Unit, 4403 3528.
- Record names and location of any personnel involve in the incident.
- Send immediately suspected overexposure radiation workers for medical examination.
- Inform Ministry of Environment at telephone number 4420 7777.

8. Post Incident / Accident Procedure

- The incident/accident should be notified to the appropriate authorities.
- All classified and non-classified personnel, f exposed in excess of their dose limits, shall be sent for medical examination.
- The Ministry of Environment should be notified.
- All apparatus must be check for defects and, if necessary, repaired before it is re-use.
- Thermo Luminescent Dosimeter (TLD's) of affected personnel shall be sent to Ministry of Environment and Natural Resources for investigation.
- All emergency and incident/ accident, no matter how small, shall be investigated by Radiation Protection Officer and keep written record.

GUIDELINES MANUAL



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EMERGENCY PREPAREDNESS AND RESPONSE - EARTHQUAKE

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OBJECTIVE:

To provide guidelines for the effective response during and after earthquake.

DEFINITIONS:

Earthquake - A sudden slipping or movement of a portion of the earth's crust, accompanied and followed by a series of vibrations.

Aftershock - An earthquake of similar or lesser intensity that follows the main earthquake.

Epicenter - The place on the earth's surface directly above the point on the fault where the earthquake ruptures began. Once fault slippage begins, it expands along the fault during the earthquake and can extend hundreds of miles before stopping.

Fault - The fracture across which displacement has occurred during an earthquake. The slippage may range from less than an inch to more than 10 yards in a severe earthquake.

Magnitude - The amount of energy released during an earthquake, which is computed from the amplitude of the seismic waves. A magnitude of 7.0 on the Richter Scale indicates an extremely strong earthquake. Each whole number on the scale represents an increase of about 30 times more energy released than the previous whole number represents. Therefore, an earthquake measuring 6.0 is about 30 times more powerful than one measuring 5.0.

Seismic Waves - Vibrations that travel outward from the earthquake fault at speeds of several miles per second. Although fault slippage directly under a structure can cause considerable damage, the vibrations of seismic waves cause most of the destruction during earthquakes.

GUIDELINES:

1. General information:

Earthquakes strike suddenly, violently and without warning. Identifying potential hazards ahead of time and advance planning can reduce the dangers of serious injury or loss of life from an earthquake. Repairing deep plaster cracks in ceilings and foundations, anchoring overhead lighting fixtures to the ceiling, and following local seismic building standards, will help reduce the impact of earthquakes.

2. What to do in case of earthquake?

2.1 If Indoor

2.1.1 Stay as safe as possible during an earthquake. Be aware that some earthquakes are actually foreshocks and a larger earthquake might occur. Minimize your movements to a few steps to a nearby safe place and stay indoors until the shaking has stopped and you are sure leaving the building is safe.



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2.1.2 **DROP** to the ground; take **COVER** by getting under a sturdy table or other piece of furniture; and **HOLD ON** until the shaking stops. If there isn't a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.

2.1.3 Stay away from glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture.

2.1.4 Use a doorway for shelter only if it is in close proximity to you and if you know it is a strongly supported, load bearing doorway.

2.1.5 Stay inside the building until shaking stop and it is safe to go outside.
Note: Research has shown that most injuries occur when people inside the building attempt to move to a different location within the building or try to leave outside.

2.1.6 Be aware that the electricity may shutdown or the sprinkler and fire alarms system may activate.

2.1.7 DO NOT use the elevators

2.2 If Outdoor

2.2.1 Move away from the buildings, streetlights and utility wires.

2.2.2 Once in an open area, stay there until the shaking will stop.

2.3 If in a moving vehicle.

2.3.1 Stop as quickly and stay in the vehicle. Avoid stopping near or under buildings, trees, overpasses and utility wires.

2.3.2 Proceed cautiously once the earthquake has stopped. Avoid roads, bridges or ramps that might have been damaged by the earthquake.

2.4 If trapped under debris.

2.4.1 Do not light a match.

2.4.2 Do not move or kick up dust.

2.4.3 Cover your mouth with handkerchief or clothing.

2.4.4 Tap on a pipe or wall so rescuers can locate you. Use a whistle if one is available. Shout only as a last resort. Shouting can cause you to inhale dangerous amount of dust.



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3. After earthquake.

- 3.1 Be prepared for aftershocks, plan for cover when they occur.
- 3.2 Be calm, try to reassure others.
- 3.3 Listen to local radio for any announcement. Be prepared, the University may be used as evacuation area for earthquake victims.
- 3.4 In case of fire, Fire Fighting Team shall extinguish the fire.
- 3.5 If chemical spillage occurs, BOD-Safety Unit shall lead in conducting emergency response.
- 3.6 If biological spillage occurs, BOD- Safety Unit shall lead in conducting emergency response.
- 3.7 If radioactive materials spillage occurs, BOD- Safety Unit shall lead in conducting emergency response.
- 3.8 Security shall call and coordinate with Civil Defense for conducting inspection; search and rescue, and fire fighting incase QU fire fighter cannot extinguish the fire.
- 3.9 Security shall declare All Clear signal and prepare overall damage assessment in coordination with other department. Submit report to the Office of the President.

GUIDELINES MANUAL		
	Title: EVACUATION FOR PEOPLE WITH DISABILITIES	Document No. : EHSG-39
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Objective:

To provide guidelines for the effective evacuation for people with disabilities at Qatar University during emergency situation.

GUIDELINES

In all emergencies, after an evacuation has been ordered:

- 1.0 Evacuate if possible.
- 2.0 DO NOT use lift, unless authorized to do so by emergency services personnel.
- 3.0 Check on people with special needs during an evacuation. A “buddy system,” where people with disabilities arrange for volunteers (co-workers/students) to alert them and assist them in an emergency, is recommended.
- 4.0 Only attempt an emergency evacuation if you have had emergency assistance training or the person is in immediate danger and cannot wait for emergency services personnel.
- 5.0 ALWAYS ASK someone with a disability how you can help before attempting any emergency evacuation assistance. Ask how he or she can best be assisted or moved, and whether there are any special considerations or items that need to come with the person.
- 6.0 If you have a physical disability and are unable to use stairways:
 - 6.1 Stay calm, and take steps to protect yourself.
 - 6.2 If there is a working phone, call Business Operation Department CSU Control Room at telephone number 4403 3600 and tell the Control Operator where you are or where you will be moving to.
 - 6.3 If you must move, we recommend the following:
 - 6.3.1 Move to an enclosed exit stairway, while taking care not to block the exit of building personnel.
 - 6.3.2 Request persons exiting by way of the stairway to notify the Fire Section of your location.
 - 6.3.3 Await Emergency Responders.
- 7.0 If a power failure occurs during the day and people with disabilities choose to wait in the building for electricity to be restored, they can move near a window where there is natural light and access to a working telephone. Business Operation Department – CSU Control Room Operator should be notified so they can advise emergency personnel.

GUIDELINES MANUAL



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8.0 If people would like to leave and an evacuation has been ordered, or if the power outage occurs at night, call BOD-CSU Control Room Operator at telephone number 4403 3600 and request evacuation assistance.

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OBJECTIVE: To provide guidelines for the effective response during utility failure (electrical/ light failure, water leak, gas leak).		
GUIDELINES: 1.0 Electrical/Light Failure Remain calm. University buildings are equipped with emergency lightings. However, it is recommended to consider keeping a flashlight in case of electrical/ light failure for safe exiting. 2.0 Plumbing Failure/ Water Leak 2.1 Cease all electrical equipment. 2.2 Call Business Operations Department CSU Control Room at telephone no. 4403 3600. 2.3 Provide the following information to CSU Control Operator. ➤ Your name ➤ Location of building where the water leak. ➤ Contact number. 2.4 Remain calm and wait for help. 3.0 Gas Leak 3.1 Do not panic. 3.2 Cease all operations. 3.3 Exit the area immediately. 3.4 Do not attempt to correct the problem yourself. 3.5 Call Business Operations Department CSU Control Room at telephone no. 4403 3600. 3.6 Provide the following information to CSU Control Operator ➤ Your name. ➤ Location of building where the gas leak. ➤ Contact number. 3.7 Remain calm and wait for help.		

GUIDELINES MANUAL



Title:

EMERGENCY TELEPHONE NUMBERS

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Business Operations Dept. –CSU Control Room.....	4403 3600
Fire Section.....	4403 3999
Security.....	4403 3566 4403 3564 4403 6161
Safety Unit.....	4403 3528 4403 3581
Medical Clinic.....	4403 3294 4403 5050
Qatar Emergency Line (Police, Fire, and Ambulance).....	999
Hamad Hospital – Accident and Emergency.....	4439 2111
Ministry of Environment	4420 7777