H.S.E ACOP

Approved Code of Practice
Introduction and Approval:

This Health, Safety and Environment Approved Code of Practice (HSE ACOP) has been developed to ensure compliance to, UAE Federal laws, Dubai Municipality code of practices and International standards and best practices. It is binding on all tenants, stakeholders, visitors, employees, contractors and consultants operating within the jurisdiction of Dubai Healthcare City.

Compliance with any provision of this code is in itself enforceable and violations can result in breach of UAE legal and statutory requirements and that failure may be taken by a Court in criminal proceedings as proof that a person has contravened the applicable regulatory authority to which the provision relates. Full compliance with this document will ensure that statutory and regulatory obligations are met.

The HSE approved code of practice is HSE specific and all businesses operational processes must be carried out in accordance with this Approved Code of Practice.

The HSE Department representatives shall make periodic assessments and/or audits to tenant facilities, building premises to ensure compliance with applicable HSE regulations and guidelines. Non compliances will be determined and actioned as per DHCC HSE enforcement policy and penalty system and when and where required reported to applicable UAE authorities for enforcement.

It is the responsibility of the respective building management and each tenant to fully cooperate with the HSE department to ensure compliance with these guidelines.

This document is issued and controlled by Dubai Healthcare City Health Safety and Environment department and is subject to authorized update.

Approved by:

Marwan Abedin
Chief Executive Officer

Ammar Hattab
Group Chief of Finance and Shared Services
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Section 1:

Abbreviations & Glossary

2.1 Abbreviations

2.1.1 DHCC  Dubai Healthcare City

2.1.2 HSE  Health, Safety & Environment

2.2 Glossary

2.2.1. Accident  Undesired event giving rise to death, ill health, injury, damage or other loss.

2.2.2. Audit  Systematic examination to determine whether activities and related results conform to planned arrangements and whether these arrangements are implemented effectively and are suitable for achieving the organization's policy and objectives.

2.2.3. Auditor  Person with the competence to conduct an audit

2.2.4. Autoclave  A piece of equipment that uses steam at high pressure to sterilize (clean) objects used in medical operations.

2.2.5. Continual improvement  Process of enhancing the HSE management system, to achieve improvements in overall HSE performances, in line with the organization's HSE policy.

2.2.6. Corrective Action  An action to eliminate the cause of a detected nonconformity.

2.2.7. Disaster  A sudden event that results in death, incapacitation, or injury to a relatively large number of persons, creating a unusual stress on organizational resources.

2.2.8. Emergency  A sudden and usually unforeseen event that must be countered immediately to minimize the consequences.

2.2.9. Environment  Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.
2.2.10. Environmental Aspect
Element of an organization's activities or products or services that can interact with the environment. A significant environmental aspect has or can have a significant environmental impact.

2.2.11. Environmental Impact
Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.

2.2.12. First Aider
A first aider is a person who has received training and who holds a current first aid certificate from an organization or employer whose training and qualification for first aiders are approved by DHA & Dubai Municipality.

2.2.13. Hazard
Source or situation with a potential for harm in terms of injury or ill health, damage to property, damage to the workplace environment, or a combination thereof.

2.2.14. Hazardous Materials
Hazardous materials appear in various forms than can cause death, serious injury, long-lasting health effects, or cause damage to property. They come in the form of explosives, flammable and combustible substances, poisons, acid or alkali chemicals, and radioactive materials.

2.2.15. HSE Management System
An HSE management system is a set of interrelated elements used to establish HSE policy and objectives and to achieve those objectives. An HSE management system includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources.

2.2.16. HSE Objective
Overall HSE goal, consistent with the HSE policy, that an organization sets itself to achieve.

2.2.17. HSE Policy
Overall intentions and direction of an organization related to its HSE performance as formally expressed by top management. The HSE policy provides a framework for action and for the setting of HSE objectives and HSE targets.

2.2.18. Incident
Work related events in which an injury or ill health (regardless of severity)
or fatality occurred or could have occurred. Events that give rise to an accident or have the potential to lead to an accident. An accident where no ill health, injury, damage, or other loss occurs is also referred to as a “near-miss”. The term “incident” includes “near-miss”.

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<td><strong>2.2.19. Interested party</strong></td>
<td>Individual or group concerned with or affected by the HSE performance of an organization.</td>
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<td><strong>2.2.20. Organization</strong></td>
<td>Company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration.</td>
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<td><strong>2.2.21. Prevention of Pollution</strong></td>
<td>Use of processes, practices, techniques, materials, products, services or energy to avoid, reduce or control (separately or in combination) the creation, emission or discharge of any type of pollutant or waste. Examples include; efficient use of resources, material and energy substitution, reuse, recovery, recycling, reclamation and treatment.</td>
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<td><strong>2.2.22. Preventive Action</strong></td>
<td>Identification and actions to eliminate the cause of a potential nonconformity.</td>
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<td><strong>2.2.23. Procedure</strong></td>
<td>Specified way to carry out an activity or a process. Procedures can be documented in an electronic or paper form.</td>
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<tr>
<td><strong>2.2.24. Record</strong></td>
<td>A document stating results achieved or providing evidence of activities performed. Records may be in paper or electronic forms.</td>
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<td><strong>2.2.25. Risk</strong></td>
<td>Combination of the likelihood and consequence(s) of a specified hazardous event occurring.</td>
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<td><strong>2.2.26. Risk Assessment</strong></td>
<td>Overall process of systematically estimating the magnitude of risk and deciding whether or not the risk is tolerable</td>
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<td><strong>2.2.27. Tenant</strong></td>
<td>Leadership of hospital, clinic, firm, enterprise, or institution licensed to operate.</td>
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<td><strong>2.2.28. Tolerable Risk</strong></td>
<td>Risk that has been reduced to a level that can be endured by the organization having regard to its legal obligation and its own OHSE policy.</td>
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<td><strong>2.2.29. Ill Health</strong></td>
<td>Identifiable, adverse physical or mental condition arising from and Or made worse by a work activity and or work related situation</td>
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Section 2:
Policy Statement

Dubai Healthcare City aspires to become an internationally recognized location of choice for quality health care and integrated centre of excellence for Clinical and Wellness services, Medical Education and Research.

This policy is based on the DHCC firm management conviction that continual improvement in Occupational Health, Safety and Environmental (HSE) aspects are integrated into its business while ensuring compliance with all relevant Local, Federal laws and International best practices as far as practicable.

Management will strive to prevent ill health, injuries and occupational illness and protect the environment by pollution prevention, waste reduction, encourage re-use, recycling and conserve natural resources through the active participation of its Employees, its Customers, Contractors and Consultants operating on DHCC sites and Visitors to DHCC facilities.

The organization shall accomplish a high standard of performance through a strong HSE management system integrated with our strategic business planning and decision making processes and by setting measurable HSE objectives.

Whilst customer satisfaction and delivery of products and services of the highest quality standards is our top priority, management shall prioritize and foster transparency with all our stakeholders in the development of solutions for all HSE issues in a constructive and timely manner.

DHCC management will ensure the following in line with the above declaration:

- Setting HSE objectives and monitoring frame work to ensure that set objectives are fully achieved according to the requirements of ISO 14001:2004 and OHSAS 18001:2007;
- Ensuring that hazards are identified and appropriate procedures developed for Risk Management, Emergency Response through Risk & Environment Impact Assessments and appropriate Controls are in place, reviewed and updated on a regular basis;
- Ensure that all new Projects or activities take full account of HSE requirements;
- The provision of training, education and ensuring involvement of employees so that they understand, promote and assist in the implementation of this policy and driving the company towards its objectives;
- Communication with employees, customers, suppliers, contractors , consultants and regulatory authorities and other interested parties to promote positive Occupational Health, Safety and Environmental issues that maximize stakeholder's benefits;
- Minimize the impact of pollution generated by our activities on the environment by reducing emissions, discharges and wastes and by promoting energy conservation and recycling of wastes;
- Promote general health and environmental awareness in the society through our Corporate Social Responsibility plans; and
- Incorporate Green Dubai concept for the environmental benefits and sustainable development in future DHCC projects.

This HSE policy will be communicated to all concerned stakeholders and reviewed periodically to address the changing business requirements and regulatory needs.

Marwan Abedin
Chief Executive Officer
Section 3:

3.0 HSE Roles & Responsibilities

3.1 Enforcement of the Occupational Health, Safety and Environmental Approved Code of Practice:

The organization CEO shall be responsible for the enforcement of the HSE ACOP amongst all employees, occupant's, tenants and stakeholders.

3.1. Authority of HSE Department:

For the protection of Occupational Health & Safety of the people and the environment, the HSE Department is empowered to:

- Amend as necessary the HSE ACOP for the safe conduct of work and protection of the environment;
- Inspect and audit work places, take samples or photographs, issue directions, instructions and orders;
- Issue improvement and Prohibition notices for non compliances;
- Issue fines to violators via a pre-determined amount set by the Dubai Municipality (DM) Code of Practice; and
- Prepare and execute education training programs.

3.2. HSE Compliance by Tenants / Bldg Managers / Employees / Contractors:

Building Managers, Tenants, Employees and contractors are responsible for complying with the UAE Federal regulations, Dubai Government Laws, Dubai Municipality regulations and code of practice, and the HSE ACOPs.

The HSE department Legal and Other Requirements Register contain the list of applicable Dubai Government Laws, Ministerial and Local Orders, Dubai Municipality Guidelines, Codes of Practices and International Best Practices in which employees, tenants and contractors must abide by. The HSE Enforcement policy supports the code of practice in ensuring compliance is achieved by all Tenants and Contractors.

Every tenant shall ensure that every workplace, modification, extension or conversion which is under his control and where any of his employees works complies with any requirement of this ACOP. The premise owner must ensure that neighborhood is not affected by its activities and acts of omission.

Any reference to a person having control of any workplace, modification, extension or conversion is a reference to a person having control of the workplace, modification, extension or conversion in connection with the carrying on by him of business or other undertaking (whether for profit or not).

Employers have a general duty to ensure, so far as is reasonably practicable, the health, safety and welfare of their employees at work & the impact of its product on the environment.

Employers have a duty to ensure that workplaces under their control comply with these ACOP. Tenant employers are responsible for ensuring that the work place which they control complies with the ACOP.

Building Management, tenant is responsible to provide safe working conditions which are free from recognized occupational health and safety hazards that may result in death or serious physical harm to the staff, patients and visitors.
People other than employers also have duties under these ACOP if they have control, to any extent, of a workplace. For example, owners/ tenants (of business premises) should ensure that common facilities, common services and means of access within their control comply with the ACOP. Their duties are limited to matters which are within their control. For example, a tenant / owner who are responsible for the general condition of a lobby, staircase and landings, for shared toilets provided for tenants’ use, and for maintaining ventilation plant, should ensure that those parts and plant comply with these ACOP. Tenants should cooperate with each other, and with the landlord, to the extent necessary to ensure that the requirements of the ACOP are fully met.

3.3 HSE Representative:

The building owner /tenant shall appoint one HSE representative for each workplace. The duties of the HSE Representative shall include the following:

- Inspection of all work places and the promotion of the safe conduct of work;
- Occupational Health and Safety Hazard identification and implementation of control measures;
- Environmental Aspect and Impact identification and implementation of control measures;
- Maintaining first aid facilities and personal protective equipment as demanded by the nature of the work;
- Reporting on incidents/accidents, investigating and maintaining records;
- Training of staff and ensuring that they are issued with adequate instructions;
- Maintain a register of chemical materials used at the premises, their Material Safety Data Sheets and advise management on their safe handling;
- Providing regular reports and advice to management and liaising with the HSE Department to ensure compliance to the regulations and rules;
- Reviewing the emergency preparedness of the department; and
- Ensuring compliance to the provisions of this HSE ACOP.

3.4. First Aider and Fire Warden:

Every tenant / building manager must have a DHA / DHCC approved certified first aider and fire warden the number depending upon staffing and area occupied. Tenant, Building management is responsible that their first aider and fire warden perform their duties as described in applicable standards during emergencies and drills. Failure to perform their roles during emergencies and drills would result in cancellation of certification where applicable and a non compliance by the tenant.

Every employer shall provide one or more first-aid boxes containing, bandages, antiseptics and such other first-aid material as may be required depending on the nature of work and as per DMTG No. 25.

3.5 HSE Enforcement and Penalties:

3.5.1. Investor Owned building within DHCC

In the event of a HSE non compliance the tenant shall inform the Investor building manager in written of the unsafe condition or act. If the building manager fails to take the necessary corrective actions within 7 days of the report based on the severity of the hazard or incident the tenant shall forward the notification to DHCC HSE department who in turn shall inform the premise manager as per the HSE enforcement policy and process.
DHCC HSE representative reserves the right to investigate, conduct assessment of buildings along with the building owner or his representatives and issue notices and penalties.

3.5.2. DHCC / Owned building

In the event of a HSE non compliance in DHCC owned building operational areas the tenant shall inform the building facility manager and DHCC HSE department of the unsafe condition or act.

In cases of HSE non compliances within tenant premises or relating to the tenant scope of activities the HSE department shall inform the premise manager following investigation as per HSE enforcement policy process.

3.5.3. HSE Corrective Action Process

Details of corrective action process and penalty matrix has been defined in the DHCC HSE enforcement policy.

**Verbal Notification**

In instances where an HSE hazard is immediately correctable, the HSE Department shall inform the building manager, tenant's representative of the existence of the HSE hazard, impact or violation.

The HSE Department shall make a note of the time, place and person informed by the Verbal Notification. If, after 24 hours, the violation has not been corrected, a Written Notification in the form of an Improvement Notice will be issued.

**Improvement Notice**

In instances where an HSE hazard is not corrected within the time frame of 24 hrs or when a Verbal Notification has been ignored, the HSE department shall issue an Improvement Notice.

The Improvement Notice shall provide details of a Verbal Notification (when applicable), full explanation of the HSE problem, and recommendations for corrective actions, including time frames.

The Improvement Notice may include penalties in line with the regulatory frame work and will most certainly be escalated to a Prohibition Notice if it is not complied with within the stipulated time frame.

Copies of the Improvement Notice shall be distributed to DHCC / DHCR Management, and if required Regulatory enforcing authorities which includes Dubai Municipality, Dubai Civil Defense, Zoning authority and Dubai Health Authority as where applicable.

**Prohibition Notice**

In instances where an HSE violation or non compliance is of a serious nature and HSE Department deem there is significant risk to employees and others or to the building, plant and equipment or an improvement notice has not been implemented, the HSE representative will issue a Prohibition Notice.
The Prohibition Notice shall include all details of the violation or non-compliance and will include details of any corrective action required and the time frame to rectify the situation.

The work process, plant or equipment will not re-commence or start up until the Prohibition Notice is closed out in coordination with HSE Department. Should the Tenant or his employees / visitors fail to comply with the requirements of the Prohibition Notice punitive action or penalties, the amount will be communicated to DHCC license renewal and government services which will be adjusted from the organization during annual license renewal.

Copies of the Prohibition Notice shall be distributed to DHCC / DHCR Management, and if required Regulatory enforcing authorities which includes Dubai Municipality, Dubai Civil Defense, Zoning authority and Dubai Health Authority as where applicable.
Section 4:

Occupational Health

4.1 Pre-Employment Health Assessment
Building management, tenants shall not employ any person (male or female) under the age of 18. The tenants shall conduct a pre-employment assessment of employee health and maintain pre-employment medical history along with records of all medical tests performed.

4.2 Health Surveillance & Immunization
Employers must conduct medical health checks through a Dubai Health Authority or DHCC approved clinic & review the Health risk assessments of its employees. The tenants shall ensure vaccination of employees to prevent transmission of diseases. Health Records must be maintained and provided to DHCC as and when required. Health surveillance of employees is required to be conducted by tenant / Facility management & contractors at least once a year for those involved with activities of a hazardous nature. Tenants, Contractors working within DHCC must ensure that their employees are provided with health insurance during their tenure of their employment.

4.3 Employee Training and Awareness
Building management, Tenant, Contractors must ensure that all its employees receive regular HSE education and training such as:
   - Orientation;
   - Modes of disease transmission;
   - Disease control measures;
   - Compliance to standard precaution;
   - Emergency Preparedness;
   - Fire safety and
   - General health, safety and environmental issues.

(NB: Evidence of training activities and attendees shall be documented, maintained, and provided when requested by DHCC / DHCR assessors)

4.4 Infectious Disease Exposures
The Building management, tenants shall develop an Infection Control plan which will include adequate steps to contain / control its spread outside the premise and prevent exposure of employees to infectious diseases which include, but are not limited to hepatitis, chickenpox, measles, rubella, mumps, H1N, Ebola and tuberculosis. Where employees are infected with such diseases, DHCR / DHCC HSE department must be informed and will assess the severity and exposure risk to the public work exclusion / restrictions.
4.5 Occupational Hazards

The tenants shall identify, minimize and control occupational hazards within the work environment. Occupational hazards shall include, but are not limited to:

- Biological/ Infectious hazards – such as bacteria, viruses, fungi or parasites;
- Chemical Hazards – such as toxins / corrosives / gases;
- Mechanical Hazards – such as injuries, accidents, strains;
- Physical Hazards – such as radiation, electricity, extreme temperature, etc, that can cause trauma; and
- Psychological Hazards - associated with work environment, stress and/or emotional strain.
- Ergonomics Hazards – Associated with the work station and lifting activities

4.6. Sharp Injuries

All tenants shall have a needle stick / sharp injuries policy and procedure. The employees of the tenants shall report all needle stick/sharp injuries (percutaneous injury) to DHCR. The employees of the tenants shall also report all mucutaneous exposures of a mucous membrane (eye, nose or mouth) or chapped, abraded or dermatitis skin with blood, tissue or other body fluids that are potentially infectious.

4.7 Thermal Comfort

4.7.1. During working hours, the temperature in all workplaces inside buildings shall ensure the thermal comfort of the occupants. (A method of heating or cooling shall not be used which results in the escape into a workplace of fumes, gas or vapor of such character and to such extent that they are likely to be injurious or offensive to any person.

4.7.2. A sufficient number of thermometers shall be provided to enable person’s at work to determine the temperature in any workplace inside a building.

4.7.3. The temperature in workrooms should provide reasonable comfort without the need for special clothing. Where such a temperature is impractical because of hot or cold processes, all reasonable steps should be taken to achieve a temperature which is as close as possible to comfortable.

4.7.4 The temperature in offices should normally be at least 24 degrees Celsius unless much of the work involves severe physical effort in which case the temperature should be at least 21 degrees Celsius. These temperatures may not, however, ensure reasonable comfort, depending on other factors such as air movement and relative humidity.

4.7.5. The above Paragraph does not apply to rooms or parts of rooms where it would be impractical to maintain those temperatures, for example in rooms which have to be open to the outside, or where food or other products have to be kept cold. In such cases the temperature should be as close to those mentioned as is practical. In rooms where food or other products have to be kept at low temperatures this will involve such measures as:

(a) Enclosing or insulating the product
(b) Pre-chilling the product
(c) Keeping chilled areas as small as possible
(d) Exposing the product to workroom temperatures as briefly as possible.
4.7.6. Tenants / employees and staff must not tamper with any of the cooling system control or the thermostat to adjust temperature without authorization. Non compliance will result in disciplinary action to the extent of damages being claimed equivalent to the cost of repair or replacement for any malfunction arising due to unauthorized modifications.

4.8 Ventilation

4.8.1. The Building owner, tenants responsible for the premise shall provide adequate ventilation and illumination in the workplace as per the Federal and DM technical guidelines to ensure the safe conduct of work.

4.8.2. Enclosed workplaces should be sufficiently well ventilated so that stale air, and air which is hot or humid because of the processes or equipment in the workplace, is replaced at a reasonable rate.

4.8.3. Employees should not be subject to uncomfortable draughts. In the case of mechanical ventilation systems it may be necessary to control the direction or velocity of air flow. Workstations should be re-sited or screened if necessary.

4.8.4. Mechanical ventilation systems (including HVAC systems & its ducting) should be regularly and properly cleaned, tested and maintained to ensure that they are kept clean and free from anything which may contaminate the indoor air quality.

4.8.5. Building occupants must not leave the windows / doors open to prevent dust or airborne contaminants from entering the ventilation system and spreading to other areas.

4.9 No Smoking Policy

DHCC is a NO SMOKING ZONE. It is prohibited for any tenant, their visitors or contractors to smoke within DHCC premises except designated smoking areas.

Building Managers, Tenants are responsible to inform their staff and visitors to comply with the No Smoking Policy. Non compliance will result in disciplinary action and fines as per Federal & Dubai Municipality regulatory guidelines and DHCC enforcement policy.

4.10. Littering

Littering is not permitted in DHCC Violators will face disciplinary action and fines as per Dubai Municipality regulatory guide lines and DHCC enforcement policy.

4.11. Cleanliness

4.11.1. It is the responsibility of the tenant to maintain a clean and tidy facility.

- Every workplace and the furniture, furnishings and fittings therein shall be kept sufficiently clean.
- The surfaces of the floors, walls and ceilings of all workplaces inside buildings shall be capable of being kept sufficiently clean.
- So far as is reasonably practicable, waste materials shall not be allowed to accumulate in a workplace except in suitable receptacles.
4.11.2. Apart from regular cleaning, cleaning should also be carried out when necessary in order to clear up spillages or to remove unexpected soiling of surfaces. Workplaces should be kept free from offensive waste matter or discharges, for example, leaks from drains or sanitary conveniences. Cleaning should be carried out by an effective and suitable method and without creating, or exposing anyone to, a health or safety risk.

4.12. Facilities for Rest/ Waiting area

The tenants / owners shall ensure the following:

4.12.1. Proper seating(s) shall be provided for use of the visitors and staff. When selecting seating, ergonomic principles should be considered, such as height, weight and stability of seating;
4.12.2. Suitable rest areas shall be provided. The areas shall be well-ventilated, free from distractions (noise, smell, etc) and equipped with comfortable furniture; and
4.12.3. Areas must be identified for wheelchair access.

4.13. Eating Area at Place of Work

The tenants / building owners shall ensure the following:

4.13.1. A room or suitable place should be identified for employee eating / rest by the tenant. This designated area should be furnished with tables and chairs/stools should be well ventilated, equipped with a microwave, refrigerator and sink with hot and cold running water.
4.13.2. Eating facilities should be kept clean to a suitable hygiene standard. Steps should be taken where necessary to ensure that the facilities do not become contaminated by substances brought in on footwear or clothing. If necessary, adequate washing and changing facilities should be provided in conveniently accessible place.
4.13.3. Good hygiene standards should be maintained in those parts of rest facilities used for eating or preparing food and drinks. Waste must be stored in closed bins and disposed regularly
4.13.4. Employees are prohibited from eating or storing food stuff at their workplace to prevent pest infestation and odor.

4.14. Drinking Water

The tenants / owners shall ensure the following:

4.14.1. Adequate filtered cold drinking water facilities should be provided. Water should be available near the work area and easily accessible for disabled persons.
4.14.2. Any appliance used to cool drinking water should be regularly inspected and well maintained as to prevent contamination.
4.14.3. Drinking water should normally be obtained from a public or municipal approved private water supplier. In particular, any cistern, tank or vessel used as a supply should be well covered, kept clean and tested and disinfected as necessary. Water should only be provided in refillable containers where it cannot be
obtained directly from a mains supply. Such containers should be suitably enclosed to prevent contamination and should be refilled at least daily.

4.14.4. Drinking cups or beakers should be provided unless the supply is by means of a drinking fountain. In the case of non-disposable cups a facility for washing them should be provided nearby.

4.15. Water Tanks

Where applicable tenants / building owners shall ensure the following:

4.15.1. All fresh water tanks must be kept in good condition and maintained properly. Water tanks should be cleaned on regular bases minimum twice a year by DM approved cleaning company.

4.15.2. Tank cleaning should be performed as per the approved method statement and risk assessments and ensuring that all HSE control measures have been implemented.

4.15.3. Records of tank maintenance including quarterly water lab analysis report shall be maintained, where the maintenance responsibility is that of the building owner a copy of the maintenance record should be obtained.

4.16. Injurious or offensive fumes / Odor

- Equipment emitting fumes should be installed and maintained in such a way that the products of combustion or chemical reactions do not enter the workplace or spread to other areas. Fumes hood and exhaust duct system must filter the impurities prior its release to the atmosphere.
- Fumes hood, foul sewer, drainage system, floor traps must be maintained on a quarterly basis.
- Spray painting within premises is prohibited to control spread of smell through the ventilation system.
- Building managers, tenants are responsible to control, refrain from generation of any form of odor arising as from their activities with a potential to create a nuisance.
- The use of incense smoke and candles with naked flames is prohibited within the building.

4.17. Workstations and Work space

4.17.1. Workstations should be arranged so that each task can be carried out safely and comfortably. Work materials and frequently used equipment or controls should be within easy reach, without undue bending or stretching.

4.17.2. Workstations including seating, and access to workstations should be ergonomically designed and suitable for any special needs of the individual worker, including workers with disabilities.

4.17.3. The total volume of the room, when empty, divided by the number of people normally working in it should be at least 11 cubic meters. In making this calculation a room or part of a room which is more than 3.0m high should be counted as 3.0m high. The figure of 11 cubic meters per person is a minimum and may be insufficient if, for example, much of the room is taken up by furniture etc.

The figure of 11 cubic meters does not apply to:

a. Retail sales kiosks, attendants' shelters, machine control cabs or similar small structures, where space is necessarily limited; or
b. Rooms being used for lectures, meetings and similar purposes.

In a typical room, where the ceiling is 2.4m high, a floor area of $4.6m^2$ (for example 2.0 x 2.3m) will be needed to provide a space of 11 cubic meters. Where the ceiling is 3.0m high or higher the minimum floor area will be $3.7m^2$ (for example 2.0 x 1.85m). (These floor areas are only for illustrative purposes and are approximate). The floor space per person indicated above will not always give sufficient unoccupied space, as required by the Regulation. Rooms may need to be larger, or to have fewer people working in them, than indicated in those paragraphs, depending on such factors as the contents and layout of the room and the nature of the work. For mixed paper and computer-based tasks, the minimum recommended desk length is 1500 mm. The desk should be deep enough to enable the employee to position the screen at a comfortable viewing distance, usually between 400 - 550 mm from the desk’s front edge. To enable the user to safely use the chair, a minimum clearance behind the desk of 860 mm is recommended. For egress from behind a desk, the recommended minimum width (between the side of the desk and the closest obstruction) is 600 mm.

4.18 Facilities for pregnant women, nursing mothers and disabled persons

The tenants shall advise pregnant employees, disabled person on practicing standard precautions when dealing with patients. Facilities for pregnant women and nursing mothers to rest should be conveniently situated in relation to sanitary facilities and, where necessary, include the facility to lie down. Staff must be trained and delegated to attend to pregnant women and disabled persons during emergencies.

4.19. Washing facilities

4.19.1. Sufficient facilities should be provided to enable everyone at work to use them without undue delay. Minimum numbers of facilities are given in Table 1 & 2 but more may be necessary if, for example, breaks are taken at set times or workers finish work together and need to wash before leaving.

4.19.2. Special provision should be made if necessary for any worker with a disability to have access to facilities which are suitable for his or her use.

4.19.3. Water closets should be connected to a suitable drainage system and be provided with an effective means for flushing with water. Toilet paper in a holder or dispenser and a coat hook should be provided. In the case of water closets used by women, suitable means should be provided for the disposal of sanitary dressings.

4.19.4. Washing stations should have running hot and cold, or warm water, and be large enough to enable effective washing of face, hands and forearms. Showers or baths should also be provided where the work is:

(a) Particularly strenuous;
(b) Dirty; or
(c) Results in contamination of the skin by harmful or offensive materials.
### Table 1:

<table>
<thead>
<tr>
<th>Number of people at work</th>
<th>Number of water closets</th>
<th>Number of wash stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6 to 25</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>26 to 50</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>51 to 75</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>76 to 100</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

### Table 2:

<table>
<thead>
<tr>
<th>Number of people at work</th>
<th>Number of water closets</th>
<th>Number of wash stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>16 to 30</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>31 to 45</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>46 to 60</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>61 to 75</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>76 to 90</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>91 to 100</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

### 4.20. Pet Animals

No pet animals, birds or live stock are allowed to be kept or fed in the area /premises without prior permission from DHCC.

### 4.21. Alcohol

Consumption and storage of alcohol is strictly prohibited within DHCC except where it is a business process requirement and licenses / approvals have been acquired from a DHCC authority.
Section 5: SAFETY

5.1 Lighting

5.1.1. Every workplace shall have suitable and sufficient lighting. The lighting mentioned shall, so far as is reasonably practicable, be by natural light. Suitable and sufficient emergency lighting shall be provided in any room in circumstances in which persons at work are specially exposed to danger in the event of failure of artificial lighting.

5.1.2. Lighting should be sufficient to enable people to work, use facilities and move from place to place safely and without experiencing eye-strain. Stairs should be well lit in such a way that shadows are not cast over the main part of the treads. Local lighting should be provided at individual workstations, pedestrian crossing points and on vehicular traffic routes. Outdoor traffic routes used by pedestrians should be adequately lit after dark.

5.1.3. Dazzling lights and annoying glare should be avoided. Lights and light fittings should be of a type, and so positioned, that they do not cause a hazard (including electrical, fire, and radiation or collision hazards). Light switches should be positioned so that they may be found and used easily and without risk.

5.1.4. Lights should not be allowed to become obscured, for example by stacked goods, in such a way that the level of light becomes insufficient. Lights should be replaced, repaired or cleaned, as necessary, before the level of lighting becomes insufficient. Fittings or lights should be replaced immediately if they become dangerous, electrically or otherwise.

<table>
<thead>
<tr>
<th>GENERAL BUILDING AREA</th>
<th>IES STANDARDS ILLUMINATION LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIRCULATION AREA</td>
<td></td>
</tr>
<tr>
<td>Corridors, Passageway</td>
<td>100</td>
</tr>
<tr>
<td>Lift</td>
<td>150</td>
</tr>
<tr>
<td>Stairs</td>
<td>150</td>
</tr>
<tr>
<td>Escalator</td>
<td>150</td>
</tr>
<tr>
<td>External covered ways</td>
<td>30</td>
</tr>
<tr>
<td>ENTRANCES</td>
<td></td>
</tr>
<tr>
<td>Entrance halls, lobbies, waiting rooms</td>
<td>150</td>
</tr>
<tr>
<td>Enquiry desk</td>
<td>500</td>
</tr>
<tr>
<td>KITCHENS</td>
<td></td>
</tr>
<tr>
<td>Food Stores</td>
<td>150</td>
</tr>
<tr>
<td>General</td>
<td>500</td>
</tr>
<tr>
<td>MEDICAL AND FIRST AID CENTRES</td>
<td></td>
</tr>
<tr>
<td>Consultant room, treatment areas</td>
<td>500</td>
</tr>
<tr>
<td>Medical stores</td>
<td>100</td>
</tr>
<tr>
<td>Rest room</td>
<td>150</td>
</tr>
<tr>
<td>STAFF ROOM</td>
<td></td>
</tr>
<tr>
<td>Changing locker and cleaner's room, cloakrooms lavatories</td>
<td>150</td>
</tr>
<tr>
<td>STORE AND STOCK ROOMS</td>
<td></td>
</tr>
<tr>
<td>Telecommunication board, switchboard rooms</td>
<td>500</td>
</tr>
<tr>
<td>Apparatus rooms</td>
<td>150</td>
</tr>
</tbody>
</table>
### 5.1.5. Emergency lighting

- Emergency lighting should be provided in work rooms where sudden loss of light would present a serious risk, for example if process plant needs to be shut down under manual control or a potentially hazardous process needs to be made safe, and this cannot be done safely without lighting.
- Emergency lighting should be powered by a source independent from that of normal lighting. It should be immediately effective in the event of failure of the normal lighting, without need for action by anyone. It should provide sufficient light to enable persons at work to take any action necessary to ensure their, and others’, health and safety.

### 5.2 Personal Protective Clothing and Equipment

- The building managers, tenants, contractors shall provide for the employees protective clothing and equipment necessary to protect them from risk or danger.
- All protective clothing and equipment should comply with the relevant standards and certified by Dubai Municipality / Accreditation Company for its operational safety integrity.
- Protective clothing and equipment of a personal nature, such as footwear, gloves hairnets etc. should be provided on an individual basis.
- All employees must use the protective equipment and clothing provided to prevent health and safety hazards.

### 5.3 Installation of Signs & Telecommunication receivers

5.3.1. It is prohibited to install dish antennas and other telecommunication receivers within DHCC premises without authorization from Dubai Telecommunication Regulatory Authority and DHCC management.
5.3.2. The premise owner, tenants, contractors within their area must provide suitable warning signs in front of dangerous installations, such as gas cylinders storage areas, radiation, biological hazards, chemical hazards, high voltage and other hazardous locations. The warning signs should be displayed in such a position that is clearly visible to persons working in or visiting the area.

5.3.3. Other signs shall also be provided to indicate designated assembly areas or access such as emergency exits and access for persons with disabilities, No smoking signs, Fire procedures, First aid box and floor evacuation plan.

5.3.4. Neon / electrical illuminated signs for the purpose of advertisement must comply with NFPA 70E, and DHCC signage procedure during installation and dismantling.

5.3.5. The responsibility for maintenance of any installed electrical advertisement sign is that of the sign owner and must be carried out at least on annual basis failure of which will result in appropriate action as per DM / DHCC enforcement process.

5.3.6. It is prohibited to fix any bill, notice, placards or other paper or means of advertisement upon any building, against any wall or places other than the places designated by DHCC marketing, CPQ and facility management.

5.3.7. Prohibited Signs/Banners
   - No Flashing, moving or scintillating light bulbs or effects are permitted.
   - DHCC reserves the right to determine the acceptability of signs. Noncompliant signs are to be removed immediately upon request or DHCC reserved the right to dismantle the sign and charge back the tenant or building manager

5.4 Housekeeping
   - Proper housekeeping, including a system for waste segregation shall be maintained.
   - Building management, tenants, contractors are responsible to ensure the work place and surrounding area is maintained free from litter and sufficient waste bins are provided in and around the building.
   - Tenants are responsible to ensure the cleanliness of spillages of solid and liquid waste during garbage transfer and disposal

5.5 Chemical Data Sheets
The tenants shall ensure the following:
   - Material Data Safety Sheets (MSDS) shall be kept for all chemicals – (Soaps, detergents, and disinfectants excluded);
   - All storage areas must be approved by the OHSE Department;
   - Chemicals shall be handled and stored according to the MSDS. All the hazardous chemicals should be stored in a manner to protect from weather conditions with adequate spill collection, ventilation, separation and fire protection; and
Highly flammable products shall be maintained in a controlled environment.

5.6 Radioactive Isotope

The tenants shall undertake approval from the CPQ Department for importing, handling and storage of radioactive isotopes within DHCC. The current IAEA, Federal & DM local rules and regulations shall apply with regards to transport, storage, usage and disposal.

5.7 Electrical Safety

5.7.1. Design and layout

Building manager, tenants must ensure that the design engineer must identify measures to achieve electrical safety in the engineering design process. General responsibilities include:

- Equipment ratings
- Conductor ampacities
- Selective coordination of over current protective devices
- Adherence to applicable codes
- Supply/demand equality
- General power distribution methods

5.7.2. Contractor's

The contractor's must identify measures necessary for electrical safety in the installation process. General responsibilities include:

- Proper mounting of equipment
- Adequate tightening or torque of connections
- Use of correct tools
- Minimizing of insulation abrasion
- Onsite coordination with other contractors
- Adherence to applicable codes

The term contractor is not reserved only for electrical contractor but, instead, includes all trades. For example, the mechanical contractor must responsibly utilize the proper method of installation of the mechanical equipment for interconnection of electrical feeds including elevators, HVAC equipment, and controls.

5.7.3. Maintenance

The maintenance team must identify preventive measures necessary for electrical safety in the operation of a system. Hence, the maintenance perspective evolves into a responsibility that ensures electrical safety by implementation of preventative programs and ongoing system monitoring. General responsibilities include:

- Preventative maintenance
- Monitoring of equipment parameters
• Use of safety measures when working on equipment
• Following tag out procedures
• Use of correct tools
• Thorough knowledge of systems
• Adherence to applicable codes

5.7.4. Building manager, Tenant’s responsibility:

- Electrical equipment shall be routinely checked by an authorized person. Evidence of last checked date shall be kept, either using a date sticker adhered to the equipment and/or recording in a safety check logbook; Defective electric cables, apparatus, motors, fans, etc. must be rectified before work commences.
- The use of 2 pin pugs is discouraged in DHCC. Standard 3 pins adaptors must be used. Similarly in the case of extension boards the cables must be secured and not run across access routes or over loaded.
- It is forbidden to replace burnt-out fuses, or fit fuses which have a higher rating than the specified rating;
- Electric heaters, motors, fans, transformers, etc. must not be covered, but are to be protected so that they are not subjected to moisture, water, oil or steam;
- During break in the work and also when work is finished for the day, lighting, electric motors, are to be switched off;
- Isolation, where necessary, must be carried out before undertaking any repair/maintenance work on electrical installations.
- DHCC encourages the installation and use of energy saving electrical accessories & light fittings such as CFL, Led.
- Procurement, installation and maintenance of electrical signage must meet NFPA 70 standard guidelines

5.8. Storage and Stacking of material

Materials and objects should be stored and stacked in such a way that they are not likely to fall, cause injury and obstruct fire detection and suppression systems. Racking should be of adequate strength and stability having regard to the loads placed on it and its vulnerability to damage. Appropriate precautions in stacking and storage include:

(a) Safe pallets stacking and storage;
(b) Banding or wrapping to prevent individual articles falling out;
(c) Setting limits for the height of stacks to maintain stability;
(d) Regular inspection of stacks to detect and remedy any unsafe stacks; and
(e) Particular instruction and arrangements for irregularly shaped objects.
(f) Avoid stacking near access routes, corridors and escape stairways

Material stacked in non-designated areas which create a risk to occupants and a fire hazard shall be removed by DHCC and the cost charged back to the owner of the material.
5.9. Scaffolding

Scaffolding and other equipment used for temporary access must either follow the provisions of requirements of DM Construction Regulations

- Scaffolding must be erected by a DM approved & certified competent scaffoldor.
- Prior to usage the scaffolding must be inspected and certified with a Scaftag by a DM approved scaffold inspector.
- Erected scaffolding must be inspected on a weekly basis and certified with a Scaftag by a DM approved scaffold inspector.
- Scaffolding must not obstruct access routes and surrounding area secured from falling material.
- Prior to erection or use of scaffolding a permit to work is required.

5.10. Windows and transparent or translucent doors

5.10.1. Every window or other transparent or translucent surface in wall or partition and every translucent or transparent surface in a door or gate shall, where necessary for reasons of health or safety -
   (a) Be of safety material or be protected against breakage of the said transparent or translucent material; and
   (b) Be appropriately marked or incorporate features so as, in either case, to make it apparent.

5.11. Traffic / Parking

5.11.1. The need for people to climb on top of vehicles or their loads should be avoided as far as possible. Where it is unavoidable, effective measures should be taken to prevent falls.

5.11.2. Routes should not be used by vehicles for which they are inadequate or unsuitable. On vehicle routes, prominent warning should be given of any limited headroom, both in advance and at the obstruction itself.

5.11.3 Where large vehicles have to reverse, measures for reducing risks to pedestrians and any people in wheelchairs should be considered, such as:
   (a) Restricting reversing to places where it can be carried out safely;
   (b) Keeping people on foot or in wheelchairs away;
   (c) Providing suitable high visibility clothing for people who are permitted in the area;
   (d) Fitting reversing alarms to alert, or with a detection device to warn the driver of an obstruction or apply the brakes automatically; and
   (e) Employing banks men to supervise the safe movement of vehicles.

5.11.4. Any traffic route which is used by both pedestrians and vehicles should be wide enough to enable any vehicle likely to use the route to pass pedestrians safely. In buildings, lines should be drawn on the floor to indicate routes.

5.11.5. Speed limit in basement parking is restricted to 10 km/hr. Vehicle owners not complying with speed limits and found driving in the wrong direction will be prohibited from using the basement parking and penalized.
5.11.6. Building basement and other open parking is reserved for authorized access. Vehicle owners must park in designated parking slots and comply with traffic direction signs. Any violation of parking rules which could endanger the safety of the building property and occupants with result in cancellation of parking access card, penalties and reference to Dubai Police

5.12. Doors and Balconies

5.12.1. Doors and gates which swing in both directions should have a transparent panel except if they are low enough to see over. Conventionally hinged doors on main traffic routes should also be fitted with such panels. Panels should be positioned to enable a person in a wheelchair to be seen from the other side.

5.12.2. Power operated doors and gates should have safety features to prevent people being injured as a result of being struck or trapped.

5.12.3. Tenants must seek approval from DHCC facility management prior to making changes in any door structures, locks or fittings. Duplicate key must be handed over to DHCC security control room with 24 hrs of change / alteration to meet emergency requirements.

5.12.4. Tenants must ensure the following practices are controlled where internal premise access leads to building balconies.

- Storage of material
- Installation of dish antennas
- Hanging of linen and cleaning material
- Smoking
- Children playing
- Parties and functions
- Posting of advertisement signs

5.13 Sanitary Facilities

The tenants / owners shall ensure the following:

- Each facility must provide sufficient water closets, wash hand basins with running hot and cold water, liquid soap dispensers and hand dryers;
- Toilet rooms should be well lit ventilated to the external air and should have self-closing and tight-fitting doors. All toilet rooms and fixtures should be kept in good repair and in a sanitary condition;
- The use of common toilets, in case both sexes are employed, is strictly prohibited.
- Sanitary facilities must be maintained in a clean hygienic condition and free from odor.
Section 6:  
Emergency Preparedness & Response  
(For details refer NFPA 1561, 1600 standards, DM Building Safety Code)

6.1 Facility Layout (Floor Evacuation Plan)

The tenants shall ensure display of facility layout map that shows sufficient detail to enable rescue services, utility workers and the employees to find power shutoffs, fire protection devices and emergency exits. Maps shall be reviewed and updated on a regular basis.

6.2 Emergency Coordinator

An Emergency Coordinator and deputy coordinator shall be designated for each facility. The Emergency Coordinator, and in his absence the deputy coordinator, will be in charge of the Emergency Action Plan. The Emergency Action Plan shall include contact information of the Emergency Coordinator, deputy coordinator and all employees.

Emergency Coordinators should:

- Review the Emergency Response Plan
- Know the locations of Building evacuation map and Assembly Points.
- Primary and alternative evacuation routes, fire alarm pull stations, fire extinguishers, hose reel cabinet and emergency exits nearest to your work area.
- Monitor and replenish first aid supplies
- During evacuation report to the building incident commander and communicate observations / headcount / attendance sheet

6.3 Emergency Action Plan

Building Management and tenants shall ensure an effective Emergency Action Plan is available drafted in line with DHCC emergency plan to:

- Prevent personal injury or death;
- Avoid damage to environment; and
- Minimize property damage.

The Emergency Action Plan shall take into account health, safety and environment risks considering:

- Serious or life-threatening injury
- Entrapment
- Fire
- Explosion
- Radiation
- Chemical release or spill
Dubai Healthcare City
(H.S.E. Approved Code of Practice)

- Flammable liquid and gas leaks
- Structural failure
- Natural disaster
- Power failure
- Bomb threat
- Civil disorder
- Security Risks
- Biological health risks

6.4 Emergency Response Team

Based on the size of the organization and number of employees, building management shall ensure that an Emergency Response Team is assigned with specific responsibilities in the event of an emergency. The responsibilities of the Emergency Response Team within its premises shall include, but not limited to:

- Procedures for shutting of utilities;
- First Aid;
- Contacting emergency services; and
- Control of traffic, onlookers, security.

The Emergency Coordinator shall direct the Emergency Response Team and coordinate activities of Emergency Plan. The contact details of Emergency Response Team shall be indicated in the Emergency Plan.

6.5 Emergency Communications

The tenant shall ensure that employees are able to respond and report emergencies. Basic information for such reporting shall include:

- Caller’s name and facilities name
- Location of emergency, as specifically as possible
- Details of the emergency (fire, spill, etc)
- Urgency of the emergency (out of control, nearby, explosive materials, etc)

6.6 Emergency Services

The tenants shall ensure Emergency Services contact details shall be displayed in waiting/reception areas. Phone numbers shall include, but not be limited to,

- Security Control Room (04-3752193)
- Civil Defense (997)
- Police (999)
- Emergency Ambulance Service (998)
- Utility Companies
PREFERRED MEDICAL PROVIDERS LIST

- Preferred Treatment Location Name: Rashid Hospital
  Dubai
  04-3371323
  24 Hours

- Alternate Treatment Location
  Well Care Hospital
  Dubai
  04 2829900
  24 Hours

- Alternate Treatment Location
  City Hospital
  DHCC, Dubai
  04 2829900
  24 Hours

6.7 Ambulance Services

The tenants shall ensure arrangements with other government healthcare services to provide ambulance services in case of emergency and non-emergency transfer of their patients. Tenants are responsible for charges arising from ambulance related services.

6.8 Security

Security procedures must be adhered with that address facility access, crowd control, security staff needs, and traffic control.

6.8.1. All tenants, staff & visitors entering DHCC buildings must provide necessary documentation, identity cards for access and material transfer as when requested by security.

6.8.2. Depending on the level of threat or Emergency and on receiving authorization from Senior Management Security reserves the right to check baggage of any tenant, staff and visitor entering DHCC buildings and if required restrict access.

6.8.3. All tenants must provide security an access key to their premise and a replacement within 24 hours if alterations are carried out to access locking system. Prior approval from DHCC facility management is required for carrying out any changes to the premise main access door locking system.

6.8.4. Tenants working during unscheduled hours and at nights within the building must inform security of their presence within the premises.

6.8.5. The tenants shall ensure that during or after an emergency, only authorized personnel are permitted to enter the tenant’s facility.

6.8.6. Visitors and members of the public are not permitted to the staff office areas unless approved by the premise / operations manager.

6.8.7. Security shall restrict any vehicle owner not complying with parking and traffic rules in the building owned parking.
6.8.8. Security shall restrict any contractor activities and access when observed not comply with HSE requirements

6.9 Salvage and Recovery
The tenants shall ensure provisions for cleanup, salvage and recovery after an emergency. The tenants shall ensure a backup plan in case of emergencies to minimize damage and to enable immediate resumption of operations including, but not limited to:

- Protection of undamaged property;
- Customer notification;
- Information and records protection;
- Backup communications; and
- Emergency supplies.
- Measures to minimize environmental impact

6.10 Emergency Training
Each health care facility shall implement an educational program. This program shall include an overview of the components of the emergency preparedness plan and concepts of the Incident Command System. Education concerning the staff's specific duties and responsibilities shall be conducted upon reporting to their assigned departments or position.

All tenants shall ensure that a minimum of 1 trained fire warden and first aider is available and all employees are provided with orientation and training in terms of their responsibilities during an emergency, the locations of exit routes, alarm signals, fire extinguisher locations as well as hazardous material information.

6.11 Emergency Drills

6.11.1. All staff, Occupants, patients, visitors, Contractors and subcontractors are required to participate in emergency drills as scheduled, coordinated and conducted in coordination with Building management personnel on site. Following each drill, observations will be made to suggest improvements to the Emergency Response system and to identify any additional training needs. Tenants / Premise owners must ensure that corrective actions for observations made during drills are completed with the stipulated time frame and communicated to HSE.

6.11.2. The tenants shall ensure conduct of periodic emergency drills to allow employees to practice emergency procedures under simulated conditions. In addition tenants must ensure that they are familiar with Emergency procedures and must coordinate and participate in all planned / unplanned EXERCISES organized by HSE dept. Non compliance with emergency procedures will be contravening Civil defense regulations.
6.11.3. Personal Preparedness

The ability of staff, patients, visitors and vendors to act quickly and decisively at the time of an emergency is dependant, in large part, on the actions taken before an emergency occurs. Staff, both direct and indirectly hired and subcontractors are encouraged to implement the preparedness actions listed below, and to become familiar with their roles and responsibilities during an emergency and in the planning/preparedness phase.

The tenants shall ensure Visitors and Contractors are registered whilst on the premises and they will be informed on potential emergencies exit / evacuation routes and participate in Evacuation drills if scheduled during the visit.


Emergency events include natural disasters (Heavy rains, Earthquakes, Strong winds) and manmade events such as terrorism, medical emergencies / microorganism’s outbreak and civil disorder. This section outlines preparedness, mitigation and response actions that will be taken for those emergency events most likely to impact DHCC and its business partners.

6.12.1 In Case of Fire: General Emergency Evacuation

Person discovering the Fire should:

1. Alert others in the area.
2. Activate the nearest fire alarm or direct someone else to do so.
3. Alert Security Control Room on 04-3752193

Provide the following information:

- Building number and address, including the nearest cross street(s)
- Company Name
- Exact location within the building

4. Attempt to extinguish fire with fire suppression equipment only if it is small fire and you can do so safely. If the fire cannot be readily extinguished, evacuate immediately.

5. General Evacuation Procedure

Upon Activation of Fire Alarm, Occupants should:
• Leave the building immediately using the nearest emergency exit.
• Do not use elevators.
• Keep to the right in hallways and stairways and use handrails.
• Close all doors as you exit.
• If you encounter smoke, find an alternate exit or place cloth over mouth and nose to make breathing easier. Crawl along the floor, close to walls to help provide direction to the exit.
• If you are trapped in a room, place cloth material (dampened if possible) around or under door to prevent smoke from entering. Use masking or other tape (if available) to mark a large ‘X’ on a window which will serve to notify fire authorities of your presence.
• Before opening any door, place hand one inch from door (DO NOT ACTUALLY TOUCH DOOR) near top to check for heat. If the door feels hot to touch, fire or smoke is on the other side and the door should not be opened.
• If forced to advance through flames, move quickly, cover head/hair; keep head down and eyes closed as much as possible.
• Once you have safely evacuated, move away from building and proceed to the building designated assembly points and report to your emergency coordinator.
• Do not re-enter the building until advised it is safe to do so by your emergency coordinator or DHCC Security or by government rescue officials
• Report the incident to **DHCC Security Control Room on 04-3601777** immediately and carry out investigation, as needed. (Kindly refer to DHCC HSE Incident Reporting – Operation and Construction).

6.12.2 **In case of a Bomb Threat**

Person receiving the call should:
• Listen – Do not interrupt caller. Keep the caller on the line as long as possible and note caller’s voice characteristics, speech patterns, language proficiency, manner of speech and background noise.

• Attempt to ask the following questions:
  • When will it go off?
  • Where has it been placed?
  • What does it look like?
  • Why are you doing this?
  • What type of explosive was used?
  • Who are you?

• Notify the **Security Control Room on 04-3752193** immediately or emergency coordinator or call Dubai Police and Civil Defense (997) immediately after the caller hangs up.
• Do not discuss the call with other persons.
• Obtain a Bomb Threat Checklist (Appendix B) from the Emergency Response Plan.
• Determine the best course of action based on feedback from security or Dubai Police.
• If decision is made to evacuate, relay information to respective emergency coordinator.
• If a search of the building is conducted and a suspicious item is located: Dial **Security Control Room on 04-3752193**

• Provide the following information:
  • Building number and address
  • Exact location within the building
  • Description of the suspicious item
Dubai Healthcare City
(H.S.E. Approved Code of Practice)

- Your name and phone number

- Do not touch or handle suspicious item and keep area clear of all personnel.
- Notify Security or other site responder of the description and location of the item.
- Report the incident to **Security Control Room on 04-3752193** and carry out investigation, as needed. (Kindly refer to HSE Incident Reporting Procedure – SP-01 Operation and SP-09 Construction).

6.12.3 **In case of a medical emergency**

Person discovering Medical Emergency should:

Notify your immediate supervisor or manager and **Security Control Room on 04-3752193** Dial preferred medical provider list (Appendix C in case of serious emergency), Dubai Police: 999, Dubai Ambulance: 998 Dubai Civil Defense: 997, City Hospital: 04-2829900, Rashid Hospital: 04 – 3371111 and state that you are reporting a medical emergency.

- Provide the following information:
  - Building number and address, including the nearest cross street(s)
  - Company Name
  - Exact location within the building
  - Your name and phone number
  - Nature of the emergency.
- Do not hang up until advised to do so by the dispatcher.
- Have a co-worker or visitor involved:
  - Request first aid trained personnel to respond to the scene. Refer to your Emergency Call List.
  - Meet arriving medical aid unit and direct them to the scene.
  - Provide first aid care consistent with the level of training. First aid supplies are located on LHO premises.
  - Keep the victim warm with a coat or blanket.
  - Do not move the victim unless there is danger of further injury.
- For any injury involving bleeding:
  - Wear protective latex gloves and protective eyewear from the First Aid Kit.
  - Notify your HSE coordinator and **Security Control Room on 04-3752193** for clean-up and disposal of blood contaminated items.

Report the incident to **Security Control Room on 04-3752193** and carry out investigation, as needed. (Kindly refer to HSE Incident Reporting Procedure – SP-01 Operation)

6.12.4 **In case of Terrorist Threat / Civil Disturbance**

Persons near a Civil Disturbance should:

- Leave the area immediately.
- Do not argue or engage in conversation with participant(s). If pursued by group of protesters, walk calmly to a populated area and report to DHCC Emergency Response Team and Dubai Police as soon as possible.
- Report disruptive circumstances to DHCC security.
- If the situation turns violent or weapons and explosives are visible, immediately lock all doors; call **Security Control Room on 04-3752193**
- Remain in your office or work area. Stay away from windows and exterior doors.
- Use stairways if you must move from floor to floor.
- Do not go to the building lobby unless absolutely necessary.
- Remain inside building, unless instructed by Security or Dubai Police.
- Carry your company ID at all times, as most buildings are placed in surveillance during duration of the event.
Parking garages may also have restricted access, so determine alternative parking area or identify other means of transportation that does not require parking.

If threatened by an individual or Witness to a Threat:
- Protect safety of self and others (withdraw if possible; get under desk or table; lock door to office; exit building if able to do so).
- Attempt to notify others in the area of threat and increase distance between yourself and the person.

Dial **DHCC Security Control Room on 04-3752193** or direct someone else to do so.

Provide the following information:
- Building number and address, including the nearest cross street(s)
- Company Name
- Exact location within the building
- Nature of the threat or incident
- Description of person, if known
- Your name and phone number
- Notify your immediate supervisor or manager.
- Remain calm and non-threatening.

If a weapon is involved:
- Cooperate fully with all demands.
- Do not try to grab the weapon or overpower the person.
- Do not make any quick moves; explain your movements at all times.
- Listen to what the threatening person says; be supportive and empathetic.
- Note physical description of person (sex, age, height, weight, clothing, distinguishing scars or marks).
- Report the incident to and carry out investigation, as needed.

### 6.12.5 In case of an Earthquake

- DROP, COVER AND HOLD under study desk or table holding on to one of the legs or the top. Be prepared to move with the table or desk.
- Do not evacuate building unless instructed to do so or if the fire alarm sounds. If instructed to evacuate, follow the evacuation guidelines in Section 6.1. Remember, most earthquake related injuries occur from falling objects outside the building.
- Assess the condition of your coworkers. Call **Security Control Room on 04-3752193** or your emergency coordinator. Be a calming example for your coworkers.
- Stay alert for aftershocks.
- Do not use phones except to report emergency conditions as you may limit rescue communications.
- Do not attempt to leave work until you are instructed to do so. Make sure roads you access to get home are in fact undamaged and traffic is moving.

**Outside the Building:**
- Move away from trees, signs, buildings, electrical poles and wires;
- Protect your head with your arms from falling bricks, glass, plaster, and other debris;
- Move away from fire and smoke;
- Proceed to the Emergency Assembly Area if safe, or proceed to a pre-designated alternate assembly area; and
- Stay alert for further instructions.

### 6.12.6 Emergencies arising from microorganism release & spillage of contaminated substances

**Administration**

When the emergency is declared:
• Cancel or postpone non-urgent and routine clinics (ambulatory care visits).
• Consider creating a dedicated telephone "hot line" to provide information about the scope of operations of the setting during this phase of the epidemic. This should also include information about the epidemic, the purpose of triage settings and self-care guidelines.
• Post signs at all entrances informing patients, clients, visitors, volunteers and staff of appropriate actions to be taken before or upon entering the facility.
• Provide instructions on setting up appointments and report any illnesses prior to attending appointment so that appropriate precautions can be taken.

Physical Setting

• Isolate the HVAC system
• Separate well persons from those with infection by considering the following strategies:
  • Minimizing time spent in waiting rooms / lobbies;
  • Providing separate entrance/waiting room for infected persons, placing infected patients directly into a single room if possible;
  • Remove magazines, toys and other unnecessary items from the waiting room.
• Isolate the spillage or the area as required
• Plan for decontamination and salvage

Management of Staff

Provide education to all staff.
Adhere to the organization’s Occupational Health Plan for managing biological hazards.

Routine Practices

Ambulatory care facilities should adhere to the established policies and procedures they have in place for routine infection control practices and/or the DOHMS / DHA Health Infection Control Guidelines Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care.

6.12.7. Hazardous materials

Training is required for the use of hazardous materials, in particular for proper use and storage of hazardous materials. This training should include hazard information, proper procedures for preventing spills, and emergency procedures when a spill occurs.
If a hazardous material spill is witnessed, evacuate the spill site and warn others to stay away. Call Security 04-3752193. If determined that the spill is not life-threatening, follow the procedures outlined below.

• Leave the area of the spill first and proceed to a safe location nearby. Then assess if you have the proper training and protective gear to clean up the spill;
• If you are able to clean up the spill, follow proper decontamination procedures and use proper personal protection, and spill kit when available;
• Manage the generated waste as appropriate (consult your supervisor if necessary);
• Isolate the spill area to keep everyone away, and post signs as necessary; and
• If you suspect or witness a release of a hazardous material to the environment (air, water, ground), call HSE Department and building and DHCC Security.

6.12.8. Utility failure

Elevator Failure
• Stay calm do not panic
• If you are trapped in an elevator, use the emergency telephone to call for assistance; and
If the elevator does not have an emergency telephone, turn on the emergency alarm (located on the control panel) to signal your need for help.

**Gas Leak**

If any gas is smelt or there is suspicion of a leak:
- Cease all operations immediately;
- Do not switch lights on or off;
- Notify building and Security and HSE Department; and
- Evacuate as soon as possible (see "General Evacuation Procedures" above).

**Ventilation / Odor Problem**

If an odor comes from the ventilation system:
- Immediately notify building and DHCC Security and HSE department;
- If necessary, cease all operations and evacuate area (see "General Evacuation Procedures" above); and
- If smoke is present, activate the fire alarm system by pulling the pull station and notify building and Security from a safe location.

**6.13. Evacuation Guidelines**

When evacuating the building or work area in an emergency:
- Stay calm, do not rush, and do not panic;
- Safely stop work;
- Gather personal belongings if it is safe to do so;
- If safe, close office door and window, but do not lock them;
- Use the nearest safe stairs and proceed to the nearest exit. Do not use the elevator;
- Proceed to the designated Emergency Assembly Area (EAA) and report to the Fire Marshall;
- Wait for any instructions from emergency services; and
- Do not re-enter the building or work area until instructed to do so by the emergency services.
Section 7: First Aid

7.1 General
The building owner / tenants shall ensure that:

- All premises are provided with adequate first aid boxes;
- Equipment and facilities are adequate and appropriate to the facility; and
- The number of appointed and/or first aiders in different workplaces are in accordance with the following requirements:

<table>
<thead>
<tr>
<th>No. of Employees</th>
<th>First-aid Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fewer than 50 employed</td>
<td>At least one trained first aider</td>
</tr>
<tr>
<td>Between 50 &amp; 100 employed</td>
<td>One trained first-aider</td>
</tr>
<tr>
<td>More than 100 employed</td>
<td>One more first-aider to every 100</td>
</tr>
</tbody>
</table>

7.2 First Aid Training

7.2.1. The building owners / tenants shall ensure that the First Aid training is given by a Dubai Municipal / DHA licensed health care professional who is trained to deliver first aid training.

7.3 First Aid Facility

All work places must have a first-aid facility established in accordance with the following table of requirements:

<table>
<thead>
<tr>
<th>First-Aid Facility</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 – 50</td>
</tr>
<tr>
<td>First-aid box</td>
<td>1</td>
</tr>
<tr>
<td>First-aid room</td>
<td>Yes</td>
</tr>
<tr>
<td>Trained certified first-aid staff</td>
<td>Yes</td>
</tr>
<tr>
<td>Nurse or Doctor</td>
<td>Yes</td>
</tr>
</tbody>
</table>

7.4. First Aid box Inventory

7.4.1. All first aid boxes must be maintained as per the inventory list attached below.
7.4.2. Records of usage and incidents must be updated in the first aid register and communicated to the office manager or the HSE representative.

7.4.3. All first aid boxes must be inspected on a monthly basis by the trained first aider as per the inventory list and recorded.

7.4.4. First aid items requiring replenishment must be communicated to the office manager or HSE representative.

7.4.5. Trained first Aiders are responsible for inspection of first aid kits on a monthly basis and reporting replenishment requirements to their dept head where required.

Non compliance in maintaining first aid boxes and emergency supplies would be contravening DM technical guidelines on First aid and emergency supplies.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidance Leaflet</td>
<td>1</td>
</tr>
<tr>
<td>Package of 40 Plasters</td>
<td>4</td>
</tr>
<tr>
<td>Adhesive plaster roll 5m x 1.25cm</td>
<td>1</td>
</tr>
<tr>
<td>Adhesive plaster roll 5m x 2.5cm</td>
<td>1</td>
</tr>
<tr>
<td>Absorbent cotton bundles of 50 g</td>
<td>1</td>
</tr>
<tr>
<td>Gauze Bandage Roll 4m x 5cm</td>
<td>2</td>
</tr>
<tr>
<td>Gauze Bandage Roll 4m x 7cm</td>
<td>4</td>
</tr>
<tr>
<td>Gauze Bandage Roll 4m x 10cm</td>
<td>4</td>
</tr>
<tr>
<td>Packet of sterile 25 gauze sheets. 10 x 10 cm</td>
<td>5</td>
</tr>
<tr>
<td>Sterile eye pad with loop</td>
<td>3</td>
</tr>
<tr>
<td>Non woven triangular bandage</td>
<td>2</td>
</tr>
<tr>
<td>Single bottle of sterile eye wash solution</td>
<td>1 of 150ml</td>
</tr>
<tr>
<td>Box of 100 pieces cotton tipped applicator</td>
<td>1</td>
</tr>
<tr>
<td>Rescue Breather</td>
<td>1</td>
</tr>
<tr>
<td>Lister surgical scissors, 15 cm long</td>
<td>1</td>
</tr>
<tr>
<td>Bottle of Povidone Iodine solution</td>
<td>1 of 500ml</td>
</tr>
</tbody>
</table>
Section 8:

HSE Incidents & Accidents

8.1 Incident Reporting:

The premise owner, tenant shall establish and maintain an accident and incident record system at the workplace and shall make this record available to the HSE Department. This system shall contain the following information:

- Nature of the HSE incident / accident
- Description and cause
- Name of the worker affected
- Treatment given
- Days of absence
- Corrective and preventive action(s) taken

Any accident resulting in death of a worker or admission/attendance at a hospital, or any other dangerous incident must be reported by the tenant immediately to DHCC control room (04-3752193) by phone and within 24 hours by email to DHCC HSE department (hse.dhcc@dhcc.ae). In addition, the tenant must keep, for a minimum of three years, a record that contains the following:

- Reportable deaths/injuries arising out of or in connection with work;
- Reportable occupational diseases; and / or
- Reportable dangerous occurrences.

8.2 Duty to Notify:

All premise owner, tenant, and employees shall notify the HSE Department by using the standard form within 24 hours of the incidents such as:

- Death of a person as a result of an accident arising out of or in connection with work;
- A major injury suffered as a result of an accident arising out of or in connection with work;
- A major injury suffered by a person not at work (e.g. a visitor, customer, client, passenger, and bystander) as a result of an accident arising out of or in connection with work and where that person is taken from the accident site to hospital for treatment; and / or
- A dangerous occurrence.

The tenant is under duty to disclose accident data to the HSE Department.

The tenant / premise owner shall be responsible for ensuring the health and safety of the Contract Workers employed at their respective premises. Tenants shall be held liable/responsible for any accident/incident that may involve the external company workers within their respective facility.

8.3 Penalties:

Contravention of any of the provisions above is an offence as per DM and DHCC / DHCR. Tenants are responsible for their visitors and liable for damages occurring during incidents due to acts of omission as identified during investigations.
8.4 Reportable HSE Accidents, Incidents Dangerous Occurrences, Occupational Diseases

8.4.1 Accidents

The tenants shall ensure reporting to HSE Department of the following:

- Accidents that lead to employee’s absence from work for more than three consecutive days (i.e. excluding the day of the accident but including any days which would not have been working days); and / or
- Accidents that include non-consensual physical acts of violence done to a person at work, suicide in/out of work.

The incident report must be submitted to the HSE department within 12hrs of the incident. Accident investigation must be submitted within 48 hrs.

8.4.2 Occupational Diseases

The tenants / employees shall report all occupational diseases immediately to the HSE department. The incident report must be submitted to the HSE department within 12hrs of the outbreak.

8.4.3 Dangerous Occurrences

The tenants shall ensure reporting to HSE Department of the following:

- The death of an employee, where the employee’s death occurred within a year of suffering an injury
- Any death or major injury, which has occurred at the work place

In respect of deceased person, the death certificate must include particulars as to whether death might have been due to or contributed to by the employment or occupational hazard

8.4.4 Incident / Near Miss

- Any incident arising as part of the organization process or end product which could have an impact on the environment.
- All incidents which could have resulted in injury or damage to property.

The incident report must be submitted to the HSE department within 12hrs of the incident.

8.5 Incident Report Register

The tenants shall ensure the following:

- An incident report register shall be maintained by the tenant;
- All minor or major incidents shall be registered; and
- All major accidents shall be reported to the HSE Department for further investigation.
Section 9

Control of Substances Hazardous to Health (COSHH)

9.1. Definition:

The term includes any material, mixture or compound, used at work or arising from work activities, which is harmful to people’s health in the form in which it occurs in the work activity.

There are five identified categories, which, summarized, are as follows:

9.1.1. Chemicals classified under the Chemicals (Hazard, Information and Packaging for Supply Regulations 2002) as very toxic, toxic, harmful, corrosive, irritant, sensitizing, Carcinogenic, mutagenic or toxic to reproduction.

9.1.2. Substances for which the Dubai Municipal Health and Safety Commission has assigned a maximum exposure limit (MEL) or an occupational exposure standard (OES).

9.1.3. A biological agent, which includes micro-organisms, parasites and microscopic infectious parasites.

9.1.4. Any dust at a substantial concentration in air.

9.1.5. Any substance not in sections A-D above, but because of its chemical or toxicological properties and the way in which it is used or is present in the workplace creates a risk to health.

9.2. Roles and Responsibilities:

Duties of tenants are as follows:

9.2.1. No work is carried out that is liable to expose employees, internal / external customers) to substances hazardous to health unless a suitable and sufficient assessment, in writing, of those risks, has been conducted and of the steps needed to meet the requirements are met.

9.2.2. The assessment will be reviewed if there is reason to suspect that the assessment is no longer valid or there has been a significant change in the work to which the assessment relates.

9.2.3. Where a review indicates that changes are required, these changes will be made and applied.

9.2.4. Where control measures are implemented (i.e. personal protective equipment or other items/facilities) they will be properly used or applied.

9.2.5. Employees, internal/external customers are aware that they have a duty of care to ensure all control measures are used effectively (i.e. Personal Protective Equipment or other item / facility provided. If they discover any defect they must report it immediately to their manager.

9.2.6. Control measures implemented and provided are effectively maintained and within appropriate working order.

9.2.7. Engineering controls (i.e. local exhaust ventilation) are thoroughly examined and tested at least once every fourteen months or sooner, if required.

NB: Respiratory protective equipment is subjected to thorough inspection and, if appropriate, testing at suitable intervals.
9.3. COSHH Risk Assessments:

The assessment should be performed by a competent person and documented.

Before any substance is used in the workplace the competent person and departmental manager (if they are not the same person) shall check to decide whether it is classified as a hazard. In each case where the substance is recognized as a hazard the competent person shall seek from the suppliers the safety data sheet which gives information on how to properly manage the substance, so as to safeguard staff, patients and visitors health. They will then pass the written information on to the person made responsible for the safe use and storage of the substance on a day-to-day basis.

The assessment should consider all persons affected by the work including patients, all contractors, and members of the public and members of other Departments.

COSHH assessment should be carried out in consultation with any safety representatives within the workplace. Whenever the competent person considers it essential then expert help should be called upon.

Before carrying out the assessment an inventory of substances, including drugs, should be completed, accompanied by their safety data sheets where applicable (refer to HSE Guidelines HS (G) 27 substances for use at work). The data sheets will give details of the health effects of exposure.

NB: Consideration must be given to the potential effects of substances, taking into account the quantity and form, and the amount to which employees may be exposed. This exposure risk should be compared to any relevant published standards.

The departmental competent person should sort the chemicals and biological hazards into priority groups as follows:

**Priority Group 1** - High-risk substances requiring extensive controls.

**Priority Group 2** - Recognized health hazards but low exposure risk or low health hazard.

**Priority Group 3** - Little or no hazard.

When the assessments are completed the departmental competent person may discuss them with management to evaluate the information gathered and to make decisions about whether control is satisfactory and if not what remedial actions are required. Review dates for the assessment must be noted. These decisions should be documented as part of the assessment.

9.4. Potential Exposure Points:

The activities that result in exposure and the extent of the exposure by skin contact (e.g. Face or hand), inhalation, ingestion or inoculation to the substances hazardous to health, which require assessment should be recorded in the risk assessment.

There may be more than one activity for each substance. If so each should be assessed and if necessary separate control measures are applied. Consideration should be given to the potential exposure of those staff or contractors called in to the assessment area from another department or site to maintain or install any equipment and what guidance this may require from the manager of the area.

9.5. Prevention or Control of Exposure to Substances Hazardous to Health:

Where possible, a substance hazardous to health should be replaced by one which eliminates or reduces the risk to health. Adequate control must be secured first by measures other than personal protective equipment (i.e. by an enclosure of the process or by the use of local exhaust ventilation).

Where such control measures are found to be inadequate by themselves then, and only then, is the employer able to resort to the provision of suitable personal protective equipment.
Certain substances have Maximum Exposure Limits (MEL). Where such limits exists control of exposure, so far as inhalation of those substances is concerned, can only be treated as adequate if the level of the exposure is reduced as low as is reasonably practicable and in any case, below the MEL.

Certain other substances, have been given approved Occupational Exposure Standards (OES) Again, so far as inhalation of these substances is concerned, control is treated as adequate if the occupational standard is not exceeded, or where it is exceeded, the employer identifies why it is, and takes appropriate action, as soon as is reasonably practicable to remedy the situation.

A list of MELs and OESs can be found in the Health and Safety Executive's revised publication, EH40

9.6 The Use, Maintenance, Examination and Testing of Control Measures

- Employees and those potentially exposed must make full and proper use of control measures, including personal protective equipment (PPE), which complies with COSHH requirements;
- The department must ensure that all the control measures provided are maintained and within working order;
- Suitable records of examinations and tests and of the repairs (engineering controls and respiratory protective equipment) found to be necessary and thereafter carried out, must be kept available for inspection for at least five years;
- Employees and those potentially exposed have a responsibility to take reasonable care of their own health and safety and that of others who may be affected by their acts or omissions at work and are required to use safety equipment appropriately;
- Local exhaust ventilation must be examined and tested at least every 14 months. Other engineering controls and non-disposable respiratory protective equipment must be examined and tested at suitable intervals;
- Records of the above examinations and tests and repairs must be kept for at least 5 years;
- The department and its employees must ensure that Personal Protective Equipment is properly stored, checked at regular intervals and replaced / repaired if defective. Contaminated PPE must be removed before leaving the workplace, prevented from contaminating any other items and as a result decontaminated or destroyed.

9.7 Monitoring Exposure at the Work Place

Where employees, visitors are exposed to substances hazardous to health and it is necessary to ensure that adequate control of their exposure is maintained, that exposure must be monitored by a suitable procedure.

In specified cases the frequency of monitoring is stipulated. (Schedule 5 in COSHH 2002 sets out the specific substances and processes for which the minimum frequency of monitoring is laid down). Records of monitoring are required to be kept for at least five years. Where a monitoring record contains personal exposures of identifiable employees then these records must be kept for 40 years from the date of the last entry.

9.8 Health Surveillance

The department must minimize, wherever possible, the risks to employees from substances that may be hazardous to health. It may be necessary therefore for health surveillance to be carried out by the Occupational Health Department. The purpose of health surveillance under COSHH is to:

A. Protect the health of individuals;
B. Assist in the evaluation of exposure;
C. Evaluate hazards to health; and
D. Assess (for micro-organisms) the immunological status of employees.

The department shall ensure the employees are kept under suitable health surveillance. If an employee is liable to be exposed to a substance hazardous to health and
1) The possible result of the exposure is an identifiable disease or
2) There is a reasonable likelihood of the disease occurring or
3) The disease is detectable by a low risk technique then health surveillance should only be carried out where it will provide useful information for the protection of the employee.

The Manager of the Department will make the results of health surveillance known to their employee.

9.9 Information, Instruction & Training for Employees
Employees exposed to substances hazardous must be provided with such information, instruction and training, such as:

- Suitable and sufficient information about the substance (e.g. its storage, safe use, control and disposal).
- Suitable and sufficient information about the risks to their health created by exposure to the substance(s) and the precautions, which should be taken to control them.
- The information mentioned above will include information on the results of any monitoring of exposure at the work place and, in particular, in the case of any substance allocated a Maximum Exposure Limit (MEL). Where that MEL is known to have been exceeded, the employee will be referred to the clinic for further treatment.
- Managers must identify training needs for his/her own department and must ensure that these training needs are met.
- Records of training must be kept within the Department and copies sent to the Training Administrator for input onto the dept training database.

9.10 Arrangements to deal with Accidents, Incidents and Emergencies
Emergency procedures must be in place to protect the Employee’s health in the event of an accident, incident or emergency involving a hazardous substance. These procedures must include appropriate first aid facilities, relevant safety drills (practiced at regular intervals) and a means of warning of such incidents. Information on these emergency procedures must be available and include details of associated work hazards, hazard identification arrangements and any specific hazards likely to arise in the event of such an incident. In the event of an emergency involving a hazardous substance the Manager and the dept must take immediate steps to:

- Minimize the effects of the event
- Return the situation to normal
- Inform any employees who may be affected
- Restrict access to the affected area to essential personnel only and provide them with the necessary PPE and/or specialist equipment until the situation returns to normal.
- Employees must be informed as soon as practicable of the causes and necessary remedial measures in emergencies involving biological agents capable of causing severe human disease.
- Employees must also report any such accident or incident to the dept
- The requirements to have emergency procedures in place, provided the hazardous substance is not a biological agent or carcinogen, the steps necessary to minimize any effects etc do not apply in cases where the risk assessment identifies a slight risk to health due to the quantities of hazardous substances involved and the control measures required can adequately control that risk. Details of emergency procedures and associated information must be made available to internal and/or external emergency services for their emergency response plans. If appropriate they must also be displayed in the workplace.
- The Occupational Health Department are informed of the employees that require health surveillance due to exposure to substances hazardous to health. Managers must also inform the occupational Health Department when, due to a change in circumstances, health surveillance is not required
- For the process of carrying out their functions under the COSHH regulations, the representatives of the Occupational Health Department require access to visit any workplace or view records
- Any Training records are kept in the workplace and also a copy must be sent to the Training Administrator for input onto the dept Human Resources training database.
9.11 Biological agents

9.11.1. Introduction:

This section of the guidance focuses on the risks to those more directly involved in where the risk of exposure is likely to be greater than for those who are more likely to be incidentally exposed to biological agents as part of their work.

The aim of this guidance is to show how the process of risk assessment is an integral part of managing the control of infection, and that the control measures required by health and safety legislation.

A biological agent is defined in COSHH as:

‘A micro-organism, cell culture, or human endoparasite, whether or not genetically modified, which may cause infection, allergy, toxicity or otherwise create a hazard to human health.’

Managing the risks in laboratories and healthcare premises

Most biological agents are micro-organisms, i.e. bacteria, viruses, fungi, microscopic endoparasites such as the malaria parasite, amoebae etc

A micro-organism is defined in COSHH as:

‘A microbiological entity, cellular or non-cellular, which is capable of replication or of transferring genetic material’

COSHH classifies biological agents into one of four Hazard Groups (HGs) based on their ability to infect healthy humans. The classification is based on the following criteria:

- whether the agent is pathogenic for humans;
- whether the agent is a hazard to employees;
- whether the agent is transmissible to the community; and
- Whether there is effective treatment or prophylaxis available.

The four Hazard Groups are defined as follows:

1. **Hazard Group 1**: unlikely to cause human disease;
2. **Hazard Group 2**: can cause human disease and may be a hazard to employees; it is unlikely to spread to the community and there is usually effective prophylaxis or treatment available;
3. **Hazard Group 3**: can cause severe human disease and may be a serious hazard to employees; it may spread to the community, but there is usually effective prophylaxis or treatment available;
4. **Hazard Group 4**: causes severe human disease and is a serious hazard to employees; it is likely to spread to the community and there is usually no effective prophylaxis or treatment available.

As indicated by the definition in COSHH, 1 the risks of allergenicity and toxicity also have to be considered.

9.11.2. Biological agent’s exposure

There are three ways in which you might be exposed to biological agents at work:

1. exposure as a result of working with biological agents, e.g. in a microbiology laboratory;
2. exposure which does not result from the work itself but is incidental to it, mainly because biological agents are present as contaminants, e.g. farming, refuse collection, sewage treatment
3. Exposure which is not a result of the work that you do, e.g. catching flu from a work colleague.

Only the first two categories are covered by COSHH. This guidance deals specifically with deliberate work with and incidental exposure to, biological agents in laboratories. It also covers the healthcare setting as this is likely to be of higher risk than other types of incidental exposure, given the nature of the work.

As well as considering risks to employees, this code of practice also considers risks to those without specialist training who may be affected by the work that you do, e.g. visitors, maintenance workers, engineers, patients and cleaners.
### 9.11.3. General COSHH measures to control exposure to biological agents:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displaying suitable and sufficient warning signs including the biohazard sign</td>
<td>For example, displaying the containment level (CL) on including the biohazard sign. a laboratory door, displaying signs on patient isolation rooms to indicate the types of controls required when in the room, e.g. barrier nursing.</td>
</tr>
<tr>
<td>Putting in place appropriate decontamination and disinfection procedures</td>
<td>You need to consider spectrum of activity, presence disinfection procedures of inactivating agents and contact and duration of exposure of the disinfectant to the biological agent.</td>
</tr>
<tr>
<td>Putting in place the means for the safe collection, storage and disposal of contaminated waste. This includes the use of secure and identifiable containers after treatment if appropriate</td>
<td>Waste needs to be segregated at source, e.g. Storage and disposal of contaminated waste. clinical and non-clinical, and arrangements need This includes the use of secure and identifiable to be put in place to ensure that exposure to Containers after treatment if appropriate. Clinical waste is controlled both when being stored and when being transported within and from premises.</td>
</tr>
<tr>
<td>Testing, where it is necessary and technically possible, for the presence of biological agents outside primary physical containment</td>
<td>Testing of integrity of seals filters etc in a bioprocessing plant environment, or environmental sampling in food testing laboratories.</td>
</tr>
<tr>
<td>Setting out the procedures for working with (and on-site transport of) biological agents or material that could contain them.</td>
<td>Work with biological agents could be covered in local or codes of practice or standard operating procedures, or else form verbal instructions to employees if appropriate. When considering transport, remember to consider all forms including pneumatic tubes. Where transport of material such as clinical specimens needs to go via the public highway, these will need to be carried in accordance with the relevant DM standards</td>
</tr>
<tr>
<td>Putting in place good occupational hygiene measures including the provision of appropriate and adequate washing and toilet facilities. Where appropriate, eating drinking or smoking is prohibited in any workplace where there is a risk of contamination with biological</td>
<td>These are the central, basic measures to control infection in any work setting. Very high standards of good occupational hygiene will be required in healthcare and laboratory settings.</td>
</tr>
</tbody>
</table>
9.11.4. Infections and routes of transmission:

<table>
<thead>
<tr>
<th>Route of infection</th>
<th>Type of disease</th>
<th>Organisms Hazard</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact: either</td>
<td>Gastrointestinal disease</td>
<td><em>Salmonella typhi</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>E. coli O157</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Clostridium difficile</em></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Campylobacter jejuni</em></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hepatitis A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Skin and soft tissue</td>
<td><em>Staphylococcus aureus</em></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>infections</td>
<td>(including MRSA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Viral respiratory tract</td>
<td>Ringworm</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>infections</td>
<td>Orf</td>
<td>2</td>
</tr>
<tr>
<td>Airborne: small</td>
<td>Respiratory tract infections</td>
<td><em>Mycobacterium tuberculosis</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Mycobacterium bovis</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avian flu</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Chlamydia psittaci</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Infectious rashes</td>
<td>Rubella</td>
<td>2</td>
</tr>
<tr>
<td>Blood-borne: either</td>
<td>Hepatitis</td>
<td><em>Hepatitis B</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>direct contact with blood</td>
<td><em>Hepatitis C</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or body fluids (or via skin-</td>
<td>HIV</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>penetrating injury) or indirect via contaminated articles, e.g. dressings</td>
<td>HTLV</td>
<td>3</td>
</tr>
<tr>
<td>Droplet: large</td>
<td>Respiratory tract infections</td>
<td><em>Bordetella pertussis</em></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mumps</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Infectious rashes</td>
<td>Varicella zoster</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Meningitis</td>
<td><em>Neisseria meningitidis</em></td>
<td>2</td>
</tr>
</tbody>
</table>
Section 10:

Fire Risk Management

General

The objective of these requirements is to safeguard the lives and property within the premises against possible fire hazards. The scope of these requirements covers 2 elements: (For details refer applicable DCD / NFPA standards)

- Fire Protection
- Fire Prevention

10.1. Fire Protection

Every building or premise shall be designed, constructed, arranged, equipped, maintained, operated and provided with fire protection, detection & prevention facilities in accordance with Dubai civil defense and NFPA, ASHRAE guidelines. No alterations or installation of fire systems must be carried out without securing a permit from facility management. Modification and replacement of installed fire systems, fire doors required approval from facility management, Fit out Engineering, HSE department and must comply with DCD / NFPA standards. Certification for fire rating of glass doors as replacement must be provided to HSE department. The premise owners, tenant shall be held liable for any damage or malfunction on the installed fire systems for the building arising due to acts or omissions by any if its employees, visitors and contractors.

10.1.1. Construction / Fit out Requirements: at a minimum must address the following elements:

- Construction type, allowable height, and area
- Exposures/separation requirements
- Fire ratings, materials, and systems
- Occupancy types
- Interior finish
- Exit stairway enclosure

10.1.2. Egress Requirements: at a minimum must address the following elements:

- Exit stairway remoteness
- Exit discharge
- Areas of refuge
- Accessible exits
- Door locking arrangements (security interface)

10.1.3. Fire Detection and Notification System Requirements: at a minimum must address the following elements:

- Detection
- Notification
- Survivability of systems

10.1.4. Fire Suppression Requirements: at a minimum must address the following elements:

- Water supply
- Type of automatic fire extinguishing system
  - Water-based fire extinguishing system
  - Non-water-based fire extinguishing system
- Standpipes and fire department hose outlets
10.1.5. Emergency Power, Lighting, and Exit Signage: at a minimum must address the following elements:

- Survivability of systems
- Electrical Safety
- Distributed Energy Resources

10.1.6. Special Fire Protection Requirements: at a minimum must address the following elements:

- Engineered smoke control systems
- Fireproofing and fire stopping
- Atrium spaces
- Mission critical facility needs

10.1.7. Mass Notification

Notifying building occupants and visitors both inside and outside facilities of hazardous events has become a critical aspect of personnel safety and health. Whether it is a fire, chemical spill, criminal activity, or act of terrorism, everyone in the vicinity of such events must be warned so they know whether to shelter in place or flee—including which direction to go. Mass notification systems can be employed in single buildings. Notices can be sent over loudspeakers, to computer monitors and to cell phones.

10.1.8 Fire extinguishing appliances

- All fire extinguishers shall be inspected immediately after the installation and periodically at regular intervals not more than 30 days.
- Inspection record shall be maintained at the facility by the approved fire protection installation and maintenance contractor
- The persons conducting inspections shall maintain the record of all fire extinguishers installed in the facility including the fire extinguishers which requires corrective action and the date of action taken.
- All the fire extinguishers shall be maintained by an approved maintenance company by the Civil defense Authority.
- Suitable Fire Extinguishers available at required areas
- Access to fire extinguishers are free from obstruction
- Emergency Response Team members are familiar with the locations and methods of handling fire extinguishers/ firefighting equipment available
- Fire extinguishers must be secured protected from tampering
- Fire fighting equipments in open spaces such as parking areas are identifiable with visible signage and protected from direct sun light
- A portable extinguisher provided next to roof top exit
- At least 1 CO2 & 1 Dry Powder Extinguisher are provided in all Fire Cabinets
- Fire extinguishers and fire hose reels been tested and last test date recorded on the appliance
- At least one fire extinguisher is available in all kitchen/pantries
- Fire blanket is available at LPG used Kitchens/pantries
- Fire extinguishers are refilled /charged after their use
- Extinguishers shall be hydrostatically tested as detailed below
  - Stored-pressure water & Carbon dioxide : 5yrs
  - Dry chemical powder/ stored-pressure: 12yrs
Dubai Healthcare City  
(H.S.E. Approved Code of Practice)

<table>
<thead>
<tr>
<th>Area</th>
<th>Minimum requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offices &amp; Stores for dry goods</td>
<td>One 13A water type per 200 m² of floor area or part thereof</td>
</tr>
<tr>
<td>Package filling sheds: Class I and Class II liquids</td>
<td>Two foam type and two chemical type per 200 m² of floor area or part thereof</td>
</tr>
<tr>
<td>Class III liquids</td>
<td>One foam type per 200 m² of floor area or part thereof</td>
</tr>
<tr>
<td>Pump houses for handling flammable or combustible liquids</td>
<td>One foam type and one 479B dry chemical type per 50 m² of floor area or part thereof</td>
</tr>
<tr>
<td>Electrical switch house/room</td>
<td>One CO₂ type or one dry chemical type per 50 m² of floor area or part thereof</td>
</tr>
<tr>
<td>Road loading and unloading points</td>
<td>One foam type and one dry chemical type per every two vehicle loading and unloading positions</td>
</tr>
<tr>
<td>Storage cabinet with not more than 250 litres of Class I and II liquids</td>
<td>Two 9KG dry chemical per every cabinet</td>
</tr>
</tbody>
</table>

10.1.9. Equipment Maintenance

The owner & occupier of a prescribed building must make sure that all installed equipment is maintained, so that it performs to the standard to which it was originally designed. The owner or occupier of a building, in which fire protection equipment is required to be installed, must have the equipment tested, maintained and repaired by a permit holder and keep a record of all testing and maintenance work carried out including the type, date and result of any test, the name of the person undertaking the test, the name and certification of the person carrying out any maintenance or repair, the date it was carried out and any maintenance or repair work required.

10.1.10. Access to fire protection equipment and water supplies

- **Fire protection equipment**
  The owner or occupier of a building must ensure that reasonable access by firefighters to any fire protection equipment or essential services is available in or on the grounds of the building

- **Water supplies**
  An owner or occupier of the following must ensure that a suitable water supply for fire-fighting is available:

10.1.11. Exits, Exit signs and Lighting

The owner or occupier of a prescribed building must ensure locking devices are not fitted on a door forming part of any required exit unless they comply with the Building Safety Code, NFPA 101 standards and have the approval of Dubai Civil defense.

Access to doors, corridors or fire escapes that form part of an emergency exit or exit route are not blocked, restricted or made narrow; exit signs and emergency lighting operate effectively and are clearly visible at all times; and ceilings, walls, floors and stairs of a fire exit, or path of travel to an exit, are only covered with materials that comply with DCD life safety code and NFPA 101 standards.

10.1.12. Flammable material covering

An occupier must not decorate a prescribed building with flammable materials in such quantity or in such a way as to constitute a fire hazard.

10.1.13. Hot Work

Hot work includes grinding, welding, thermal or oxygen cutting or heating, and other related heat-producing or spark-producing operations.
Before commencing hot work in a building, a person must inform the owner or occupier of the building of their intention to carry out hot work; and perform all hot work in accordance with the relevant Permit to work procedure, NFPA & Dubai civil defense guidelines

- Design of laboratories shall be in accordance with the requirements of the DM guidelines, NFPA 45 and the Fit out Design Manual.
- All designs for laboratory spaces shall follow the lab unit approach as defined in NFPA 45.
- Where the quantities of hazardous materials and/or the number of lab units on a given level of a building exceed the limitations established by DHCR, the requirements of NFPA 45 shall govern the design.
- In all cases the sprinkler system requirements of NFPA 45 shall be followed for laboratories.
- Limitations on allowable quantities of corrosives, toxic chemicals, and other hazardous materials, shall comply with the requirements of DM and NFPA 45

10.1.15 Fire Protection during Construction and Renovation
Coordinate with the facility and acquire permit to work where applicable prior to and concurrent with design.
- Separate all occupied areas from demolition, renovation, or construction activities by temporary smoke-tight construction partitions of gypsum board or other approved non-combustible or limited-combustible material in accordance with the requirements of NFPA 241. Barrier design shall be detailed in project documents.
- Partitions shall be full height, extending through suspended ceilings to the floor slab or roof deck above and shall be one-hour fire rated, unless sprinklers are installed and are operational on both sides of the temporary partition whereupon the partition may be permitted to terminate at the ceiling in accordance with NFPA 241.
- Sprinklers are considered to be operational when they are installed in accordance with NFPA 13 (spacing, protection, distance from the ceiling, etc.) and there is a sufficient automatic water supply.
- Phase construction as necessary to ensure that exits are not obstructed or reduced in width. If exits must be obstructed during construction, provide alternate exit routes during each phase of construction and identify the alternate routes on the construction drawings.
- Minimize or avoid disruptions to fire alarm and sprinkler systems. Delineate phasing of construction to ensure that installations of new systems are expedited, and where possible, maintain existing systems in service until the replacement system is operational. If fire protection systems are to be disrupted, follow the NFPA fire system impairment procedures to ensure procedures are incorporated to maintain equivalent levels of fire protection and provide formal notification to the facility while systems are down via the fire protection
- Contractors shall furnish their own fire extinguishers when an area is vacated for renovations. Hot work operations involving open flames or smoke producing processes shall be conducted in accordance with the requirements of NFPA 51B

10.1.16. Fire and Smoke Barriers
Fire and smoke barriers shall comply with the requirements of the DCD life safety code of practice, NFPA and the DHCC Fit out Design Manual.
- Fire barriers for incidental use areas shall be as required by applicable codes and standards. In each case the most restrictive requirement among the DCD life safety code, NFPA Codes, shall be followed.
- Comply with the requirements of NFPA 90A for treatment of HVAC duct penetrations, locations of smoke dampers, and smoke detector requirements.
• HVAC ducts that penetrate smoke barriers provided to isolate collections storage rooms shall be equipped with listed combination fire/smoke dampers.

10.1.17 Interior Finishes and Decorative Materials

Interior finish, insulation, and decorative materials shall comply with the Fit out Design Manual, and applicable NFPA code requirements.

• Wood used for platforms, enclosures, cases over 100 cubic feet (or with heat producing equipment) or for other purposes shall be fire retardant pressure impregnated lumber and markings clearly visible attesting to its fire retardant characteristics.

• Fire retardant coatings of intumescent paint or other fire retardant chemicals shall not be used in lieu of fire retardant pressure impregnated treatment.

• All fabrics or other materials used in curtains, draperies, or other window treatments must be certified as flame resistant in accordance with the criteria contained in NFPA 701 – Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

• Decorative materials including: banners, bunting, streamers, fabric, paper, cotton batting, artificial and real vegetation; as well as wall, ceiling, and floor cover for acoustical or other effects shall meet the requirements of DCD life safety code of practice and NFPA 101.

• Textiles or other materials treated with a fire retardant shall be re-treated as per the recommended frequency by the treatment manufacturer. The building manager shall maintain a record of the date and type of treatment for as long as the material is in use.

• Artificial rocks, faux environments, and similar construction shall be fabricated of noncombustible materials to the greatest extent possible. Gypsum, glass fiber, metal lath and other noncombustible materials shall be used in lieu of foamed plastics and other combustibles.

10.1.18. Roof covering and roof decks

• Use roof coverings approved and listed by NFPA 256, Fire Tests of Roof Coverings.

• Roof deck assemblies must be FM Class I approved.

10.1.19. Smoke control systems

• Smoke control systems shall be installed where required by applicable NFPA Codes and Standards.

• All smoke control systems shall comply with the requirements of DCD life safety code of practice, NFPA 92A or NFPA 92B, as applicable.

10.1.20. Fire Alarm systems

• Complete smoke detection coverage shall be provided throughout facilities where early detection of fire can improve life safety or limit damage to collections and property (leased or owned) or where required by DHCC and/or applicable NFPA 72 codes.

• When fire protection systems are installed in facilities they are to be compatible with and connected to the site wide fire alarm monitoring system.

• Fire alarm installations shall comply with the requirements and recommendations of DCD Life safety code of practice, NFPA 72, project specifications, requirements.

• All new fire alarm systems shall be addressable unless otherwise permitted by FM. See NFPA 101 Addressable Fire Alarm System, for fire alarm specification criteria.

• Where multiple fire alarm control panels are provided they shall be interconnected in a network arrangement.
• Occupants must ensure that fire alarm systems installed within their premises shall be monitored, tested and maintained by a DM approved company and building owners in operational areas.

• All fire alarm circuits shall be installed in conduit (EMT, IMT, or rigid)

• Signaling Line, notification appliance, and power circuits shall each be in separate conduit.

• Separate public address systems shall be provided for non-emergency communication where desired/needed. Fire alarm systems shall not be used to address the public in non-emergency situations.

• In addition to compliance with NFPA 75, critical IT spaces, research laboratories, and other operations vital to the offices and research shall be protected by the following active and passive fire protection measures:
  1. 2-hour fire rated enclosures.
  2. Very early warning smoke detection.
  3. Clean agent fire suppression system or other approved active system.
  4. Clean agent, water mist, or CO₂ portable fire extinguisher and one water extinguisher for class A fires.
  5. A sign shall be located adjacent to each fire extinguisher to plainly indicate the type of fire for which it is intended.
  6. Dry chemical fire extinguishers shall not be permitted.

• Combustible storage, such as paper stock, inks, and unused recording media within the computer room shall be restricted to the minimum necessary for efficient operations, and shall be stored in closed metal cabinets.

• LAN rooms and similar second tier IT spaces shall be enclosed with 1 hour fire rated construction, be protected with sprinklers and smoke detection, and kept free of combustible storage.

• Where trash receptacles are specified as part of the design only non-combustible containers shall be specified.

10.1.21. Generator Installation

Installation, maintenance, operation, and testing requirements as they pertain to the performance of emergency power supply systems shall comply with NFPA 110, Emergency and Standby Power Systems.

In general, electrical installations shall conform to Article 700 of NFPA 70.

• Emergency generator sets shall be located in a separate room that is separated from the remainder of the building by fire separations having a minimum 2-hour fire rating. Or, generator sets shall be located in a separate generator building capable of preventing the entrance of rain, resisting maximum wind velocity required by the local building code, and preventing flood damage, sewer water backup and similar disasters. Consideration shall be given to the location of the emergency generators to minimize the possibility of damage caused by vandalism, sabotage, and other similar occurrences. Generators shall be installed in a location that will permit ready accessibility and adequate working space around the unit.

• Each emergency generator shall be provided with approved fire extinguishers of appropriate size, type, and number as specified in DCD Life safety code or practice and NFPA 10.

• Emergency generator rooms or separate generator buildings shall be equipped with fire detection systems in accordance with DCD Life safety code or practice, NFPA 72.
• Emergency generators shall be adequately protected from damage due to lightning.

• Openings in the emergency generator room that open to other sections of the building shall be provided with automatic or self-closing fire doors or dampers to confine a fire to the generator room.

10.1.22. Switchgear and uninterruptible power supply areas:

• Installation, maintenance, operation, and testing requirements as they pertain to the performance of the stored emergency power supply systems (i.e., UPS) shall comply with NFPA 111, Stored Electrical Emergency and Standby Power Systems.

• All areas of the switchgear and UPS areas shall be fire-rated, including all penetrations. These areas shall be protected by photoelectric smoke detectors and an automatic sprinkler system. Total flooding Halon 1301 systems shall not be used. The consideration of Halons substitutes (such as FE-200) shall be subject to the approval of the site Facility Management.

• The UPS shall be permitted to be located in switchgear or other electrical service room, provided that the manufacturer's environmental specification is met.

• The rooms or buildings housing the UPS shall be located to minimize the possibility of damage from flooding, including flooding resulting from fire fighting, sewer water backup, and similar disasters or occurrences. The UPS shall be installed in a location that allows ready accessibility and adequate working space for the inspection, repair, maintenance, cleaning, or replacement of the unit.

10.1.23. Battery room:

• The battery room shall be of fire-rated construction. A fire detection system and an automatic sprinkler system shall be provided.

• An automatic ventilation system shall be provided that keeps the battery room hydrogen (H2) concentration below 2.0 percent by volume at all times.

• A trouble alarm shall be transmitted to the central receiving station if the concentration of H2 exceeds the control limit.

• Portable fire extinguishers appropriate to the hazards shall be located in and adjacent to the battery room. Rooms or buildings housing the stored emergency power supply system (i.e., UPS, central battery system, etc.) shall be located to minimize the possibility of damage from flooding, including flooding resulting from fire fighting, etc.

10.1.24. Data and power cabling areas:

The following guidance shall be used to establish fire protection requirements in areas used to route data and power cables.

• Power cables installed in the ceiling plenum or below raised floor shall meet the requirements of NFPA 70, except that use of nonmetallic conduit shall not be permitted. Data and other communication cables installed in ceiling spaces and under raised floors shall be plenum rated or installed in conduit in accordance with NFPA 70.

• Different classes of cables, such as medium-voltage, low-voltage, and instrument cables shall be installed in cable trays or raceways specifically dedicated to each class. Where cable trays are arranged in tiers, the cables shall, whenever possible, be installed in tiers in order of fault energy, with the highest fault energy cables in the upper trays and instrumentation cables in the lower trays. Detection in the cable trays shall consist of line-type wire heat detectors.
10.16. Entry control point:

The guard house at an entry control point shall have provisions for automatic fire detection. A signal shall be sent to the central alarm receiving station indicating alarm or trouble. Appropriate fire extinguishers shall be provided.

10.17. Transformer vault/room

- The design agency shall consider the following criteria when establishing the fire protection requirements for transformer installations.

- Oil-insulated transformers installed indoors shall be located in fire resistive vaults except for indoor transformer installations exempt by NFPA 70. Fire protection for oil-insulated transformers in fire resistive vaults shall comply with DCD Life safety code or practice, NFPA 70. Requirements apply to single-phase or polyphase lighting or power transformers.

- Transformers insulated with less flammable liquids (fire point not less than 572°F [300°C]), shall be permitted to be installed without a vault in buildings of Types I and II construction. This applies to areas in which no combustible materials are stored, where there is a liquid confinement area, and where the installation complies with restrictions provided for in the listing of the liquid. Such indoor installations not meeting the requirements of the liquid listing, or installed in other than Types I or II buildings, or in areas where combustible materials are stored shall either be provided with an automatic fire suppression system and a liquid containment area, or installed in an approved vault. Transformers installed indoors and rated over 35,000 volts shall be installed in a vault.

- Dry type transformers shall be installed and located in accordance with DCD Life safety code or practice, NFPA 70.

<table>
<thead>
<tr>
<th>Area</th>
<th>Minimum Fire Barrier Requirements (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incinerator rooms and trash storage rooms</td>
<td>2-hour (2)</td>
</tr>
<tr>
<td>Paint shops</td>
<td>2-hour</td>
</tr>
<tr>
<td>Laundry rooms over 100 sq ft</td>
<td>1-hour</td>
</tr>
<tr>
<td>Incidental storage rooms over 100 sq ft</td>
<td>1-hour</td>
</tr>
<tr>
<td>Collections storage rooms</td>
<td>2-hour rated fire/smoke barriers</td>
</tr>
<tr>
<td>Wet collections spaces &lt; 500 sq ft</td>
<td>Per NFPA 30</td>
</tr>
<tr>
<td>Wet collections space ≥ 500 sq ft</td>
<td>4-hour</td>
</tr>
<tr>
<td>Bulk alcohol storage for wet collections</td>
<td>3-hour</td>
</tr>
<tr>
<td>Stationary lead-acid battery systems having a liquid capacity of more than 50 gallons used for facility standby power, emergency-power or uninterrupted power</td>
<td>1-hour in Group B, F, M, S and U occupancies.</td>
</tr>
<tr>
<td></td>
<td>2-hour in Group A, E, I and R occupancies</td>
</tr>
<tr>
<td>Electric closets</td>
<td>1-hour</td>
</tr>
<tr>
<td>Mechanical rooms</td>
<td>1-hour</td>
</tr>
<tr>
<td>Electrical switchgear and/or transformer rooms and generator rooms</td>
<td>1-hour or 2-hour depending upon size</td>
</tr>
<tr>
<td></td>
<td>3-hour for transformer vaults</td>
</tr>
<tr>
<td>Telephone/ communication closets</td>
<td>1-hour</td>
</tr>
<tr>
<td>IT spaces/closets (non-mission critical)</td>
<td>1-hour</td>
</tr>
<tr>
<td>IT spaces (mission critical)</td>
<td>2-hour</td>
</tr>
<tr>
<td>Maintenance shops</td>
<td>1-hour</td>
</tr>
<tr>
<td>Loading Docks</td>
<td>2-hour (over 100 sq ft used for movement of combustible materials)</td>
</tr>
</tbody>
</table>
10.2. Fire Prevention

10.2.1. Scope
All tenants shall be responsible for implementation of appropriate / necessary fire preventive measures, including housekeeping, at work places to prevent the outbreak of fires or explosions that could result in loss of valuable lives and property and the maintenance of fire detection and suppression systems within its premises.

The fire preventive measures shall include, but not limited to precautions against:

1. Sources of ignition including heat transfer;
2. Lightning;
3. Spontaneous combustion;
4. Explosions;
5. Flammable / combustible dusts, gases or other special requirement applications storage areas, and vapors and wastes;
6. Hazardous processes;
7. Naked lights and flames; and
8. Hazardous chemicals posing flammability risks.
9. Electrical connections and equipment
10. Storage areas
11. Buildings rooms corridors and floors must be clean, free from congestion and inappropriate storage of combustible material
12. Cigarette butts and wasted flammable material must be discarded only in designated receptacles
13. Electrical and heat producing equipment must be installed as per manufacturer’s recommendations
14. Electrical equipment such as Portable appliances, transformers, electrical equipment in hazardous atmospheres, etc are maintained, inspected and tested at regular intervals
15. Heating equipment such as refrigerators are maintained clear from combustible material
16. Open flames or heat producing equipment such as halogen lamps or spot lights are positioned at least one meter away from sprinkler heads
17. Extension cords in use are protected with circuit breakers. No Multi tap sockets are used
18. Smoke generated from the activities is disposed in a controlled manner
19. Ventilation ducts, machinery intakes/extracts are maintained clear and clean from grease and debris
20. Pipelines carrying combustible material protected with earth bonding against static electricity
21. Hot-work is performed only with permit to work
22. During the hot work combustible material are protected from ignition sources and suitable extinguishing equipment are properly located at the site

<table>
<thead>
<tr>
<th>Area</th>
<th>Minimum Fire Barrier Requirements (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Kitchen</td>
<td>1-hour</td>
</tr>
<tr>
<td>Fire Pump Room</td>
<td>2-hour</td>
</tr>
<tr>
<td>Refrigerant machinery rooms</td>
<td>1-hour</td>
</tr>
</tbody>
</table>
23. Burning of candles and incense sticks is strictly prohibited.

24. Any loose connection, short circuiting, spark from the plugs and fuse blowing off, must immediately be reported to the Maintenance department in writing. Overloading of sockets by multi plugs should be avoided.

NB: It is prohibited to use naked flames or aromatic smoke inside building premises.

10.2.2. Incident of fire / explosion taking place in the premises of tenants shall be reported in the prescribed format to the HSE Department. Investigation into the cause thereof shall be carried out by the HSE Department with the sole objective of implementing appropriate / necessary corrective measures to prevent recurrence.

10.2.3. Fire Prevention at work place is the tenant’s responsibility and co-operation is essential to prevent outbreak of fires which could destroy valuable lives and property. The tenants, therefore, shall ensure the following:

- Do not use naked flame such as candles, lamps etc. Use of burners in a controlled way in laboratory fume hoods or hospitals may be allowed with proper process/procedure and precautions in place;
- Do not let papers, rags or other rubbish accumulate at your place of work;
- Use proper containers for flammable liquids, and not open tins or buckets;
- Handle flammable liquids at a safe distance from possible sources of ignition;
- Do not overload electrical circuits;
- Switch off from mains any electrical equipment when not in use;
- Check electrical cables, plug sockets, for damage/fraying;
- Wipe out spilled oil, grease or liquids;
- Use metal containers for waste;
- Do not leave rubbish lying out;
- Do not hang clothing over or near heating element;
- Keep compressed gas cylinders away from sun, artificial heating, flammable materials, corrosive chemicals and fumes;
- Do not obstruct access to fire extinguishers;
- Make sure that staff members and visitors know the escape routes in case of fire;
- Keep fire escapes exits unobstructed;
- Ensure that all fire protection facilities are inspected / maintained / serviced – Hose Reels (monthly), Fire Extinguishers (six monthly) and Fire Detector/Alarm System (six monthly);
- Ensure that employees are trained in the use of Firefighting equipment, Fire Action and Evacuation on a yearly basis;
- Ensure that staff members and visitors know what to do in case of a fire.
10.3 Fire Extinguishing Systems

10.3.1 General

- Design of new, and modifications to existing building, exhibits, and facilities shall be in accordance with the requirements of DCD life safety code NFPA guidelines, which describe specific fire protection design criteria. Design is to incorporate redundant fire protection concepts, employing active fire protection through automatic fire suppression and detection systems, passive fire barrier features, and limiting combustible fuel load within the buildings in order to control and minimize potential injury to staff and losses to collections, mission, and infrastructure.

- Complete automatic fire suppression systems are to be provided and installed in accordance with DCD life safety code, the applicable DM Building Code and National Fire Protection Association (NFPA) standards for all projects where the maximum credible fire loss (MCFL) without automatic fire suppression would result in the loss of use of a vital structure or equipment for a period longer than that considered as acceptable by the program director.

- In addition to the above requirement, fire extinguishing systems shall be provided where required by DCD and applicable NFPA standards.

- Specialized extinguishing medium system must be installed for server room, restaurant kitchen areas, laboratories etc. This includes:
  1. Carbon dioxide system
  2. FM 200

- When the criteria above does not apply, automatic fire suppression and/or detection may still be warranted based on any of the following factors:
  1. Programmatic importance
  2. Effects on operations
  3. Cost vs. benefit
  4. Exposure
  5. Future conditions

10.3.2 Sprinkler Systems

- Fire Sprinkler System design criteria for facilities shall comply with DCD life safety code and NFPA 13 – Standard for the Installation of Sprinkler Systems,

- Compact (mobile) shelving shall be protected with automatic sprinkler systems meeting the requirements of NFPA 909.

- Refer NFPA 13 Automatic Sprinkler Systems, for complete sprinkler specification criteria.

10.3.3 Standpipe systems

- When required, standpipe systems must be installed in accordance with DCD life safety code and NFPA 14, Installation of Standpipe and Hose Systems.

- The minimum distance of standpipe hydrants must be 40ft from the building structure with a minimum pressure of 50psi.

- Fire hydrants must be maintained and pressure tested minimum once a year

10.3.4 Clean agent extinguishing systems

Application

Clean agent fire extinguishing systems are suitable for protection of certain types of special occupancies, hazards, and facilities. Clean agent fire extinguishing systems are not a substitute for required automatic sprinkler systems.
Design Requirements

- Clean agent fire extinguishing systems must conform to NFPA 2001, *Clean Agent Fire Extinguishing Systems*.

10.3.5. **Cooking equipment suppression systems**

- Grease ducts shall be protected by approved products, designed with clearance reduction methods and installed as fire rated enclosures.

10.3.6. **Portable Fire Extinguishers**

- Portable fire extinguishers are to be provided in facilities based on occupancy, length of travel between extinguishers, and hazard as required per DCD life safety code and NFPA 10 – Standard for Portable Fire Extinguishers, and this attachment.
- HSE shall be consulted as to the appropriate type of extinguishers for the occupancy.
- Clean gas or water-mist extinguishers rated for Class A: C fires are to be purchased and placed in assessed area with collections (i.e. all exhibit areas, collection storages rooms, conservations labs, etc.) unless waived by HSE. Areas with wet collections shall be provided with fire extinguishers appropriate for alcohol-based flammable liquid fires.
- Kitchens using deep fat fryers or other appliances utilizing combustible liquids shall have the appropriate size class K fire extinguishers located within 30 ft of such appliances.
- Additional requirements on the maintenance, type and sizes of fire extinguisher for special areas are listed in NFPA 10.

10.3.7. **Fire Pumps**

- Rooms containing fire pumps in non-high-rise buildings shall be 2-hour rated or 1-hour rated in a fully-sprinklered building, per DCD life safety code and NFPA 20 requirement.
- Rooms containing fire pumps in high-rise buildings shall be 2-hour rated per NFPA 20 requirement.
Section 11

Environmental Protection

Sustainability

The main objectives of sustainable design are to avoid resource depletion of energy, water, and raw materials; prevent environmental degradation caused by facilities and infrastructure throughout their life cycle; and create built environments that are livable, comfortable, safe, and productive.

11.1. Optimize Energy Use

11.1.1. Reduce Heating, Cooling, and Lighting Loads through Climate-Responsive Design and Conservation Practices

- Use high-performance building envelopes; select walls, roofs, and other assemblies based on long-term, insulation, and durability requirements.

11.1.2. Employ Renewable or High-Efficiency Energy Sources

- Renewable energy sources include solar water heating, photovoltaic (PV), wind, biomass, and geothermal. Use of renewable energy can increase energy security and reduce dependence on imported fuels, while reducing or eliminating greenhouse gas emissions associated with energy use. Consider solar thermal for domestic hot water and heating purposes.

- Evaluate the use of building scale to take advantage of on-site renewable energy technologies such as day lighting, solar water heating

11.1.3. Specify Efficient HVAC and Lighting Systems

- Use energy efficient HVAC equipment and systems that meet or exceed ASHRAE standards.

- Use lighting systems that consume less than 1 watt/square foot for ambient lighting.

- Evaluate energy recovery systems that pre-heat or pre-cool, in-coming ventilation air in commercial and institutional buildings.

11.1.4. Optimize Building Performance and System Control Strategies

- Employ energy modeling programs early in the design process.

- Use sensors to control loads based on occupancy, schedule and/or the availability of natural resources such as daylight or natural ventilation.

- Evaluate the use of modular components such as boilers or chillers to optimize part-load efficiency and maintenance requirements.

- Evaluate the use of Smart Controls that merge building automation systems with information technology (IT) infrastructures.

- Employ an interactive energy management tool that allows you to track and assess energy and water consumption.

11.2. Conservation of Water

The protection and conservation of water must be considered throughout the life of the building, and facility owners and developers must seek to:

- Reduce, control, and treat surface runoff;

- Use water efficiently through low or ultra-low flow fixtures, elimination of leaks, water conserving cooling towers, and other actions;

- Improve water quality;

- Recover non-sewage and gray water for on-site use (such as irrigation)

- Establish waste treatment and recycling centers;
Water conservation must also be a key consideration in the reuse or renovation of an existing building or premise.

11.2.1. Reduce, Control, and Treat Surface Runoff

- Use low impact development principles.
  - Use rainwater cisterns, and depressions to reduce runoff.
  - Reduce the amount of impervious site area.
  - Filter surface runoff.
  - Use pervious paving materials.
- Consider incorporating green roofs into the project where feasible.
- Plan for storm water events in the overall management of surface water runoff.

11.2.2. Use Water Efficiently

- Incorporate water efficiency and conservation in construction specifications.
- Use low or ultra low water-efficient plumbing fixtures and integrate other water-saving devices into buildings.
- Design landscape for water efficiency through the use of native plants that are tolerant of local soil and rainfall conditions.
- Install water-conserving cooling towers designed with delimiters to reduce drift and evaporation.
- Reduce evaporation through controlled scheduled irrigation at dawn and dusk.
- Eliminate leaks; around pipes and plumbing fixtures; conduct annual checks of hoses and pipes.

11.2.3. Recover non-sewage waste water On-Site Use

- Use non-sewage wastewater for irrigation and other uses permitted by DM Code.
- Use roof water, groundwater and groundwater from sump pumps for on-site activities.
- Capture and use condensate from HVAC systems.
- Greywater use can significantly reduce the amount of potable water needed for landscaping irrigation, toilet flushing and other non-drinking water application.

11.3. Use Environmentally Preferable Products

When developing specifications, product descriptions and standards, consider a broad range of environmental factors including: waste prevention, recyclability, the use of recycled content, environmentally preferable and bio-based products, life-cycle cost, and ultimate disposal.

During the facility/renovation design and development process, projects must have a comprehensive, integrated perspective that seeks to:

- Renovate existing facilities, products, and equipment whenever possible, such as historic structures or used furniture;
- Evaluate the environmental prefer ability of products using the cradle-to-cradle, life-cycle assessment (LCA) approach;
- Maximize the recycled content of all new materials, especially from a post-consumer perspective;
- Specify materials harvested on a sustained yield basis such as lumber from certified forests;
- Encourage the use of recyclable assemblies and products that can be easily "de-constructed" at the end of their useful lives;
- Limit construction debris, encourage the separation of waste streams, and encourage recycling during the construction process;
- Eliminate the use of materials that pollute or are toxic during their manufacture, use, or reuse; and
- Give preference to locally produced products and other products with low embodied energy content.
11.3.1. Renovate Existing Facilities, Products, and Equipment

- Use reconditioned products and equipment, such as furniture, whenever economically feasible and resource efficient.
- Evaluate if components of existing buildings or facilities, such as windows or metal door frames, can be incorporated in any new construction. Ensure that the windows and doors meet the new facility's security, accessibility, and energy requirements.
- Within an acceptable category of product, use materials and assemblies with the highest percentage available of post-consumer or post-industrial recycled content.
- Within an acceptable category of product, evaluate the use of materials and assemblies with low embodied energy content.

11.3.2. Specify Materials Harvested on a Sustainable Yield Basis

- Use timber products obtained from sustainably managed forests.
- Evaluate the substitution of bio-based materials or products, such as agricultural-fiber sheathing, for inert or non-recycled alternatives.
- Specify rapidly renewable materials that regenerate in 10 years or less, such as bamboo, cork, wool, and straw.

11.3.3. Encourage the Use of Recyclable Assemblies and Products

- Within acceptable levels of performance, evaluate the use of de-mountable or de-constructible products and assemblies.
- Establish a waste management plan in cooperation with users to encourage recycling.
- Investigate providing locations at the project site for organic waste composting.

11.3.4. Limit Construction Debris

- Require the development and implementation of a plan for sorting construction waste for recycling.
- Use products and assemblies that minimize disposable packaging and storage requirements.
- Consider designing a facility for deconstruction from the beginning.

11.3.5. Eliminate the Use of Materials that Pollute or are Toxic during their Manufacture, Use, or Reuse

- Within an acceptable category of product, use materials and assemblies with the lowest level of volatile organic compounds (VOCs).
- Eliminate the use of asbestos, lead, and PCBs in all products and assemblies.
- Eliminate the use of chlorofluorocarbons (CFCs) and hydro chlorofluorocarbons (HCFCs) as refrigerants in all HVAC systems.
- Evaluate the use of materials and assemblies whose manufacture does not pollute or create toxic conditions for workers.
- Avoid Ground-level Ozone in buildings. It can contribute to health problems for the building's occupants and damages vegetation and ecosystems.

11.3.6. Give Preference to Locally Produced Materials with Low Embodied Energy Content

- Evaluate the use of locally produced products to stimulate local economies and reduce transportation burdens.
- Evaluate the use of materials and assemblies that require minimum "embodied" energy for raw materials acquisition, manufacture, transport, installation, and use.

11.4. Durability of Environmentally Preferable Materials

It is important that 'green' products perform the same as 'standard' products over their expected lives; therefore, it is valuable to develop a durability plan, which informs material and systems decisions assessing potential risk factors and damage functions. Once identified, measures can be made in the building design to address the risk factors. This process follows every phase from pre-design to building occupancy.

Durability plans consider effects related to moisture, heat, sunlight, insects, material failure, ozone and acid rain, building function, style and natural disasters.
11.5. Enhance Indoor Environmental Quality (IEQ)

In the struggle to build cost-effective structures, it is easy to forget that the ultimate success or failure of a project rests on its indoor environmental quality (IEQ). Healthy, comfortable employees are invariably more satisfied and productive. Unfortunately, this simple, compelling truth is often lost, for it is simpler to focus on the first-cost of a project than it is to determine the value of increased user productivity and health. Facilities should be constructed with an appreciation of the importance of providing high-quality, interior environments for all users.

During the facility/renovation design and development process, projects must have a comprehensive, integrated perspective that seeks to:

- Facilitate quality IEQ through good design, construction, and operating and maintenance practices;
- Value aesthetic decisions, such as the importance of views and the integration of natural and man-made elements;
- Provide thermal comfort with a maximum degree of personal control over temperature and airflow;
- Supply adequate levels of ventilation and outside air to ensure indoor air quality;
- Prevent airborne bacteria, mold, and other fungi through heating, ventilating, air-conditioning (HVAC) system designs that are effective at controlling indoor humidity, and building envelope design that prevents the intrusion of moisture;
- Avoid the use of materials high in pollutants, such as volatile organic compounds (VOCs) or toxins;
- Assure acoustic privacy and comfort through the use of sound absorbing material and equipment isolation;
- Control disturbing odors through contaminant isolation and careful selection of cleaning products;
- Create a high performance luminous environment through the careful integration of natural and artificial light sources; and

11.5.1. Facilitate IEQ through Good Design, Construction, Operation & Maintenance Practices

- Acceptable IEQ is often easiest to achieve if "source control" is practiced, not only during building construction, but also over the life of the building. For example, the designer may select building products that do not produce noxious or irritating odors; and design exterior entrances with permanent entryway systems to catch and hold dirt particles.

- The Operations & Maintenance (O&M) and cleaning staff can also avoid creating IEQ problems by choosing less noxious materials during repair and cleaning activities. While HVAC systems may be designed to isolate operations (kitchens, dry cleaners, etc.) from other occupancies, the O&M staff ensures that pressure differentials are maintained to avoid the undesirable flow of contaminants from one space to another.

11.5.2. Value Aesthetic Decisions

- Appreciate the importance of providing windows in all occupied spaces for view and natural ventilation.
- Design spaces around basic human needs, and connections to the patterns of nature and the mind.
- Demand that individual buildings or facilities are consciously integrated into their natural and man-made context.
11.5.3. Provide Thermal Comfort

- Evaluate the use of access floors with displacement ventilation for flexibility, personal comfort control, and energy savings.

- Understand moisture dynamics as key criteria in the selection of wall and roof assemblies.

- Evaluate the benefit of specifying high-performance windows to increase mean radiant temperature.

11.5.4. Supply Adequate Levels of Ventilation and Outside Air

- Design the ventilation system to meet ASHRAE Standard 62: Ventilation for Acceptable Indoor Air Quality.

- Implement a construction management program that ensures key ventilation components are protected from contamination during construction.

- Commission HVAC systems to ensure they operate and perform as designed. This will ensure that adequate ventilation rates have been achieved prior to initial occupancy. HVAC system should be installed with filters with a Minimum Efficiency Reporting Value (MERV) of 7.

- Investigate the use of separate outside air and conditioned air distribution systems.

- Ensure fresh air intakes are located away from loading areas, exhaust fans, and other contamination points.

- Ensure parking lot/garage usage cannot generate pollutants that affect fresh air intake or pedestrian traffic. Prevent vehicles idling near the facility during normal operations.

- Investigate the use of a permanent air quality monitoring system. ASHRAE acceptable level of carbon dioxide (CO₂) for an indoor office environment is 100 ppm ("normal" CO₂ outside level is about 300 to 400 ppm). Carbon monoxide (CO) levels in office environments should be below 2 ppm. OSHA regulates levels of CO for industrial locations.

- Coordinate ventilation and air filtration with chemical, biological, and radiological concerns and locate outside air intakes so they do not conflict with physical security requirements.

- During operation, replace filters on periodic basis.

11.5.5. Prevent Airborne Bacteria, Mold, and Other Fungi

- Prevention of mold and fungi is dependent upon effective HVAC and building envelope design and construction.

- The HVAC system must be able to control interior humidity conditions over a wide range of outdoor conditions.

- The system must be designed to have the capacity to dehumidify at the 1% Humidity Ratio and mean coincident dry bulb temperature, and control interior humidity at both extreme and low load conditions.

- The building envelope must be carefully designed to prevent intrusion of water and to dry if intrusion should occur. It must also incorporate barriers that control vapor and air infiltration.

- Carefully consider the envelope of the building to prevent moisture infiltration.

- Investigate immediately when there is a moisture condition, either from a leak or flood.
11.5.6. Limit Spread of Pathogens

- Implement proper maintenance procedures to prevent nosocomial infections.

11.5.7. Avoid the Use of Materials High in Pollutants

- Limit the use of volatile organic compounds (VOCs) in such products as cleaners, paints, sealants, coatings, and adhesives.
- Avoid products containing formaldehyde, i.e., carpet, wall panels, cabinetry.
- Remove asbestos-containing material or contain it in a manner that precludes the possibility of future exposure.
- In areas where it is prevalent, include measures to control and mitigate radon buildup.
- Create safe, convenient, and secure storage spaces for housekeeping chemicals.

- If an area in an occupied building is being renovated, consider isolating and negatively pressurizing the fit out area if work is being performed that would result in dust, fumes, or odors. If conditioned air is required due to high end finishing work, the air should be directly exhausted to the exterior environment and not returned to the fan.
- Ensure office equipment installed emit minimal odors or pollutants.

11.5.8. Assure Acoustic Privacy and Comfort

- Minimize noise through the use of sound-absorbing materials, high sound transmission loss walls, floors, and ceilings, and equipment sound isolation.
- Consider sound masking systems. These systems introduce an unobtrusive background sound that reduces interference from distracting office noise. Note that some level of HVAC "noise" can serve as a background white noise source, eliminating the need for sound masking systems.
- Avoid the use of small diameter ducts with high velocity airflow.

11.5.9. Control Disturbing Odors through Contaminant Isolation and Product Selection

- Directly exhaust copying and housekeeping areas, and provide added return air grills in these areas. This will help limit lower atmosphere ozone generation, commonly associated with duplicating and printing processes. Ozone acts as a power oxidant. It can attack surfaces of certain elastomers, plastics, paints, and pigments; and aid in sulfide and chloride corrosion of metals. Possible health hazards caused by ozone include eye and mucous membrane irritation as well as chronic respiratory disease.
- Minimize disturbing odors through contaminant isolation and careful selection of cleaning products.
- Ensure maintenance procedures are in place to remove all trash and recyclables from the building on a regular basis rather than storing them within the building for prolonged periods of time.
- Prohibit smoking in all areas of the building. Environmental Tobacco Smoke (ETS) is a known carcinogen.
11.5.10. Create a High—Performance Luminous Environment

- Use day lighting for ambient lighting wherever feasible.
- Supplement natural light with integrated, high-performance CFL lamps, fixtures, and controls.
- Substitute magnetic fluorescent lamps with high-frequency electronic ballasts to reduce flickering.
- Reduce direct glare from both natural and man-made sources in the field of view—particularly in spaces with highly reflective surfaces, such as visual display terminals (VDTs).
- Use task/ambient systems that provide reduced levels of diffuse, general illumination, and supplement with task lighting. Most people do not need lighting in excess of 300 Lux (a unit of illumination).
- Use light color on walls and locate windows properly.

11.5.11. Provide Quality Water

- Comply with DM Safe Drinking Water guidelines for the levels of various metals and bacteria in potable water systems.
- For newly installed or temporarily suspended domestic water systems, follow "start-up" procedures by flushing all downstream outlets.
- Conduct periodic ‘maintenance flushing’ to proactively control drinking water issues.
- Control domestic water temperature to avoid temperature ranges where legionellae grow: keep domestic water temperatures above 140°F (60°C) in tanks and 122°F (50°C) at all taps (faucets and showers).
- Design cooling tower and building air intake placement so air discharged from the cooling tower or evaporative condenser is not directly brought into the facility's air intake.
- Consider a closed loop system instead of an open system to reduce the potential of exposure at the cooling tower.

11.6. Optimize Operational and Maintenance Practices

No matter how sustainable a building may have been in its design and construction, it can only remain so if it is operated responsibly and maintained properly. Ensure operation and maintenance personnel are part of the project planning and development process including the establishing of commissioning criteria at the onset of a project.

The use of toxic cleaning products can deteriorate indoor air quality; failure to test sensor control points on a regular basis can compromise energy efficiency; and poor training can lead to early system failures.

Buildings must be operated and maintained with the security, safety, health, comfort, and productivity of their occupants in mind, and with an understanding of the next generation's need to reuse and recycle building components. To the extent possible, select systems that are easily maintained.

Throughout the building's life cycle, operations and maintenance should seek to:

- Train building occupants, facilities managers, and maintenance staff in sustainable design principles and methods;
- Purchase cleaning products and supplies that are resource-efficient, bio-degradable and non-toxic;
- Use automated monitors and controls for energy, water, waste, temperature, moisture, and ventilation;
- Reduce waste through source reduction and recycling to eliminate disposal off-site; and
- Minimize travel by supporting telecommuting programs and enabling teleconferencing.
11.6.1. Train Building Occupants, Facilities Managers, and Maintenance Staff in Sustainability Principles and Methods

- Implement a comprehensive, preventive maintenance program to keep all building systems functioning as designed.

- Install meters and track progress of energy, water, and waste systems to ensure the highest performance levels possible. Without meters to monitor and verify performance, it will be difficult to determine if building systems are operating as designed.

- Provide operations support to facilities managers and maintenance crews to answer questions and offer additional information.

11.6.2. Employ Environmentally Preferable Landscaping Practices

- Landscape with drought-tolerant native, or indigenous, plants.

- Develop a Pest Control Plan, which includes information about: materials and equipment for service; method for monitoring and detection; service schedule for each building or site; any structural or operational changes that would facilitate the pest control effort; and commercial pesticide applicator certificates or licenses.

- Consider composting and/or recycling yard waste.

- Where necessary, use non-toxic outdoor fertilizers and pesticides.

- Minimize site disturbance.

- Use landscaping products with recycled content as required by DM for landscaping products.

11.6.3. Purchase Cleaning Products and Supplies that are Resource-Efficient and Non-Toxic

- Use cleaners that biodegrade rapidly.

- Look for products that are concentrated, using less packaging for more power.

- Use non-toxic pest control for indoor spaces and plants. Keep air ducts clean and free of microorganisms through a structured program of preventive maintenance and regular filter changes.


- Use schedule, occupancy, or luminance sensors to control lighting and other functions. In the absence of sensors, turn off lights when not in use.

- Use timers for heating/ventilation/air conditioning (HVAC) equipment.

- Turn off computers and equipment when not in use.

- Enable power-down features on office equipment

- Turn off computer monitors when not in use.

11.6.5. Reduce Waste through Source Reduction and Recycling

- Start a comprehensive recycling program with source separation and occupant incentives.

- Use on-site composting of organic materials.

- Evaluate potential venues like restaurants, food outlets that are sustainable in that they recycle, purchase recycled or recyclable items, use non disposable food and beverage service, have bottle deposits, a plan for leftover food and meeting materials, and practice water and energy conservation.
11.7. Reduce, Reuse, and Recycle

The tenants, staff shall practice the principle of “Three R's” - Reduce, Reuse & Recycle - to produce less waste:

- Reduce the amount and toxicity of the waste, including waste prevention through source reduction;
- Reuse containers and products; and
- Recycle as much as possible, which includes buying products with recycled content.

11.8. Ozone Depleting Substances

The tenants shall adhere to the requirements of Montreal Protocol of Ozone Depleting Substances whereby use of chemicals such as Chlorofluorocarbons (CFCs), Halons, Carbon Tetrachloride and Trichloroethane used in air-conditioning, refrigeration, fire protection systems and aerosol sprays are controlled. DHCC actively promote the goal of controlling ozone depleting substances to achieve timely phase out of ozone depleting substances.

11.9. Prohibited Discharge

It is prohibited to discard, abandon or discharge any of the following materials listed below in any road path, building passage, open land, roof, wall, fence, sewer system or any other such public place whether communal or private: For details refer UAE federal law 24 of 1999 and DM technical guideline 26

11.6.1. All kinds of waste and unwanted discarded materials such as garbage, waste paper, waste packing materials, waste equipment, medical waste, and waste water; and
11.6.2. Anything which may hinder the free passage of vehicles and pedestrians or adversely affect the environment of DHCC areas or cause contamination or any other breach or threat to public health and environmental safety.
11.6.3. Chemicals or other hazardous chemicals like toxic waste; corrosive chemical waste or their empty cans into ordinary skips or sewer system

11.10. Disposal of Light Waste

Light waste such as papers, polybags or light packing materials which may move or fly easily by the wind must not be disposed of untidily into skips or in any uncovered bins.

11.11. Air Conditioning - Condensed Water

If applicable the tenants shall ensure the following:
- Air conditioning condensed water drainage is connected to a central drainage system;
- Connections include a designed air gap to prevent system backflow;
- Drainage is maintained and routinely inspected for blockages and air gapes; and
- Maintenance records are retained.
11.12. Septic Tanks
If applicable and approved the tenants shall ensure maintenance of septic tank and soak away in proper condition. The maintenance record shall be retained.

11.13. Collection of Waste
The tenants shall ensure all refuse are collected in clean steel dust bins with inner bags and covering lids before being disposed of in the collection bins appropriate for waste stream separation.

Indoor air quality parameters and element exposure limits are displayed below. If applicable the tenants shall ensure periodic monitoring of the important parameters and maintain measurement records of the readings and provide the reports as when requested by FM / HSE department to ensure control measures are appropriate.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Symbol/Formula</th>
<th>Max. allowable limits (µg/m 3)</th>
<th>Average time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur Dioxide</td>
<td>SO₂</td>
<td>350</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
<td>24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>1 year</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>CO</td>
<td>30 (mg/m3)</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 (mg/m3)</td>
<td>8 hours 1</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>NO₂</td>
<td>400</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
<td>24 hours</td>
</tr>
<tr>
<td>Ozone</td>
<td>O₃</td>
<td>200</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120</td>
<td>8 hours 2</td>
</tr>
<tr>
<td>Total Suspended Particles</td>
<td>TSP</td>
<td>230</td>
<td>24 hours</td>
</tr>
<tr>
<td>Particulate Matter (10 microns in diameter)</td>
<td>PM</td>
<td>90</td>
<td>1 year</td>
</tr>
<tr>
<td>Particular Matter (2.5 microns in diameter)</td>
<td>PM</td>
<td>50</td>
<td>24 hours 3</td>
</tr>
<tr>
<td>Lead</td>
<td>Pb</td>
<td>0.50</td>
<td>1 year</td>
</tr>
</tbody>
</table>

The units of measure for the standard are milligrams per cubic meter (mg/m³) and micrograms per cubic meter (µg/m³) of air.
11.15 Air Pollutants Emissions Limits

11.15.1 Air pollutants emissions limits for hazardous and medical waste incinerators

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>EMISSION LIMITS (mg/Nm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Suspended Particles (TSP)</td>
<td>10 (daily average), 30 (½ hourly average)</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>50 daily average, 100 (½ hourly average)</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>200 daily average, 400 (½ hourly average)</td>
</tr>
<tr>
<td>Sulphur Dioxide (SO₂)</td>
<td>50 daily average, 200 (½ hourly average)</td>
</tr>
<tr>
<td>Hydrogen Chloride (HCl)</td>
<td>10 daily average, 60 (½ hourly average)</td>
</tr>
<tr>
<td>Hydrogen Fluoride (HF)</td>
<td>1 daily average, 4 (½ hourly average)</td>
</tr>
<tr>
<td>Total Volatile Organic Compounds (VOC)</td>
<td>10 daily average, 20 (½ hourly average)</td>
</tr>
<tr>
<td>Cadmium Thallium</td>
<td>Total 0.1</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>0.1</td>
</tr>
<tr>
<td>Antimony (Sb)</td>
<td></td>
</tr>
<tr>
<td>Arsenic (As)</td>
<td></td>
</tr>
<tr>
<td>Chrome (Cr)</td>
<td></td>
</tr>
<tr>
<td>Cobalt (Co)</td>
<td></td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td></td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td></td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td></td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td></td>
</tr>
<tr>
<td>Tin (Sn)</td>
<td></td>
</tr>
<tr>
<td>Vanadium (V)</td>
<td></td>
</tr>
</tbody>
</table>

Total 1
11.15.2 Air pollutants emission limits from stationary sources

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>SOURCES</th>
<th>EMISSION LIMITS (mg/Nm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visible emissions</td>
<td>Combustion sources</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Other sources</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Total Suspended Particulates (TSP)</td>
<td>All Combustion sources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large sources</td>
</tr>
<tr>
<td></td>
<td>Sulfuric acid mist or sulfur trioxide (SO₃)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Sulfur Dioxide (SO₂)</td>
<td>All fuel burning sources</td>
</tr>
<tr>
<td></td>
<td>Hydrogen sulfide (H₂S)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Hydrogen Fluoride (HF)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Oxides of Nitrogen (NOx)</td>
<td>All Sources</td>
</tr>
<tr>
<td></td>
<td>Carbon Monoxide (CO)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Chlorine (Cl₂)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Mercury (Hg)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Heavy metals in total:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead (Pb)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Copper (Cu)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Arsenic (As)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Cadmium (Cd)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Antimony (Sb)</td>
<td>All sources</td>
</tr>
<tr>
<td></td>
<td>Nickel (Ni)</td>
<td>All sources</td>
</tr>
</tbody>
</table>

11.16. Noise

To protect the public from excessive noise DHCC has established noise criteria. The tenants and their contractors shall ensure that the emission of noise does not exceed the set levels. Authorized representative from DHCC may investigate a compliant of excessive noise and may issue verbal or written notification followed by the disciplinary code of practice.

The accepted noise levels is 55dBA during day and 45 dBA at nights for operational areas in line with Dubai Municipality guidelines.

The National Institute for Occupational Safety and Health (NIOSH) recommends the following standard for promulgation by regulatory agencies.

11.16.1. Hearing Loss Prevention Program

The employer shall institute an effective hearing loss prevention program (HLPP) when any worker’s 8-hr TWA exposure equals or exceeds 85 dBA.

11.16.2. Noise Exposure Assessment

The employer shall conduct a noise exposure assessment when any worker’s 8-hr TWA exposure equals or exceeds 85 dBA. Exposure measurements shall conform to the American National Standard Measurement of
Dubai Healthcare City
(H.S.E. Approved Code of Practice)

Occupational Noise Exposure, ANSI S12.19-1996 [ANSI 1996a]. Noise exposure is to be measured without regard for the wearing of hearing protectors.

11.16.3. Instrumentation

Instruments used to measure workers’ noise exposures shall be calibrated to ensure measurement accuracy and, at a minimum, they shall conform to the American National Standard Specification for Sound Level Meters, ANSI S1.4-1983 and S1.4A-1985, Type 2 [ANSI 1983, 1985] or, with the exception of the operating range, to the American National Standard Specification for Personal Noise Dosimeters, ANSI S1.25-1991 [ANSI 1991a]. If a sound level meter is used, the meter response shall be set at SLOW.

In determining TWA exposures, all continuous, varying, intermittent, and impulsive sound levels from 80 to 140 dBA shall be integrated into the noise measurements.

11.16.4. Engineering and Administrative Controls and Work Practices

To the extent feasible, engineering controls, administrative controls, and work practices shall be used to ensure that occupants are not exposed to noise at or above 55 dBA as an 8-hr TWA. The use of administrative controls shall not result in exposing more workers to noise.

| Combination of Noise exposure levels and durations that no worker shall equal or exceed |
|----------------------------------|------------------|------------------|------------------|
| Exposure Level L (dBA) | Hours | Minutes | Seconds | Exposure Level L (dBA) | Hours | Minutes | Seconds |
| 80 | 25 | 24 | - | 106 | - | 3 | 45 |
| 81 | 20 | 10 | - | 107 | - | 2 | 59 |
| 82 | 16 | - | - | 108 | - | 2 | 22 |
| 83 | 12 | 42 | - | 109 | - | 1 | 53 |
| 84 | 10 | 5 | - | 110 | - | 1 | 29 |
| 85 | 8 | - | - | 111 | - | 1 | 11 |
| 86 | 6 | 21 | - | 112 | - | - | 56 |
| 87 | 5 | 2 | - | 113 | - | - | 45 |
| 88 | 4 | - | - | 114 | - | - | 35 |
| 89 | 3 | 10 | - | 115 | - | - | 28 |
| 90 | 2 | 31 | - | 116 | - | - | 22 |
| 91 | 2 | - | - | 117 | - | - | 18 |
| 92 | 1 | 35 | - | 118 | - | - | 14 |
| 93 | 1 | 16 | - | 119 | - | - | 11 |
| 94 | 1 | - | - | 120 | - | - | 9 |
| 95 | - | 47 | 37 | 121 | - | - | 7 |
| 96 | - | 37 | 48 | 122 | - | - | 6 |
| 97 | - | 30 | - | 123 | - | - | 4 |
| 98 | - | 23 | 49 | 124 | - | - | 3 |
| 99 | - | 18 | 59 | 125 | - | - | 3 |
| 100 | - | 15 | - | 126 | - | - | 2 |
| 101 | - | 11 | 54 | 127 | - | - | 1 |
| 102 | - | 9 | 27 | 128 | - | - | 1 |
| 103 | - | 7 | 30 | 129 | - | - | 1 |
| 104 | - | 5 | 57 | 130-140 | - | - | <1 |
| 105 | - | 4 | 43 |
11.16.5. Noise Exposure levels

The employer shall provide audiometry for all workers whose exposures equal or exceed 85 dBA as an 8-hr TWA.

11.17 Hazardous Materials Storage

11.17.1 Hazardous Materials

The tenants shall ensure the following:

- All the hazardous materials are stored in a manner to protect from weather conditions with adequate spill collection and fire protection equipment; and
- Hazardous materials are labeled and segregated as per the hierarchy of storage groups given below. Store two incompatible goods at least 3m apart. All highly flammable and reactive goods are to be stored in separate fire rated enclosures.

Hazardous material segregation categories

Hierarchy of Storage Groups

<table>
<thead>
<tr>
<th></th>
<th>Radioactive Material A1</th>
<th>11</th>
<th>Non Flammable – Non Toxic Gas G4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Explosive E1</td>
<td>12</td>
<td>Flammable Liquid F1</td>
</tr>
<tr>
<td>3</td>
<td>Herbicides P1</td>
<td>13</td>
<td>Oxidizers R1</td>
</tr>
<tr>
<td>4</td>
<td>All other Pesticides P2</td>
<td>14</td>
<td>Pyrophoric R4</td>
</tr>
<tr>
<td>5</td>
<td>Flammable – Toxic Gas G1</td>
<td>15</td>
<td>Water Reactive R3</td>
</tr>
<tr>
<td>6</td>
<td>Non Flammable – Toxic Gas G3</td>
<td>16</td>
<td>Reducers R2</td>
</tr>
<tr>
<td>7</td>
<td>Flammable – Non Toxic Gas G2</td>
<td>17</td>
<td>Corrosive Acid C1</td>
</tr>
<tr>
<td>8</td>
<td>Acetylene Gas G7</td>
<td>18</td>
<td>Corrosive Base B1</td>
</tr>
<tr>
<td>9</td>
<td>Oxygen/Oxidizer G6</td>
<td>19</td>
<td>Toxic Chemicals T1</td>
</tr>
<tr>
<td>10</td>
<td>Chlorine Gas G5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11.17.2 Oil Storage

Storage of more than 200 liters oil in tanks and containers, outside and above the ground at DHCC site shall meet the following requirements:

- Tanks, drums or other containers must be strong enough to hold the oil without leaking or busting;
- A form of secondary solid containment to oil and water, such as bund or drip tray must be provided to catch any oil leaking from the container or pipe work and equipment;
- The bund must be large enough to contain 110% of the maximum contents of the oil container;
- The bund must not have any outlet, valve or drain to remove rainwater or oil spilt;
- The bund base and walls must be resistant to water and oil. It should be checked regularly for leaks; and
- Above ground pipe work must be adequately protected and the underground pipes should be protected from damage and have provision for leak detection.
11.17. Asbestos products

Use of asbestos products in all facilities inside DHCC is strictly prohibited.

11.18. Wastewater disposal

The following substances are prohibited for discharge into water environment:

- Pesticides and herbicides
- Oil and solvent waste
- Radioactive waste
- Residues from the removal of anti-fouling paints
- Medical liquid waste

All sewer discharge points must be located 1 meter below the low water level and equipped with sampling point to provide access for taking representative samples.

### Wastewater discharge limits to Sewerage system

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Maximum allowable limits (Sewerage system) mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physico-chemical Parameters</td>
<td></td>
</tr>
<tr>
<td>Biochemical oxygen demand</td>
<td>1,000</td>
</tr>
<tr>
<td>Chemical Oxygen demand</td>
<td>3,000</td>
</tr>
<tr>
<td>Chlorine residual</td>
<td>10</td>
</tr>
<tr>
<td>Cyanides</td>
<td>1</td>
</tr>
<tr>
<td>Detergents</td>
<td>30</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>40</td>
</tr>
<tr>
<td>Oil and grease</td>
<td>50</td>
</tr>
<tr>
<td>pH (range) units</td>
<td>6-10 (units)</td>
</tr>
<tr>
<td>Pesticides</td>
<td>Nil</td>
</tr>
<tr>
<td>Chlorides</td>
<td>Nil</td>
</tr>
<tr>
<td>Phenols</td>
<td>50</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>30</td>
</tr>
<tr>
<td>Sulfates, total</td>
<td>500</td>
</tr>
<tr>
<td>Sulfides as S</td>
<td>10</td>
</tr>
<tr>
<td>Suspended solids</td>
<td>500</td>
</tr>
<tr>
<td>Surfactants</td>
<td>Nil</td>
</tr>
<tr>
<td>Temperature</td>
<td>35-40 0C</td>
</tr>
<tr>
<td>TDS</td>
<td>3,000</td>
</tr>
</tbody>
</table>
### 11.19. Shipment and Disposal of Hazardous and Radioactive Waste

DHCC follows requirements of Dubai Municipality as it is a signatory to the Montreal Protocol. Therefore, any trans-boundary shipment and disposal of hazardous and radioactive waste shall be carried out in accordance to applicable local as well as international protocols such as “Basel convention on control of trans-boundary movements of hazardous wastes and their disposals”, IAEA regulations for safe transport of radioactive materials and the UAE Federal radioactive regulations.
Section 12:

Waste Management

12.1 Introduction

Many different waste streams are generated in the delivery of the health care services. It is an onerous task for the responsible management for disposing such wastes, involving health, environmental, and safety considerations. Healthcare Waste is defined as solid or liquid waste arising from healthcare or health related facilities. This waste comprises two fractions, namely risk waste and non-risk waste as illustrated below.

12.2 Responsibility of Healthcare Occupant:

It is the responsibility of the business unit / Clinical manager in each location to comply with Dubai Municipality waste management legislation.

12.2.1. Every clinical unit generating medical waste shall appoint one staff to act as the waste coordinator. The Waste Coordinator will ensure that Monthly Waste Generation Report is regularly sent to DHCC HSE at hse.dhcc@dhcc.ae.

This person shall be familiar with the local authorities waste disposal regulatory requirement and shall have sufficient authority to directly advise senior management or the person in charge of the need for the implementation of the Code and the proper management of medical wastes.

12.2.2. Each healthcare facility or business unit as a generator or holder of waste is responsible for ensuring that the waste is properly stored, transported and disposed of in compliance with statutory requirements.

12.2.3. The holder of waste can be defined as the owner, person in charge, or any other person having possession or control of the waste.

12.2.4. The holder of waste must ensure that anyone that the waste is passed onto such as a waste contractor is authorized by DM to take it.

12.2.5 If the waste is illegally disposed, those responsible will be legally accountable for this. This obligation has no time limit and extends until the waste has either been finally and properly disposed of or recovered.

12.2.6. The holder of waste should ensure that at a minimum:

- All waste is stored and disposed of properly to ensure that it will not cause environmental pollution or cause a health and safety risk
- Hazardous waste is stored in designated colored containers properly labeled and locked.
- Identifying the waste and providing information on the hazardous nature of the waste as per the material safety data sheet (MSDS).
- Waste is only handled by individuals or companies that are authorized by Dubai Municipality to deal with it
- Spillages are promptly cleaned as per procedure
- Recycling is encouraged
- Record is kept of all wastes.
**12.3 Medical Waste**

**12.3.1. Medical Waste Bags**

- The tenant shall ensure that medical waste are placed in approved medical storage bags or sharp containers for collection into wheeled container trolleys provided by approved medical waste transporters.
- The tenant shall ensure that bags are securely tied, sealed and labeled with the tenant’s name. The bags shall not be re-bagged except under supervision in the event of a bag failure.
- A Yellow color lockable bin with identification label will be used for storage of medical waste when a Medical Waste Storage Room provided in the building floors are shared among the various Health Care Operators (HCOs).
- The following color coded bags shall be used:

<table>
<thead>
<tr>
<th>Waste Category</th>
<th>Bag Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Waste</td>
<td>Black</td>
</tr>
<tr>
<td>Radiotherapy Waste</td>
<td>Red</td>
</tr>
<tr>
<td>Cytotoxic Waste</td>
<td>Purple</td>
</tr>
<tr>
<td>Waste for Autoclaving</td>
<td>Light Blue</td>
</tr>
<tr>
<td>Other Medical Waste</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

**12.3.2 Medical Waste Segregation**

The tenant shall ensure that medical waste is not disposed or mixed with non-hazardous general waste. The tenant shall ensure the following segregation guidelines are followed:

- Provide with Yellow bags for collection of medical wastes
- Provide with Sharp boxes for collection of hypodermic needles, syringes, blades and broken glass items contaminated with medical waste.
- Sharp containers are to be replaced on being ¾ filled.
### Laboratory Waste
- Waste chemicals generated shall be segregated for disposal as hazardous waste. The hazardous chemical waste will be disposed based on the DM Guideline 26.
- Samples shall be autoclaved and deposited in Yellow bags or Sharp Boxes
- Culture dishes and other infested wastes must be autoclaved and deposited in Yellow bags

### X-Ray & Radiography
- Developer chemicals shall be collected and recycled with approval of Dubai Municipality. They will be treated as a hazardous chemical waste and will be disposed based on the DM Guideline 26.
- Radioisotopes shall be segregated and stored safely for 4 half-lives of the isotope involved. After this time, the material shall be disposed as general waste.
- Irradiated liquids may be flushed down the sewage system with copious quantities of water on receipt of written approval from Dubai Municipality

### 12.3.3. Waste Storage and Handling
- The tenant shall ensure bagged medical waste when labeled is not stored in office or patient care areas. The medical waste shall be taken to a dedicated collection point, which has an impervious hard standing and is of adequate size related to the volume of production and the frequency of collection;
- The storage area for the waste awaiting collection, if outside the clinic or laboratory must be secure and lockable. Access to these storage facilities should be limited to those responsible for handling, transporting or disposing of the waste;
- Only the approved wheeled collection container trolleys should be used when collecting, moving or transporting full bags of medical waste from the point source into the designated collection or storage area;
- All waste streams shall be collected from site on regular basis with no less than one week between collections. Collection log shall be retained;
- Bags used to store medical waste must not be filled up more than 80% of its nominal capacity in order to allow effective closure by tying up its neck;
- The sealing of plastic bags can be carried out by tying the neck with a purpose made plastic coated metal wire. Staples must not be used as they may cause tearing-off of the bags or cause injury to the handlers;
- At times where manual handling is involved (for example when placing into the wheeled collection trolleys), the necks of the bags should be positioned upright to allow any subsequent handling to be easily undertaken. Heavy duty gloves should be worn and the bags held at the closure end only since there is always a risk of "puncture injury" as sharps or hypodermic needles may find their way into the yellow bag indiscriminately;
- When handling sharps container heavy duty gloves should be worn and the container picked up only by the handle provided. The other hand should not be used to support the bottom of the container since sharps have been known in some instances to pierce the sides of its containers;

- Bodily contact with the bags of medical waste should be avoided. If there is a slightest chance of them brushing against clothing or body when being handled, then an industrial apron or leg protectors need to be worn. Sturdy shoes or industrial “Wellington” boots are to be used to protect injury against bags accidentally dropped;

- Personal protective outfits such as overall, mask, disposable gloves or eye protector, need to be worn when engaged in clearing up body fluid especially when there is risk of the worker’s skin becoming contaminated;

- Basic cleaning tools should be readily available including among others, disinfectant, granular chlorine compound for blood spillage or suitable equipment and sand available in sealable plastic bags which can be used in the event of any liquid leakage;

- A full course of anti-tetanus, Hepatitis B and serum and feaces carried disease immunization must be considered for all staff carrying out medical waste handling and disposal operations; and

- All generators of medical waste must have a contingency plan for spillage and rupturing of any container of waste, injury of personnel handling such wastes and alternative collection and transport plans should the normal transporter become unavailable.

12.3.4. Medical Waste Training

Tenants will be responsible for ensuring that all staff who work in areas where medical waste arises understands the proper procedures for waste handling, storage and segregation. In particular staff should be trained to:

- Check that storage bags are securely sealed;
- Handle bags by neck only;
- Know the procedure in the case of accidental spillage and to report promptly such incident;
- Check the integrity of the seal of the storage bags when movement is complete;
- Be able to identify the bag and ensure that the origin of the waste is clearly marked on the bag;
- Be aware of all occupational health and safety procedures related to the handling of medical waste.

12.3.5. Medical Waste Transportation & Disposal

- Generators of medical waste shall be responsible for its proper handling and transportation to the central medical waste treatment facility in Jebel Ali.

- Clinics and laboratories should seek the approval of HSE Department for their medical waste collection and transport company.

- Only approved Transport Company having vehicles with valid permits from Dubai Municipality for medical waste collection and transportation to the treatment facility will be allowed to operate within DHCC.

- It is mandatory for all approved waste operators / contractors operating within DHCC to provide data of all hazardous and other waste collected for disposal as when required by DHCC HSE department. Failure to comply with the ACOPs requirement could result in prohibition of further operation in DHCC.
12.3.6 Assessment of Waste Generation

The waste coordinator/team shall make assessment of all waste generated in the hospital/clinic. The waste should be classified as mentioned above. The survey should determine the average daily quantity of waste in each category by each hospital department.

Evidence of poor waste segregation shall be rectified and outcomes recorded.

Sample Weekly Assessment of Waste Generation

<table>
<thead>
<tr>
<th>Waste collection point (department)</th>
<th>Waster category</th>
<th>Total per week</th>
<th>Quantity of waste generated per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kg Lit</td>
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12.4. Safety and Emergency Response:

All waste producers and licensed collectors should make the necessary arrangement and provide adequate supervision to prevent any danger or injury to their staff arising from the handling of waste. They should take all such precautions as are necessary for preventing any danger to public health or safety, any pollution to the environment and any nuisance to the neighboring area in storing, removing, collecting, receiving, delivering and transporting of clinical waste.

12.4.1. General Requirements

- Responsible personnel for the management of waste and frontline staff involved in handling clinical waste should all receive proper training.
- Direct handling of waste containers should be minimized as far as possible through provision of bins on wheels, trolleys or carts, transit skips, etc.
- Regular inspection of waste storage area (and its access) should be conducted to ensure that it is free from obstruction and is kept dry and clean.
- No person should be allowed to eat, drink or smoke during the handling of clinical waste. Warning signs indicating "NO SMOKING, NO EATING AND DRINKING" should be posted at all transportation vehicles and storage area.

12.4.2. Safety Equipment and Training

- Employers should ensure that all employees involved in handling clinical waste are provided with adequate safety information, protective equipment and training.
- All staff who may be required to handle or transfer clinical waste should be trained to
follow safety procedures and wear appropriate personal safety and protective gear before handling clinical waste

- identify different types of clinical waste and know their packaging and handling requirements;
- seal different types of waste containers;
- label different types of waste containers;
- handle plastic bags by the neck only;
- avoid damaging the packaging;
- handle accidental spillage and leakage of clinical waste;
- check that waste containers and their seals are not broken or damaged after movement;
- know the precautions in dealing with special types of clinical waste (e.g. sharps, infectious waste); and
- observe personal hygiene practices, e.g. wash hands thoroughly after handling clinical waste

12.4.3. Handling

The general principles when handling healthcare waste are as follows:

- Appropriate Personal Protective Equipment (PPE) should be worn when handling waste and all employees handling infectious waste must be vaccinated as per DM guidelines
- Waste bags, boxes and containers should be closed when two-thirds full or at the manufacturer's fill line and labeled, tagged and securely sealed to prevent spillages, Containers holding liquid must have sufficient absorbent material to prevent leakages from the container.
- Cleaners / care assistants should not remove bags/containers unless they are labeled / tagged appropriately,
- Manual handling of waste bags / containers should be minimized,
- Waste bags should be picked up by the neck only and should not be thrown or dropped to avoid puncture or other damage,
- To prevent the risk of injury waste bags should not touch the body during handling and containers should be carried by the handle
- Wash hands thoroughly after handling waste with soap and hot water.

12.4.4. Spillages

- All spillages from healthcare waste bags or containers should be treated as potentially hazardous and dealt with as follows:
- Do not leave spillages unattended. A member of staff should remain in the area while another gets assistance
- Adequate protective clothing should be worn when cleaning up spillages
- In the event of a spillage of healthcare waste, the Clinic and facility Manager should be informed and the area should be disinfected immediately
- All staff involved in any aspect of packaging storage and transport of healthcare risk waste should receive standard safety training as appropriate to their task this should include:
  - Hand hygiene,
  - Proper use of Personal Protective Equipment (PPE)
  - Management of blood and body fluid spillage
• Employers should establish procedures for handling emergencies involving spillage or leakage of clinical waste and make available the procedures to their staff for reference.

• In the event of emergencies involving spillage or leakage of clinical waste, the spillage or leakage should be stopped as soon as practicable and the spilled or leaked waste cleaned up promptly. The affected area should be properly cleaned and disinfected. Absorbent materials, disinfection chemicals, protective clothing, masks, eye protection, gloves should be used as appropriate in the clean-up and disinfection operations.

• All materials arising from the clean-up of spilled or leaked clinical waste should be disposed of as clinical waste and should be properly packaged and labeled before disposal.

• All spillage or leakage incidents should be recorded and reported to the responsible person according to the established procedures. Follow-up investigations of the incidents should be conducted so that improvement measures can be taken to avoid recurrence of similar incidents in future.
Section 13:

Pest Control

13.1 Pest control program *(For details refer UAE Local Oder 11 Article 38)*

*Without prejudice to the responsibility of the Owner for the common operational areas of the Building which continues even after the completion of construction works, the Occupant shall be responsible for controlling Public Health Pests in the part of the building occupied rented out.*

The tenants shall establish effective written pest control program and maintain appropriate records.

13.2 Prevention of Rodents

At points where pipe works/ vents/ services etc. pass into buildings, maximum care should be taken to ensure that rodents cannot gain access.

13.3 Pest Infestations

It is the responsibility of the tenants to report to FM in case of any pest infestation. The tenant would be responsible for any damages due to pest infestation arising from his premises and its spread to other areas for failure to carry out pest control within his premises.

13.4 Aerosol Agents

Companies may not use any form of residual pesticide but may use aerosol/flushing agents, which are properly labeled. With the exceptions of domestic aerosol products, companies are not permitted to use any pesticides in the premises without first consulting the HSE Department.

13.5 Commercial Pest Control

The tenants may not have the services of private pest control services without approval of the HSE Department.
Section 14:

Compressed Gas Cylinders

14.1 General

The tenant shall ensure appropriate mechanisms are used for safeguarding patient, staff, visitors and property by promoting safe practices in the receipts, storage, handling and use of compressed gas cylinders. The tenant shall ensure that personnel involved in use and transport of compressed gas cylinders are trained in proper handling of cylinders, supports and cylinder-valve-protective caps.

The following gases and / or combination of gases are used within a healthcare program:

- Carbon Dioxide / Nitrogen
- Carbon Dioxide / Oxygen / Nitrogen
- Carbon Dioxide / Air
- Industrial Grade Oxygen
- Nitrous Oxide
- Medical Air
- Liquid Nitrogen
- Ethylene Oxide 100%
- Acetylene
- Chlorine
- Freon

14.2 Compressed Gas Cylinder Identification

The tenant shall ensure cylinder contents are identified by labels or stencils in English, naming the component(s), giving their proportions and with appropriate cylinder color-coding. All cylinders stored and in-use shall display a label "Empty / In-Use / Full" status condition.

14.3 Compressed Gas Cylinder Storage

The tenant shall ensure the following safety conditions are observed with regard to compressed gas cylinder storage:

- Cylinders are stored in approved locations;
- Storage rooms must be dry, cool and well ventilated and maintained below 35°C;
- Storage area is secured to prevent tampering;
- No Smoking signs are posted and clearly visible to show the presence of compressed gas cylinders;
- Compressed gas cylinders are kept away from radiators, steam pipes, direct sunlight and other sources of heat;
- Cylinders are not stored in operating room;
- No flammable gases or liquids stored with oxygen and nitrous oxide;
- Oxygen and nitrous oxide cylinders are stored at least 20 feet away from any combustible materials such as paper, cardboard, plastics and fabrics;
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(H.S.E. Approved Code of Practice)

- Cylinders are secured, upright and properly chained or supported by a metal strap in cylinder storage racks / stands / carts;
- Large cylinders not stored in racks shall be stored upright (nitrous oxide excepted) and secured. Nitrous oxide cylinders shall be stored horizontally;
- Compressed gas cylinders must be capped when not in use or when not connected to the delivery system;
- Wrappers shall be removed from cylinders prior to storage;
- Empty cylinders shall be segregated from full cylinders;
- Valves shall be closed on all cylinders in storage;
- All empty Freon cylinders must be discarded and used for no other purpose;
- Cylinder carts must be used for transporting cylinders. No rolling or dragging of cylinders shall be permitted;
- Use of oil / grease / lubricants on cylinder valves, regulators or fittings is prohibited;
- Do not attempt to repair damaged cylinders or to force frozen cylinder valves; and
- Storage locations are shown on emergency evacuation plans both for the tenancy area and building.

14.4 Compressed Gas Cylinder Handling and Use

The tenant shall ensure the following safety conditions are observed with regard to compressed gas cylinder handling and use:

- Cylinders in use must be secured in an approved manner;
- Equipment designed for one gas should not be utilized for another;
- Regulators should be “Off” as the cylinder is turned “On” and the cylinder valve is opened slowly;
- Regulators and hoses should never be interchanged between materials without gas supplier’s approval;
- Before equipment is disconnected from a cylinder, the cylinder valve is closed and pressure released from the device;
- Trans-filling of cylinders is hazardous and shall not be done;
- Cylinders must not be lifted by the cap;
- Cylinders are not knocked or bumped together;
- Never lubricate valve outlets or connecting equipment;
- Replace cap on empty cylinders and ensure cylinder status label indicated “empty”;
- Position cylinders so that the label is clearly visible;
- Check the label and color code of the compressed gas cylinder before use;
- No source of open flame is permitted in areas where compressed gas cylinders are in use;
- Equipment designated for use with a specific gas must be clearly and permanently labeled accordingly;
- Cylinder carts must be self-supporting design with appropriate casters and wheels, serviceable clamping or cylinder storage devices. The appropriate cart must be used at all times when full and empty cylinders are transported.
14.5 Oxygen - Handling and Use

The tenant shall ensure the following safety conditions are observed with regard to use of oxygen:

- When oxygen is in use, fire and safety sign / labels shall be conspicuously displayed;
- Ensure cylinders are secure on rack and never hang anything on cylinder;
- Safety relief mechanisms, non-interchangeable connections and other safety features shall not be removed or altered;
- Do not use wool or nylon inside the oxygen tent as they may cause sparks;
- Control valves on equipment must be closed before connections / disconnections are made and when cylinder is not in use;
- Store oxygen cylinders in well ventilated area, secured and 25 to 50 feet away from slow burning to highly combustible materials respectively.
- Oxygen cylinder storage exceeding 300cuft must comply with design and ventilation standards

14.6 Ethylene Oxide (ETO) - Handling and Use

The tenant shall ensure the following safety conditions are observed with regard to the use of ETO:

- Cylinders should not be stored outdoors in direct sunlight;
- A wrench or other leverage device should not be used to tighten if a leakage is discovered. Instead, remove the leaking cylinder to open air (if safely practicable) and notify emergency services;
- The storage of ETO cylinder(s) should be segregated from other cylinder sources;
- Appropriate signage for the cylinder;
- Employees are trained in the safe management of cylinders and systems using ETO and the training records are retained.

14.7 Liquid Nitrogen and Other Cryogenic Material Handling and Use

The following precautionary handling measures listed below should be applied for facilities using Liquid Nitrogen or other cryogenic liquids to minimize the risk involved.

14.7.1 Operating Precautions

- Liquid nitrogen should never be used except in a well-ventilated area. This is especially true when filling a warm container or transfer tube or inserting a warm object, as large volumes of nitrogen gas is evolved. The safe volume of liquid nitrogen stored or used in any enclosed space is described later;
- The dispensing of liquid nitrogen from the supply tank may be carried out only by those trained to do so;
- Only containers or fittings (i.e. pipes, tongs) that have been designed specifically for use with cryogenic liquids may be used as non-specialized equipment may crack or fail. In particular, food type vacuum flasks must not be used as they can implode resulting in flying glass fragments;
All glass Dewar’s must be protected against the possibility of flying glass fragments, arising from failure by mechanical or temperature stress damage, by sealing all exposed glass either in an insulated metal can or by wrapping with adhesive tape;

- Warm Dewar’s should be filled slowly to reduce temperature shock effects and to minimize splashing. Storage Dewar’s should not be over-pressured when filling a globular Dewar. The minimum pressure required to maintain a flow of liquid should be used;
- Containers of liquid nitrogen must be suitably vented and unlikely to block due to ice formation;
- Care must be taken to avoid the formation of liquid oxygen in cold-traps that are open to air or the increase of liquid oxygen content in a flask of liquid nitrogen that has been cold for a long period (Liquid oxygen has a blue water-like appearance);
- Solid carbon dioxide (dry ice) should be considered as an alternative coolant in situations where liquid oxygen could accumulate. However, most liquid nitrogen containers are closed except for a small neck area and the nitrogen vapor issuing from the surface forms a barrier which keeps air away from the liquid thus preventing oxygen contamination;
- Skin contact with either liquid nitrogen or items cooled by liquid nitrogen should be avoided as serious burns may occur. Care must be taken with gloves, wrist-bands or bracelets which may trap liquid nitrogen close to the skin; and
- Personal Protective Equipment (especially safety glasses) must be worn to protect against splashes, freezing vapor, failure of glass apparatus or brittle failure of items cooled by liquid nitrogen.

14.7.2 Personal Protective Equipment

The following equipment should be worn when handling or dispensing liquid nitrogen:

- Face shield or safety glasses;
- Dry insulated gloves when handling equipment that has been in contact with the liquid.
- Lab coat or overalls are advisable to minimize skin contact and also trousers over shoe/boot tops to prevent shoes filling in the event of a spillage.

**NB: Special kits are available for handling of cryogenic liquid.**

14.7.3 Avoidance of Oxygen Depletion/ Asphyxiation

- Liquid nitrogen should normally be used only in a well-ventilated area. However, there may be occasions (i.e. Transport of Dewar’s in lifts) when this may not be possible. To avoid the danger of oxygen depletion, the following should be noted:

  - **Safe limit in an unventilated space:** Calculate the room volume in m$^3$ and the max volume of nitrogen in m$^3$ (this can be found from the volume of liquid in litres x0.7). If the volume of nitrogen amounts to >0.15 of the room volume, special precautions or ventilation are required.
  - **Spillage during filling:** during filling assume that 10% of the final volume may be spilled.
  - **Loss during storage:** the boil off loss from a 5l Dewar is expected to be 0.2l per day.
• **Transport of liquid nitrogen in lifts:** To avoid in possible risks from nitrogen boil off during, for example, a prolonged period of lift breakdown, Dewar’s of liquid nitrogen must not be accompanied in lifts. Rather, two people should be used to transport the Dewar’s, one to load and one to receive at the destination floor. To prevent others from entering the lift, the fitted straps should be pulled across the entrance.

14.7.4 Training
Formal training is required before use of the liquid nitrogen dispensing facility. All personnel handling liquid nitrogen should receive instruction in its use from the experienced personnel prior to the handling of liquid nitrogen. The training record should be maintained.

14.7.5 Remaining Level of Risk
There remains a significant risk in using liquid nitrogen from inadvertent condensation of oxygen into a closed system. It is therefore recommended that whenever possible some other coolant is used e.g. solid carbon dioxide/liquid traps or baths – the preferred liquids for such baths are isopropanol or glycols. It is recommended that such baths be used in preference to liquid nitrogen when long term storage is envisaged.

(Source: Based on Risk Assessment: Handling, Transportation and Storage of Liquid Nitrogen and other Cryogenic Material, Assessor Dr. K MacNeil, http://www.tlchm.brisk.ac.uk/safety/initcry.htm and NFPA 55)
Section 15:
Building Utilities

15.1 General

The tenant shall ensure safe and reliable operation of all building utilities and utility systems such as emergency power systems, electrical distribution, emergency power, heating, ventilation and air-conditioning, plumbing, steam and hot water generation, medical gas, medical / surgical vacuum and facility communication systems through:

- Maintenance Inventory that details current and accurate inventory of system and components of the utility systems that support patient care environment and require regular observation and / or maintenance;
- Preventive Maintenance Plans for ensuring ongoing performance and reliability of utility systems; and
- Failure Response Plans for responding to system disruptions and failures.

15.2 Electrical Distribution

The tenant shall ensure effective management and maintenance of the electrical distribution systems to maximize safety and reliability and to guard against shocks and hazards associated with misuse and electrical interruption.

15.3 Emergency Power Systems

An emergency power system shall be provided to ensure availability of sufficient power to maintain essential functions during power failures, thereby reducing the risks associated with such failures. This shall include provision of:

- Emergency generators;
- On-site fuel storage for generators;
- Emergency lighting system;
- Emergency generators shall be tested on load each month; and
- Records of test shall be maintained.

15.4 Heating, Ventilating and Air Conditioning Systems (HVAC)

Heating, cooling and proper distribution of air are of prime importance in a healthcare facility. Correct temperature, humidity and air flow shall be provided in order to ensure a comfortable environment inside the facility, regardless of the climatic conditions outside.

The management and maintenance of HVAC systems shall address system performance, air balancing, smoke control, filters and servicing.
15.5 Plumbing Systems

The tenant shall ensure effective management and maintenance of the plumbing systems to accommodate facility needs for:

- Hot and cold potable water;
- Cold non potable water;
- Processes potable water for laboratory and patient treatment applications;
- Waste and storm water collection and disposal; and
- Sanitary sewage disposal.

It is strictly prohibited to dump any sort of waste in the sewer plumbing system.

15.6 Steam and Hot Water Generation Systems

Steam and hot water services form an essential part of a healthcare facility. The management and maintenance of steam and hot water generation system shall address generation and distribution subsystems, steam and water quality, boiler water pre-treatment, smoke emission control, alarm and protection devices, and fuel supplies in the event of contingencies.

15.7 Medical Gas and Vacuum System

Medical gas and vacuum systems form an essential feature for the provision of gases and reliable piped vacuum facility, oxygen and nitrous oxide to locations in the healthcare facility. The prime objective of the medical gas system is to ensure patient safety by having the correct gas, of the right purity and pressure pipe to dedicated user outlets.

The management and maintenance of medical gas and vacuum system shall address all component features, product purity controls, distribution configuration, alarms, automatic pressure switches, shut off valves, connectors and outlets, emergency shut-off controls and alternative supply methods. The tenant must ensure activities are conducted by an authorized person or organization accredited to provide such a service.

15.8 Facility Communication Systems

The tenant shall ensure effective management and maintenance of the facility communication systems to address component maintenance, system security, system configuration and alternative communication resources during system failures.

15.9 Conservation of energy and utilities

The tenants shall practice good engineering and behavior principles to minimize the consumption amount of energy and water.

The tenants have to take under control all their activities associated with the use of energy and utilities. The tenant shall demonstrate evidence of continual improvement by measuring and targeting improvement goals with respect to energy and utility usage within DHCC DuBiotech.
Section 16:

Food Safety

16.1 General

This section is applicable to food outlets operating within the DHCC premises. Large Hospital will have its own kitchen and food serving facility to cater the needs of the patients and staff. The operators of food outlets shall ensure:

- Safe preparation, handling and storage of food to minimize contamination by microorganisms and chemicals;
- Employee training on food safety; and
- Compliance to the Dubai Municipality and Food Safety (HACCP) Standards.

16.2 Layout and design

The layout and design of Cafeteria and Restaurants for the food outlets within the facility shall conform to the DHCC & Dubai Municipality design standards. Restaurants and catering premises shall preferably include the following:

- Raw food and vegetable preparation rooms;
- Raw food and vegetables storage;
- Cold storage for raw meat, fish and poultry;
- Chiller room for thawing and meat preparation;
- Cooked food preparation area;
- Cooked food storage;
- Dishwashing area;
- Cleaned pots and dish storage; and
- Packing room.

The layouts must ensure the work process flow(s) clearly separate food preparation, storage, dishwashing and packing area.

16.3 Unauthorized Personnel and Visitors

The tenants shall:

- Restrict unauthorized personnel entering food preparation areas, and food facilities in general; and
- Restrict visitors’ entry into food preparation areas unless wearing a cover coat and hair restraint.

16.4 Food Handlers

The tenants shall ensure food handlers:

- Availability of trained and certified Person in Charge (PIC)
- Are properly trained and certificated;
- Carry out cleaning and sanitation procedures, including cleaning and sanitizing of trays, utensils, tableware and other surfaces;
- Follow proper and frequent hand washing and personal hygiene practices;
- Wear and maintain proper clean attire during food handling;
- Do not eat, drink or smoke while preparing and handling food;
- Undergo a medical screening process and carry a valid medical examination certificate indicating that they are free from infectious diseases and fit to work as a food handler; and
- Are managed appropriately for the work related illnesses and / or injuries.

16.5 Employee Training

The tenants shall provide employee training which shall include, but not limited to the following:

- Hand washing;
- Food safety hazards;
- Food storage, preparation, transportation and display;
- Sanitation and disinfection; and
- Personal hygiene.

16.6 Food Products Purchase

The tenants shall ensure:

- Food products are purchased from an approved source and inspected on delivery for the expiration date and signs of spoilage;
- Any damaged food or containers are rejected; and
- Perishable food products are stored immediately at proper temperature.

16.7 Food Storage

The tenants shall:

- Store non-perishable food in clean, dry, properly ventilated areas, and inspect periodically for any signs of spoilage or expiration dates;
- Store food in designated areas. Do not store in housekeeping and dishwashing areas or near any sources of potential contamination;
- Store food at least 6 inches above floor level and away from walls to facilitate cleaning and allow pest control measures;
- Rotate food stocks to avoid outdated food to be used. Follow the First in First out (FIFO) system;
- Store foods in a way to avoid cross contamination between cooked and raw foods, washed and non-washed food;
- Store food covered and labeled at proper temperature for refrigeration (freezing storage less than -18 Degree Centigrade, refrigeration 1-4 Degree Centigrade, and hot storage above 64 Degree Centigrade); and
- Monitor refrigerators and freezers temperature and record it daily.
16.8 Food Preparation

The tenants shall ensure the following:

- Instruct personnel and supervise them for personal hygiene and food safety during food preparation;
- Wash vegetables and fruits properly;
- Thaw in a microwave (above 75°C) or refrigerator (at 4°C or below) or under running potable water (not above 21°C for not more than 4 hours). Do not thaw under room temperature;
- Do not thaw and refreeze;
- Cook food thoroughly to reach correct temperature for different types of food;
- Reheat food at least at 75°C and serve at least at 65°C;
- Store prepared food protected at proper temperature once ready to avoid contamination. Do not allow to sit uncovered at room temperature;
- Avoid food handling with bare hands, use proper and clean utensils like tongs and spoons;
- Use separate cutting boards for raw meat, poultry, fish, raw fruits, vegetables and cooked food, unless boards are non-absorbent (scratch, chip, crack) and can be cleaned and sanitized adequately between uses; and
- Use clean equipment and utensils during food preparation and avoid cross contamination.

16.9 Food Transport, Display and Serving

The tenants shall ensure the following:

- Transport food to different areas protected in temperature controlled carts;
- Establish safe times for food items to be stored in inpatient care areas;
- Protect food on display from customer contamination by use of easily, cleanable counter protector devices; and
- Maintain food on display at right temperature when hot or cold.

16.10 Washing and Cleaning

The tenants shall ensure the following:

- Comprehensive cleaning schedules are established to include different areas, equipment, fixtures and physical facility structure;
- Monitor dishwashing and rinsing temperature to achieve proper sanitation and washing of food utensils;
- For manual washing, sanitize all utensils and equipment either by hot water minimum at 70 degree centigrade or the use of sanitizer at appropriate concentrations and exposure time; and
- Wash all working surfaces, thoroughly rinse and sanitize them after each use with the proper sanitizer, dilution, and exposure time and water temperature.

16.11 Water

If applicable the tenants shall ensure use of clean, potable and safe water in the food service facility. The tenants shall test water monthly for its quality and portability from a DHCC / DuBiotech approved laboratory and records.
maintained. Immediate corrective action should be initiated if the water does not conform to the UAE unbottled drinking water specification Standard No. 148/2000.

16.12 Ice Machine

The tenants shall ensure the following:
- Preferably use ice dispensing machine;
- Use potable water for ice making;
- Clean and disinfect ice machines bi-monthly; and
- Use a clean scoop to dispense ice. Do not handle ice with bare hands.

16.13 Waste Management at Food Facility

The tenants shall ensure the following:
- Storage of garbage in leak and pest proof containers with tight fitting covers;
- Store all garbage containers either outdoors or above a smooth surface of non-absorbent material; and
- Wash containers and sanitize routinely in an area provided with a floor drain connected to a sanitary sewer.

16.14 Pest Control at Food Facility

The tenant shall ensure appropriate pest control measures such as sanitation, screens, closure of cracks and holes, etc to prevent the access and extermination of pests.

16.15 Maintenance

The tenant shall identify and follow a cleaning and sanitization procedure all equipment used in food services. All equipment such as food processing, washing, refrigerated storage rooms, shall undergo routine servicing in conjunction with a maintenance program schedule. Evidence of maintenance shall be retained.
SECTION 17

Permit to Work System

17.1. Purpose

The purpose of Work Permits is:

To safeguard people, plant, equipment and the environment to ensure that there is an appropriate process involving all stakeholders to control identified risks, where the work is:

- Of a non-routine nature;
- In changed circumstances;
- In a restricted, confined space; and / or
- In a hazardous area which cannot be safely controlled by normal management or operational systems such as Safe Work or Operating Procedures (SWP’s/SOP’s) or Current Best Practices (CBP’s).

A Permit to Work system should be established in organizations where the direct control of a safety process for every job cannot be supervised directly by the management or the work force may not comprise of specialist persons required for the job. All organizations operating in DHCC will fall into this category.

The Permit to Work System shall be in place during the following stages:

- Construction;
- Fit outs;
- Pre-operation; and
- Operational stages.

It is essential for contractors or their associated subcontractors working within DHCC premises to obtain a Permit to Work from DHCC HSE / FM prior to carrying out any task which could have an impact on the operation of utilities and personnel activities.

17.2. Accountabilities

The tenant must ensure that its contractors must acquire and comply with the PTW process from DHCC approved Permit issuer prior to any activity being carried deemed for an appropriate permit.

DHCC representatives reserve the right to monitor all activities carried out within the premises and take immediate actions for non compliances to the extent of penalties and work stoppage.

After end of days work or completion of work the contractor must ensure the work place is restored in a safe condition and FM / Security is informed to close out the permit. The contractor must not leave the place without informing building FM / Security to inspect the area of activity. Failure to do so and resulting in any incident or accident the contractor and the tenant will be held liable for the acts of omission and duty of care.

17.3 Scope of PTW

The work permit system applies to all personnel on all DHCC work sites for operations, maintenance, and other operational activities. Work activities requiring permits to work must be planned and coordinated in consultation with the work area owners and the designated approved permit issuer.

- Entry into confined spaces, (vessels, silos, hoppers, bunkers, sumps and pits, cable trenches ;)
- Breaking into pipes that potentially contain dangerous liquid or gas;
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- Excavations;
- Places where there is a risk of fire or explosion;
- Work where toxic materials are involved;
- Places where work is performed near x-ray or radioactive sources;
- Electrical or Equipment isolations;
- Demolitions
- Painting (Note: Spray painting is prohibited)
- Working at heights; and
- Welding or oxy-acetylene cutting (excluding workshops unless the need for a permit has been identified based on the risk assessment of the activity e.g. on fuel tanks.

Work permits are not transferable between shifts. At shift change handover the new stakeholder(s) must ensure the revalidation of the risk assessment and appropriate controls.

Note: Work activities generating noise dust or impact neighboring business partners, visitors etc must be carried out between 1900hrs to 0700hrs.
# SECTION 18

## References

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### International Standards

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### International Protocols

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<td>LPG Safety</td>
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21. Local Order 61 of 1991  |  Environment law  
22. Local Order 8 of 2002  |  Sewerage, Irrigation and Water Drainage in the Emirate of Dubai  
23. Administrative Order No.20  |  Food hygiene regulations (February 1992)  

**Federal Laws (UAE)**

25. Federal Law No, 1 of 2002  |  Regulation and Control of the Use of Radiation Sources and Protection against their hazards  
26. Labor Law  |  Labor Law  
27. Final Air Pollution Law  |  Final Air Pollution Law  
29. Regulations 2004  |  Regulations of the safe transport of radioactive materials  
30. Ministerial Order No. 32  |  Determination of ways & means to protect Employees against Occupational Hazards.  
31. Ministerial Order No. (5/1) 1982  |  Specifies dangerous operations in which employment of young person’s is forbidden  
32. Ministerial Order No, (6/1) 1982  |  Prohibits employment of women in certain jobs  

**Dubai Municipality Guidelines**

33. Guideline No. 1  |  Application of Waste Discharge Permits to Sewer, Land & Marine Environment  
34. Guideline No. 2  |  Guideline for Waste Audit Reports  
35. Guideline No. 3  |  Guidelines for Safety Audit Reports  
36. Guideline No. 4  |  Guidelines for Preparation of Environmental Impact Report for New Industrial Premises  
37. Guideline No. 5  |  Oil Spill Response & Preparedness  
38. Guideline No. 6  |  Industrial Compressed Gas Cylinders  
39. Guideline No. 7  |  Heat Stress at Work  
40. Guideline No. 8  |  Entry into Confined Spaces  
41. Guideline No. 9  |  Electrical Safety at Work  
42. Guideline No. 10  |  Guarding of Dangerous Machinery  
43. Guideline No. 12  |  Requirements of Waste Water Separators  
44. Guideline No. 13  |  Industrial Waste Water Disposal  
45. Guideline No. 14  |  Personal Protective Equipment – Head Protection
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