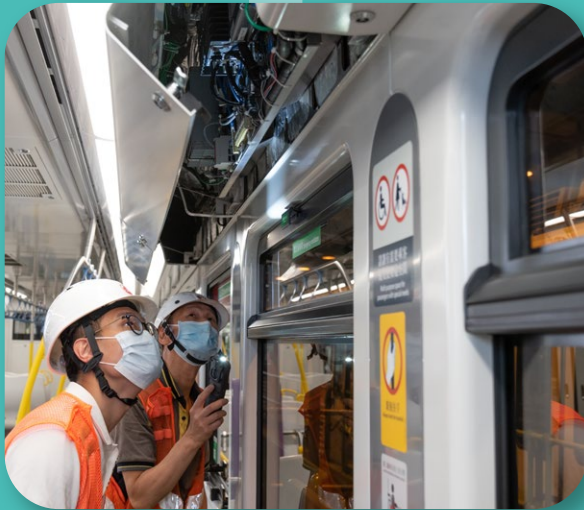




Electrical and Mechanical
Services Department

Safety & Health Handbook



機電工程署 安全及健康手冊



Foreword

The Electrical and Mechanical Services Department has two functional arms, namely the Regulatory Services and the Trading Services, to provide electrical and mechanical (E&M) services for enhancing the safety and quality of life of Hong Kong. Our Regulatory Services arm operates a number of divisions each specialising in different areas, including mechanical safety, gas safety, electrical safety, railway safety, energy efficiency and utilities monitoring. In addition to monitoring the power and gas companies, we regulate electrical, gas, lift and escalator contractors and workers, and advise the Government on nuclear safety matters. Our Energy Efficiency Office spearheads a wide range of energy efficiency programmes such as the energy labelling scheme for appliances and equipment. We also collaborate with the Water Supplies Department to regulate fresh-water cooling towers, so as to reduce the risks associated with Legionnaires' disease.

The Electrical and Mechanical Services Trading Fund (EMSTF) was established in 1996. It provides a wide range of E&M engineering services through its Strategic Business Units (SBUs) to over 80 government departments/bureaux and public bodies in Hong Kong. Each SBU caters for the needs of a specific group of government departments and public sector bodies. The scope of the EMSTF's services covers airport services, schools, environmental hygiene, government buildings and facilities, hospitals and clinics, leisure and cultural venues, ports and harbour, postal services, project management and consultancy. "Creating public value for community betterment through partnership with our clients" is the corporate goal of the EMSTF.

The Safety and Health Handbook of the Department was first published in 2016, and this revised edition was reviewed by the Hong Kong Quality Assurance Agency in 2022. This handbook contains important information on safety legislation, directives, procedures and construction methods relating to the Department's operations. All the management and staff of the Department as well as consultants and contractors employed by the Department should be familiar with the provisions contained in this handbook before providing regulatory and trading services.

Major additions and amendments to this handbook are as follows:

- Chapter 1 – Addition of sections on Online Knowledge Sharing Platform, Smart Site, Notifiable Accidents and Accident Investigation
- Chapter 2 – Addition of sections on Dealing with Nuisances Caused by Wild Pigs and Monkeys, Work Safety Zone and Prevention of COVID-19, and amendment to the section on Welfare Facilities on a Construction Site
- Chapter 3 – Addition of a section on First Aid Equipment and First Aiders
- Chapter 4 – Addition of sections on Handling of Batteries and Lithium Batteries, Monitoring of Modernisation and Addition Works of Lifts and Escalators, Inspection of Periodic Maintenance and Repair Works of Lifts and Escalators, Flammable Refrigerant Safety, Ventilation Requirements for Biohazard Areas, Personal Protective Equipment, Rapid Antigen Test and Work Safety Guidelines
- Chapter 5 – Addition of sections on Points to Note about Ventilation Systems and Reference Index of Indoor Air Quality

We are committed to ensuring the safety and health of our staff at work. We hope to provide them with comprehensive and easy-to-reference guidelines by updating this handbook, and to promote a safety culture through communication and co-operation between the management and staff of the Department and between our consultants/contractors and their employees. Our long-term goal is to ensure public safety and enhance quality of life in Hong Kong through cooperation with government departments, the legislature, the industry and the public.

We wish you all happiness, safety and health at work!

Electrical and Mechanical Services Department



Chapter 1

Foreword 2

Policies on Safety and Health at Work 9

Overview of EMSD Safety and Health Organisation 10

1.1	Strategic Safety and Health Objectives	11
1.2	Safety and Health Management in EMSD	12
1.2.1	Two-tier Departmental Safety and Health Committees	12
1.2.2	Corporate Level Functions	12
1.2.3	Safety Management System Model in EMSD	13
1.2.4	Divisional Level Functions	14
1.3	Safety Responsibilities	15
1.3.1	Management Level	15
1.3.2	Supervisory Level	15
1.3.3	Divisional Safety Officer	16
1.3.4	Sectional Safety Supervisor	16
1.3.5	All Staff	16
1.4	Safety Training for EMSD Staff	17
1.4.1	Online Safety Knowledge Sharing Platform in Knowledge Communities Portal 3.0 (KCP3.0)	19
1.4.2	Knowledge Sharing	19
1.5	Planning and Design for Project Work	20
1.5.1	General	20
1.6	Design for Safe Maintenance	21
1.6.1	Plant Room Layout and Safe Access	21
1.6.2	Selection of Machinery and Material	22
1.6.3	Smart Site	23
1.7	Safety Management of Project Work	23
1.7.1	General	23
1.7.2	Follow-up Action to Rectify Poor Performance	24

2

Chapter 2

1.8	Reporting of Accidents	24
1.8.1	Reporting Procedures	24
1.8.2	Accident Investigation	25
1.9	Employees Compensation	26
1.10	Emergency Preparedness	26

Safety and Health Guidelines for Workplace Environment 28

2.1	General Safety and Health	29
2.1.1	Housekeeping	31
2.2	General Fire Safety and Fire Precautions of the Venue	32
2.2.1	Staff Working in Headquarters Building	32
2.2.2	Staff Working in Places Other Than Headquarters Building	33
2.3	Outdoor Work	35
2.3.1	General	35
2.3.2	Outdoor and Countryside Work Safety	36
2.3.3	Performing Outdoor Work When Air Quality Health Index is Reaching or Already at the "Very High" or "Serious" Category	39
2.3.4	Recommended Precautionary Actions under Air Pollution	41
2.3.5	Work Safety during Lightning	42
2.3.6	Site Safety During and After Typhoons and Rainstorms	44
2.3.7	Prevention of Wasp Stings	46
2.3.8	Prevention of Snakebites	47
2.3.9	Prevention of Dog Bites	48
2.3.10	Dealing with Nuisances Caused by Wild Pigs or Monkeys	50
2.3.11	Mosquito or Insect Bites	50
2.4	Construction Sites	53
2.4.1	General Safety Guidelines on Entering a Construction Site under the Charge of Other Person(s)	53
2.4.2	Layout of a Construction Site	53

2.4.3	Roads and Traffic on a Construction Site	54
2.4.4	Ventilation, Temperature and Lighting on a Construction Site	55
2.4.5	Fire Prevention on a Construction Site	56
2.4.6	Housekeeping of a Construction Site	56
2.4.7	Noise Control on a Construction Site	57
2.4.8	Dust Control on a Construction Site	58
2.4.9	Welfare Facilities on a Construction Site	59
2.4.10	Protection Against Adverse Weather on a Construction Site	59
2.5	Road Work	60
2.5.1	Pre-work Safety Checklist (Road Work)	62
2.5.2	Work Safety Zone	64
2.6	Working Alone	65
2.6.1	What Types of Work Are Considered to be Lone Working?	65
2.6.2	Safety Problems During Lone Working	65
2.6.3	Safety Arrangements	66
2.6.4	Risk Assessment and Hazard Control	67
2.6.5	Other Points to Note	67
2.7	Infectious Diseases	68
2.7.1	Prevention of Infectious Diseases	68
2.7.2	Sites with a High Risk of Infectious Diseases	71
2.7.3	Prevention of Dengue Fever and Mosquito-borne Diseases	74
2.7.4.	Prevention of COVID-19	74
2.8	Others	76
2.8.1	Handling Violent Incidents	76
2.8.2	Tips on How to Cope with Violence	77
2.8.3	Work Safety during Large-scale Events, Public Assemblies or Processions	79

3

Chapter 3

Safety and Health Guidelines for Equipment and Tools

82

3.1	Personal Protective Equipment	83
3.1.1	General	83
3.1.2	Eye Protection	84
3.1.3	Head Protection	85
3.1.4	Protection for Work at Height	87
3.1.5	Ear Protection	88
3.1.6	Respiratory Protection	88
3.1.7	Foot Protection	91
3.1.8	Hand Protection	91
3.2	General Mechanical and Hand Tools	92
3.2.1	Mechanical Plant and Equipment	92
3.2.2	Hand-held Tools	92
3.3	Power Tools	94
3.3.1	Woodworking Machines	94
3.3.2	Air Compressors and Air Receivers	95
3.3.3	Electric Tools	96
3.3.4	Abrasive Wheels and Portable Grinders	97
3.4	Hoisting and Lifting	98
3.4.1	Lifting Appliances	98
3.4.2	Slings	100
3.5	Forklift Trucks	101
3.5.1	Operation of Forklift Trucks	101
3.6	Welding and Cutting	102
3.6.1	General Safety Matters	102
3.6.2	Electric Arc Welding	102
3.6.3	Gas Welding	104
3.7	First Aid Equipment and First Aiders	106
3.7.1	First Aid Boxes	106
3.7.2	Automated External Defibrillator (AED)	107
3.7.3	First Aiders	108

4

Chapter 4

Safety and Health Guidelines for Various Tasks

110

4.1	Manual Handling Operation	111
4.2	Chemicals and Dangerous Goods	113
4.2.1	Asbestos	114
4.2.2	Work with Fibreglass	116
4.2.3	Pre-work Safety Checklist (Use of Chemicals)	116
4.3	Confined Spaces	119
4.4	Painting	120
4.5	Accumulation of Gas	121
4.6	Batteries	122
4.6.1	Charging	122
4.6.2	Handling of Batteries and Lithium Batteries	123
4.6.3	Correct Ways to Dispose of Old/Damaged Batteries and Lithium Batteries	123
4.7	Safety of Working at Height	124
4.7.1	Code of Practice for General Safety	124
4.7.2	Risk Assessment of Work at Height	124
4.7.3	Safety Measures to be Taken When Carrying Out Work at Height	124
4.7.4	Points to Note When Using "Light-duty Working Platforms"	125
4.7.5	Points to Note When Using "Mobile Working Platforms"	126
4.7.6	Points to Note When Using "Power-operated Elevating Work Platforms"	127
4.7.7	Pre-work Safety Checklist (Work at Height)	128
4.8	Electrical Work	130
4.9	Monitoring of Modernisation and Addition Works for Lifts and Escalators	131
4.10	Inspection of Periodic Maintenance and Repair Works of Lifts and Escalators	132
4.11	Flammable Refrigerant Safety	132
4.11.1	Household Air Conditioners Using R32 Refrigerant	133

4.11.2	Household Refrigerators Using R600a Refrigerant	134
4.11.3	Household Dehumidifiers Using R290 Refrigerant	134
4.11.4	Medium and Large Air-conditioning systems	135
4.12	Steam Equipment	135
4.13	List of Guidelines for Specific Work Activities	136
4.13.1	Biohazard Area	136
4.13.1.1	Personal Protective Equipment	136
4.13.1.2	Ventilation Requirements	136
4.13.1.3	Rapid Antigen Test	137
4.13.1.4	Work Safety Guidelines	137

5

Chapter 5

Office Safety		138
5.1	Office Safety	139
5.1.1	Working Environment of Office	139
5.1.2	Points to Note about Ventilation Systems	140
5.1.3	Indoor Air Quality Reference Index	140
5.1.4	Office Equipment and Tools	142
5.1.5	Points to Note about the Safe Use of Electricity	142
5.1.6	Manual Handling in Office	142
5.2	Guidance Notes on Using Display Screen Equipment (DSE)	143
5.3	Risk Assessment of Workstation Display Screen Equipment	146
5.3.1	Risk Assessment	146
5.3.2	Registration Form for Display Screen Equipment User	147
5.3.3	Workstation Display Screen Assessment Form	148
5.4	Work Stress	151
5.4.1	What You Should Do	151
5.4.2	Face up to Problems	152
5.4.3	What Supervisors Should Do	152
	Disclaimer	153

Policies on Safety and Health at Work

The management and staff of the Electrical and Mechanical Services Department (EMSD) are committed to achieving and maintaining a high standard of safety and health at work for in-house staff and employees of our consultants and contractors, and to putting safety as first priority in the course of delivering electrical and mechanical (E&M) services.

The policies on safety and health at work developed by EMSD include:

1. To provide and maintain a safe and healthy working environment and work systems for all our staff, and to provide appropriate protection to other people who may be affected by our work.
2. To monitor site safety and health performance of our consultants and contractors, and to take necessary actions timely in case of sub-standard performance and for preventing accidents.
3. To strive for continuous improvement in safety and health management and performance, including identifying and developing the best practices in safety and health, and requiring or promoting where appropriate the adoption of such practices by in-house staff, our consultants and contractors.
4. To observe all statutory and contractual requirements for safety and health, relevant standards and codes of practice, and the recommendations put forward by safety and health authorities.
5. To provide adequate resources for implementing the safety and health policies and safety plans, and to provide necessary information, staff training and supervision.
6. To foster a proactive and risk-based accident prevention culture, to cultivate the attitude that every level of the organisation bears responsibility for work safety, and to promote work behaviour consistent with the notion that all work shall be undertaken in a safe manner.
7. To keep the policies under constant review so as to ensure that they are effective and up-to-date.

Chapter 1

Overview of EMSD Safety and Health Organisation

1

Overview of EMSD Safety and Health Organisation

To provide and maintain a safe and healthy working environment and work systems for all our staff

1.1 Strategic Safety and Health Objectives

1. To provide and maintain a safe and healthy working environment and work systems for all our staff, and to provide appropriate protection to other people who may be affected by our work.
2. To ensure site safety and health performance of our consultants and contractors, and to take necessary actions timely to rectify consultants' and contractors' sub-standard performance and prevent accidents.
3. To achieve zero fatalities, zero serious accidents and dangerous occurrences as well as sound management of safety and health at work through requiring rigorous statutory safety compliance and the adoption of the best practices in safety and health for work activities directly undertaken by in-house staff and employees of our consultants and contractors, or promoting the adoption of such practices by them.
4. To observe all statutory and contractual requirements for safety and health, relevant standards and codes of practice, and the recommendations put forward by safety and health authorities.
5. To provide adequate resources for implementing the safety and health policy and safety plan, and to provide necessary information, staff training and supervision.
6. To control the accident frequency rate for activities undertaken by in-house staff to within the level set by EMSD Occupational Safety and Health Steering Committee.
7. To control the accident frequency rate for activities undertaken by employees of our consultants and contractors to within the level set by the Development Bureau (DEVB).
8. To foster a proactive and risk-based accident prevention culture, to cultivate the attitude that every level of the organisation bears responsibility for work safety, and to promote work behaviour consistent with the notion that all work should be undertaken in a safe manner.
9. To keep the policy under constant review, so as to ensure that it is effective and up-to-date.

1.2 Safety and Health Management in EMSD

EMSD is committed to achieving and maintaining a high standard of safety and health at work for in-house staff and employees of our consultants and contractors, and to putting safety as first priority in the course of delivering E&M services. We strive to provide and maintain a safe working environment and safe work systems in all our work; to provide appropriate protection to other people who may be affected by our work; and to promote safety through the implementation of safety and health management system by each staff member.

1.2.1 Two-tier Departmental Safety and Health Committees

The Department has a two-tier safety management committee structure to provide effective safety and health leadership and encourage staff involvement in all safety and health matters.

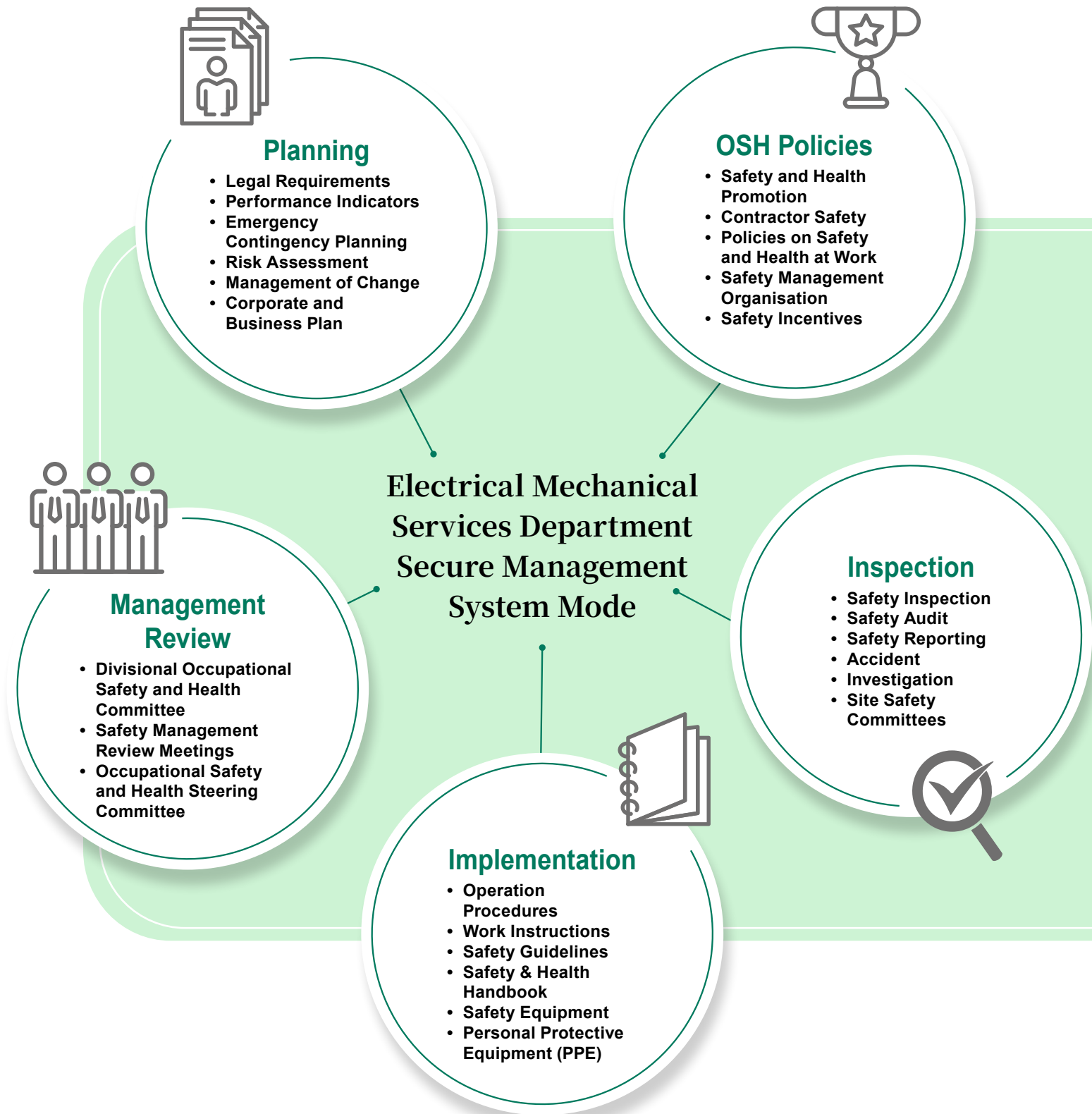
At the first tier is the Steering Committee on Occupational Safety and Health (SCOSH) chaired by an Assistant Director (AD) with various Division Heads as members. It aims to formulate departmental occupational safety and health (OSH) policies and to oversee all OSH activities conducted in the Department for continuous improvement.

At the second tier is the Divisional Occupational Safety and Health Committee (DivOSHC). Chaired by a division head and comprised of management and staff representatives from different sections/units, the DivOSHC serves as a staff consultative committee on safety and health issues and focuses on the implementation of safety measures, OSH promotional activities and safety related issues.

1.2.2 Corporate Level Functions

1. The Quality and Safety Sub-division supports the implementation of EMSD's corporate level safety functions and assumes the role of the departmental safety advisor, serving both the Trading Fund (TF) and Regulatory Services (RS) Divisions in the Department.
2. The corporate level safety and health functions provide, maintain and develop a Safety Management System which is comprised of work-related departmental safety and health policies, guidelines, standards, procedures, check and balance mechanisms, etc., in order to assist Divisions in their management of safety and health in a systematic manner.
3. Specifically, corporate level safety functions encompass work related to safety advisory matters and the promotion of in-house and contract work safety. The main responsibilities are to:
 - ◆ formulate policies, procedures and instructions on safety and health at work
 - ◆ support the Development Bureau (DEVB) on matters concerning safety and health measures, and disseminate information about the measures and procedures to staff and contractors
 - ◆ support various safety committees to take forward safety directives and initiatives
 - ◆ assist in organising various safety promotional activities
 - ◆ organise safety training and briefings
 - ◆ offer advice on safety issues in contracts, and recommend OSH improvements for workplaces, plants and equipment
 - ◆ perform OSH inspections at both in-house and contractor sites
 - ◆ conduct accident investigations and identify remedial measures
 - ◆ liaise with other works departments, the Labour Department (LD), DEVB, the Environment and Ecology Bureau (EEB) and the Civil Service Bureau (CSB) on OSH and environmental matters
 - ◆ represent the Department to take part in meetings and activities organised by external OSH bodies such as the Construction Industry Council (CIC) and the Occupational Safety and Health Council (OSHC), etc.

1.2.3 Safety Management System Model in EMSD



1.2.4 Divisional Level Functions

1. All Divisions in EMSD are required to strictly implement the safety management system in order to ensure work safety in the course of delivering E&M services.
2. A safety organisation has been established under the respective Integrated Management System (IMS) of each Division. All OSH-related functions are co-ordinated by the respective Management Representatives (MR), Deputy Management Representatives (DMR), Divisional Safety Officers (DivSO) and/or Sectional Safety Supervisors (SecSSs). Some Divisions have appointed Regional Safety Officers in addition to SecSSs. Respective safety manuals, operation procedures and work instructions have been established under the IMS of TF and RS respectively.
3. Responsibilities of each Division under the IMS:

<ul style="list-style-type: none"> ◆ the Chief Engineer is responsible for overseeing the implementation of the IMS, including the safety functions <p>.....</p> <ul style="list-style-type: none"> ◆ the progress and performance of safety issues/initiatives are regularly reviewed in the Divisional Occupational Safety and Health Committee meetings, the IMS Management Review meetings and the divisional meetings <p>.....</p> <ul style="list-style-type: none"> ◆ designated Senior Engineers/ Engineers oversee the implementation of safety management within the Division, and convey OSH directives to staff representatives during the Divisional Occupational Safety and Health Committee meetings in which the DivSO will also attend 	<ul style="list-style-type: none"> ◆ frontline inspectors, works supervisors and SecSSs are responsible for implementing OSH instructions, performing pre-work safety checks and ensuring that frontline staff follow the relevant safety procedures and guidelines <p>.....</p> <ul style="list-style-type: none"> ◆ Divisions follow the established safety procedures of EMSD and their own specific safety procedures. Appropriate safety training is arranged for staff if necessary
--	---

1.3 Safety Responsibilities

The management and all staff of EMSD are required to make every effort to ensure effective operation of the established safety management system. An essential part of work safety is to have a clear understanding of the management system and one's specific safety responsibilities. The safe delivery of E&M services is the prime responsibility of each staff member. All staff should execute their roles proactively and participate in and deliver the following actively:

1.3.1 Management Level

- ◆ Monitor the implementation of EMSD's safety and health policies
- ◆ Provide adequate resources for effective implementation of safety and health requirements
- ◆ Adopt a rigorous risk-based approach to the planning and execution of work
- ◆ Ensure that all staff are trained and conversant with the requirements of OSH policies, procedures and plans
- ◆ Ensure that all staff are assigned with appropriate duties and responsibilities
- ◆ Ensure the safety performance of contractors and take necessary actions timely in case of sub-standard performance for preventing accidents
- ◆ Ensure that accident investigations are conducted and corrective actions are taken
- ◆ Ensure that the safety procedures and plans are regularly reviewed and kept up to date

1.3.2 Supervisory Level

- ◆ Implement EMSD's safety and health policies
- ◆ Monitor the work activities and operations and take appropriate actions to prevent unsafe working methods or other non-compliance with OSH procedures and instructions
- ◆ Ensure that all machinery, equipment and tools are maintained in safe working conditions and are operated by competent persons
- ◆ Report any inadequacy in safety and health measures and dangerous conditions caused by contractors
- ◆ Conduct accident investigations in collaboration with the relevant safety personnel and implement remedial measures to prevent recurrence of similar incidents
- ◆ Identify the OSH training needs of our staff and arrange the necessary safety training courses and briefings
- ◆ Prepare OSH work instructions where necessary for compliance by the staff
- ◆ Ensure that the PPE provided are properly maintained and readily available, and are correctly used
- ◆ Ensure good housekeeping within the site

Ensure that the PPE provided are properly maintained and readily available



Prepare OSH work instructions where necessary for compliance by the staff



1.3.3 Divisional Safety Officer

- ◆ Assist in implementing the OSH policies, procedures and plans, and enforcing the safety and health requirements
- ◆ Conduct OSH inspections on a regular and need basis to identify hazards at work and recommend measures for eliminating or controlling the hazards and improving the safety and health conditions of the workplaces
- ◆ Provide safety advice and guidelines to SecSSs
- ◆ Assist in monitoring the observance of safety standards and safe working methods by the staff within the Division, consultants and contractors (if any)
- ◆ Assist in the investigation of accidents and recommend remedial measures for preventing recurrence
- ◆ Assist in assessing the OSH training needs of the staff within the Division, arrange and conduct in-house safety training and briefings to them and maintain a safety training record
- ◆ Co-ordinate with the Quality and Safety Sub-division on matters related to safety and health

1.3.4 Sectional Safety Supervisor

- ◆ Conduct regular safety inspections on plants and other installations and make recommendations for improving the safety and health conditions of the workplaces
- ◆ Assist in ensuring that all fire service installations are in good working condition and fire drills are arranged regularly
- ◆ Conduct accident investigations and prepare reports with recommendations for preventing recurrence
- ◆ Promote safety and health within the workplaces and keep up-to-date information on safety and health for reference by staff
- ◆ Conduct safety reviews on the working methods and procedures within the Division
- ◆ Co-ordinate with the Quality and Safety Sub-division on matters related to safety and health and seek advice where necessary
- ◆ Recommend suitable OSH training courses and seminars for staff

1.3.5 All Staff

- ◆ Familiarise themselves with the safety and health requirements related to their work, and observe such requirements to prevent accidents
- ◆ Work safely and take care of themselves and others who may be affected by their behaviour at work at all times
- ◆ Take immediate action to rectify any unsafe tools, equipment and plants or any unsafe or unhealthy conditions, or report to their supervisors or the officers responsible if the work is beyond their capabilities
- ◆ Report any accidents and damage to property or equipment to their immediate supervisors, regardless of whether there is injury
- ◆ Make suggestions to improve the safety and health conditions at work



1.4 Safety Training for EMSD Staff

1. EMSD staff should familiarise themselves with the safety requirements and safe working methods. They should receive adequate safety training in regard to their duties and responsibilities and continue safety education through refresher courses.
2. Each Division is required to identify the training needs of its staff so that they will perform their job in a safe and healthy manner. Sub-division Heads shall annually compile a training plan for officers in his/her sub-division and forward it to the Training Sub-division for course arrangement. Training records should be kept by the Training Sub-division.
3. The purpose of safety training is to enhance safety knowledge and upkeep safety awareness of the staff so that:

staff injury can be prevented while work is being performed

a positive safety culture can be developed

safety standard at work can be improved

statutory legal duty relating to safety can be complied with

4. Mandatory basic safety training with the relevant certificate (commonly known as "Green Card") awarded is required for staff undertaking E&M maintenance work or work in construction sites. No one is allowed to carry out the aforementioned work unless exemption has been obtained. "Green Card" is valid for one to three years. Staff holding "Green Card" are required to renew their card before it expires.
5. In order to meet the statutory training requirements, staff shall attend specific training courses before undertaking certain types of work/activities. The list of statutory prescribed courses below is not exhaustive and staff are required to seek the advice from their supervisors if in doubt as to what type of training is required.

Statutory Training Courses	Certificate Required	Ordinance/Regulations
Mandatory Basic Safety Training (commonly known as "Green Card")	Mandatory Basic Safety Training Certificate	Factories and Industrial Undertakings Ordinance
Confined Spaces Safety Training	Competent Person/ Certified Worker Certificate	Factories and Industrial Undertakings (Confined Spaces) Regulation
Crane Operator Training	Crane Operator Certificate	Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations
Loadshifting Machinery Safety Training	Training Certificate of Relevant Type of Loadshifting Machine (e.g. fork-lift truck)	Factories and Industrial Undertakings (Loadshifting Machinery) Regulation
Gas Welding Safety Training	Gas Welding Safety Training Certificate	Factories and Industrial Undertakings (Gas Welding and Flame Cutting) Regulation
Training Courses for Persons Working on Suspended Working Platforms	Training Certificate of Working on Suspended Working Platforms	Factories and Industrial Undertakings (Suspended Working Platforms) Regulation
Basic First Aid Training	First Aid Certificate	Occupational Safety and Health Regulation, Factories and Industrial Undertakings (First Aid in Notifiable Workplaces) Regulations
Display Screen Equipment Assessment Training	Certificate of Competence in Display Screen Equipment Assessment	Occupational Safety and Health (Display Screen Equipment) Regulation
Workplace Noise Assessment Training	Certificate of Competence in Workplace Noise Assessment	Factories and Industrial Undertakings (Noise at Work) Regulation
Mounting and Safe Use of Abrasive Wheels Training	Competent Person for Mounting and Safe Use of Abrasive Wheels	Factories and Industrial Undertakings (Abrasive Wheels) Regulations
Manual Handling Operations Assessment Training	Certificate of Competence in Manual Handling Operations	Occupational Safety and Health Ordinance
Boiler and Receiver Safety Course	Boilers and Steam Receivers Competent Operator Certificate	Boilers and Pressure Vessels Ordinance
Certificate in Safety and Health for Supervisors (Construction) Course	Certificate in Safety and Health for Supervisors (Construction)	Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations

6. Staff shall meet the safety training requirements required by their respective Divisions. The training listed therein is specifically assigned for each post to enable the work to be carried out safely. It is suggested by EMSD that divisional staff shall meet the following minimum training requirements and the latest departmental safety guidelines:

Grade of Staff	Safety Training
Works supervisor or equivalent	Certificate in Safety and Health for Supervisors issued by OSHC or CIC (43 hrs)
All appointed SecSSs	Certificate in Safety and Health for Supervisors issued by OSHC or CIC (43 hrs)

7. General safety and health training (such as health for office workers, work stress, first aid, fire safety, etc.) should be attended by staff where appropriate. These training courses are mainly organised by the CSB, LD, OSHC and the Construction Industry Council Training Academy (CICTA), which are suitable for the nature of our work and working environment.
8. The SCOSH will, from time to time, review (and update) the safety training provided by the Department and issue guidelines timely to staff for information.

1.4.1 Online Safety Knowledge Sharing Platform in Knowledge Communities Portal 3.0 (KCP3.0)

The online safety knowledge sharing platform in the Knowledge Communities Portal 3.0 (KCP3.0) facilitates the technical exchange and sharing of safety knowledge among colleagues in different areas of work, promoting the dissemination of safety information and passing on of such knowledge internally for the development of a safe and healthy working environment.

1.4.2 Knowledge Sharing

Content includes:

- ◆ What's New
- ◆ EMSD Safety and Health Policy
- ◆ Annual Safety Report and Safety and Health Handbook
- ◆ Accident Statistics and Accident Reporting Procedure
- ◆ In-house Safety Measures
- ◆ OSH Promotion Programme
- ◆ Contract Safety Management and DEVB-related OSH information
- ◆ Safety and Health Apps, Animation, Video, Comic and Poster
- ◆ Guidelines (General)
- ◆ Anti-mosquito Operation
- ◆ COVID-19
- ◆ Others (including safety improvement works, risk management measures, risk assessments, etc.)

1.5 Planning and Design for Project Work

1.5.1 General

1. Project Engineers should ensure that the project work is properly planned in order to protect the safety and health of those carrying out the work or the general public who may be affected by the project.
2. It is important to identify and eliminate possible hazards during project planning so as to eliminate/reduce the hazards that may be encountered by the site personnel during construction and by the operation and maintenance personnel in subsequent inspection and maintenance work after project completion.
3. Where hazards could not be totally eliminated, the measures below that are as high up on this hierarchy as possible should be chosen so as to avoid or mitigate the potential hazards inherent in the project:

A Substitution of a less hazardous design feature

B Provision of safety features, such as:

- ◆ Enclosure – isolation, barriers, guarding or segregation, all of which are designed to separate people from the hazard
- ◆ Reduced exposure – reduction in the time individuals are exposed to the hazard, or reduction in the number of people exposed to the hazard
- ◆ Use of PPE.
- ◆ Safe systems of work, along with suitable training and proper supervision
- ◆ Written procedures, and provision of information, instructions, warnings, signs and/or labels

4. The safety-related requirements as stipulated in the ordinances, regulations, safety guidelines and standards, codes of practice, technical circulars, etc. shall be observed during the planning and design stage.
5. Sufficient site inspection, proper co-ordination with client departments and detailed investigation shall be carried out to identify possible site constraints and potential hazards in order to facilitate safe planning and design.
6. The end-user and the maintenance organisation shall be consulted on the safety requirements regarding future operation and maintenance of the completed works at the early stage of design.
7. Detailed design of the safety features shall be agreed with the end-user and/or the maintenance organisation.
8. Ensure that health and safety risks have been considered during the construction phase, as well as when maintaining and using the facilities upon project completion.
9. Maintain a good working relationship with clients and contractors such that safety issues can be actively discussed and resolved.
10. Ensure that suitable welfare facilities are in place for workers before the commencement of works, where possible (please refer to Chapter 3 of the DEVB's Construction Site Safety Manual (CSSM) for details).

11. Upon completion of the project, the Project Engineer should ensure that all the health and safety information relevant to the operation and maintenance of the project are provided by the contractor. Such information includes maintenance procedures, as-built drawings, operation manuals, escape routes, special hidden features (such as safety harnesses anchorage for maintenance) and special hazardous materials affecting the safety and health of staff during subsequent operation and maintenance, etc.
12. Seek the advice of DivSO and/or the Quality and Safety Sub-division where necessary on project-specific health and safety risks along with ways to address them.

1.6 Design for Safe Maintenance

1.6.1 Plant Room Layout and Safe Access

1. Main equipment rooms shall be, as much as possible, located at the outer walls of buildings to allow easy access of the equipment.
2. Sufficient space and lifting devices shall be made available for the safe installation of large machinery.
3. The layout of plant rooms shall be so designed as to allow sufficient space for the installation, operation and maintenance of all plant items.
4. Safe access to plant items, which require frequent and regular maintenance, shall be provided.
5. Permanent ladders or catwalks, equipped with guard rails, toe boards and safety hoop as appropriate, shall be provided if the work is to be carried out at height. Anchoring points shall be provided for lifelines if necessary.
6. The floor and access of all plant rooms should be so designed as to avoid tripping and slipping hazards by using non-slippery surfacing materials and keeping access free of pipes and ducts, etc.
7. Sufficient space should be allowed in plant rooms for future maintenance work.
8. The lighting of all plant rooms should be designed to the standards for the type of work to be carried out. Emergency lighting should be provided at strategic locations (e.g. escape routes and locations of plant and equipment for use in emergency situations).
9. Equipment should be located with sufficient working space to ensure that emergency egress is not obstructed.
10. Lifting beams, eye-bolts and the like should be provided when heavy machinery and its parts have to be lifted for maintenance.
11. Cable ducts and cable routing should be designed to be easily accessible at ground level (e.g. inside cable trench or mounted at low level on wall) to reduce the necessity for working at height.
12. Water sprinkling system should not be used in the vicinity of electrical equipment. If this is not possible, the electrical system should be designed to be waterproof and/or able to automatically shut down prior to the activation of water sprinklers.



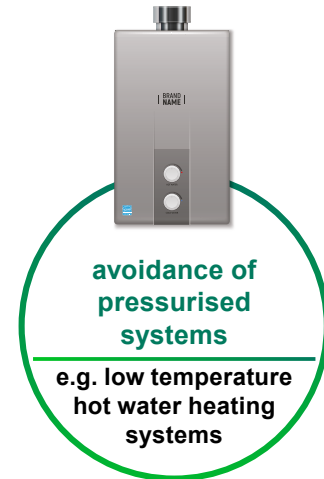
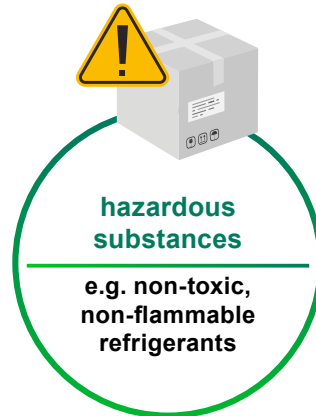
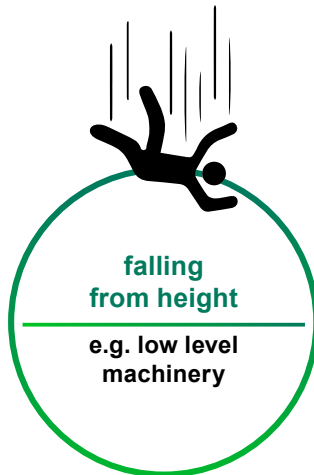
Safe access to plant items, which require frequent and regular maintenance, shall be provided



The layout of plant rooms shall be so designed as to allow sufficient space for the installation, operation and maintenance of all plant items

1.6.2 Selection of Machinery and Material

1. Selection of major plant items should be considered on the basis of eliminating or reducing the common hazards including :



2. Equipment emanating high sound pressure level should be avoided. Acoustic enclosure should be provided where necessary.
3. Where possible, the use of prefabricated items connected by bolts and nuts should be specified to minimise the use of cutting and grinding tools, etc.
4. The use of prefabricated items should be specified as much as practicable to minimise the time spent on working at height.
5. Sharp edges and corners shall be avoided or properly protected to prevent accidents.
6. The dangerous parts of machinery, including the prime mover, the transmission machinery and the working parts, shall be fitted with appropriate protective guards.
7. Suitable guard rails should be provided for above ground platforms, walkways, etc. to prevent the falling of personnel from height.
8. Wherever possible, heavy machinery and equipment should be mounted and installed on isolated bumpers to reduce noise and vibration.
9. All electrical equipment shall be designed to be adequately insulated, protected by circuit breakers and the like, able to be isolated (for maintenance) and earthed.
10. Circuit breakers should be designed such that it can be fitted with a "lock-out tag-out" device to prevent inadvertent reinstatement of electricity supply resulting in accidents.
11. Wherever possible, the use of hazardous materials and those which may become hazardous when heated should be avoided.
12. Materials that may require special handling or protection during removal and disposal (e.g. asbestos) should be avoided as much as possible.
13. Potential ignition sources should be avoided. Where this is not possible, the electrical system shall be designed to be safely enclosed and shielded and preferably located away from combustible substances.

1.6.3 Smart Site

1

Use advanced intelligent technologies, including Artificial Intelligence, Internet of Things sensor, Mixed Reality, Virtual Reality, Augmented Reality, Multi-trade Integrated Mechanical, Electrical and Plumbing, Building Information Modelling and Digital Twin technology, etc., to design sites and workflows, in order to reduce the risk of injury to workers.

2

Smart Site is a new project management model that allows project teams to manage the safety, quality, progress, materials and environment of the site around the clock. The smart site system can automatically collect, consolidate and analyse various real-time construction data on site, record the construction progress and the implementation of safety measures, simulate work processes and project material distribution, etc., enabling project teams to make decisions, control risks, carry out site safety management intellectually and improve project construction efficiency.

1.7 Safety Management of Project Work

1.7.1 General

1. Site safety management should follow the relevant provisions in Chapter 8 of the DEVB's CSSM and the relevant provisions of Chapter 5 of the Administrative Manual of Mechanical and Electrical Engineering.
2. For existing contracts in which there is no contractual provision on site safety based on the CSSM (e.g. minor quotation job), safety inspections shall be conducted to ensure the compliance with statutory requirements.
3. The Project Engineer should encourage the contractor and his workers to use safe working methods and remind them of the provisions of the Construction Sites (Safety) Regulations and other relevant regulations.
4. When the project staff have identified an unsafe situation or believe that the contractor or his workers are using unsafe working methods, the matter shall be drawn to the attention of the contractor's representative or his/her Safety Officer as soon as possible. The project staff should also record the matter and properly inform the contractor's representative in writing.
5. If the unsafe situation or the unsafe working methods still persist after repeated notifications by the project staff, they shall be reported by the Project Engineer to the relevant Divisional Occupational Safety Officer of the LD for his/her immediate action, after consultation with the Chief Engineer.
6. When the unsafe situation is considered as one with a definite risk to life, the Engineer may in parallel instruct the contractor to suspend the relevant portions of the works.
7. The safety performance of the contractor shall be reported in the Contractor's Performance Report (CPR).

1.7.2 Follow-up Action to Rectify Poor Performance

1. Contractors with poor ratings on safety aspects in the CPR shall be interviewed and served with warning letters to urge them to improve their safety performance.
2. The contractor shall be interviewed by the respective Chief Engineer if an accident happens within the contract period. If there are two or more accidents in any rolling three months, and the rolling three-month accident rate exceeds 0.9 per 100,000 man-hours, the interview shall be conducted by the respective AD.
3. The Project Engineer shall require the contractor to submit monthly reports on progress of improvement works until the improvement measures have been satisfactorily implemented/completed.

1.8 Reporting of Accidents

1.8.1 Reporting Procedures

1. The procedures to be followed for the reporting by the Department of accidents causing injury or death to EMSD staff or employees of consultants or contractors in EMSD-controlled premises/sites (including venues directly managed, operated or maintained by EMSD and project sites of EMSD) are set out in an EMSD Technical Circular No.6/2013 which covers the following:
 - Reporting procedures for accidents involving EMSD staff
 - Action in case of death or serious injury of EMSD Staff
 - Reporting procedures for accidents involving employees of consultants or contractors
 - Dangerous occurrences in EMSD-controlled premises/sites
 - Reporting of near-miss incidents
2. An accident shall be reported and follow-up actions shall be taken in accordance with the EMSD Technical Circular No. 6/2013, if:
 - it has led to fatality in EMSD-controlled premises/sites
 - the victim is in critical condition
 - the media have arrived on site or have telephoned to ask information concerning the accident
 - it will arouse public interest/concern in view of the damage/inconvenience that has been caused or its potential harm to EMSD staff and/or employees of any consultants or contractors and/or the public
 - it has created a drawn-out situation which may lead to fatality or multiple injuries
 - it involves EMSD staff on duty, including those accidents which have not resulted in the granting of any sick leave to the injured staff
 - it involves employees of any consultants or contractors in the course of employment under project works contracts or maintenance contracts and results in incapacity of more than three days
3. Any enquiries on the accident reporting procedures should be addressed to the Quality and Safety Sub-division supervisor or the Departmental Safety Officer.

1.8.2 Accident Investigation

1. Accident investigation should be carried out as quickly as possible.
2. To conduct interviews with the injured and relevant witnesses as necessary.
3. Total reliance should not be placed on any one sole source of evidence.
4. Use appropriate tools, such as cameras, tape recorders, etc., which may be useful for accident investigation.
5. The investigation should cover the following:
 - ◆ Time, place and person(s) involved in the accident
 - ◆ Causes of the accident
 - ◆ Preventive measures regarding the accident
 - ◆ Key factors involved in the accident
6. Prepare an investigation report which should be as short as possible, but should be detailed enough for its purpose. The report should contain the following:
 - ◆ A summary of what had happened prior to the accident
 - ◆ A summary of events at the time of the accident
 - ◆ Information gathered during the investigation
 - ◆ Detailed information provided by witnesses
 - ◆ Information on injuries or losses sustained
 - ◆ Possible causes and conclusions of the accident
 - ◆ Recommendations to prevent recurrence
 - ◆ Supporting materials (photographs, drawings, etc.)
7. To review and revise the relevant method statements

Use appropriate tools which may be useful for accident investigation



1.9 Employees Compensation

If an EMSD staff member is injured or dies as a result of discharging his duties, he or his dependents may, depending on the terms of employment, receive compensation under the following ordinance/regulations:



1.10 Emergency Preparedness

Staff members of each workplace should follow the emergency procedures of their respective Divisions and the following established emergency procedures developed by the DEVB/the Department:

1. Chapter 10 of the DEVB's CSSM - "Emergency, Tropical Cyclone and Heavy Rainstorm Procedures"
2. EMSD General Circular No. 3/2014 – "EMSD Headquarters Fire Security Arrangements and General Fire Orders"
3. EMSD Departmental Emergency Response Contingency Plan for Communicable Diseases;
4. EMSD Emergency Manual
5. EMSD General Circular No. 4/2015 – "Security and Safety in Office Premises"
6. EMSD General Circular No. 3/2019 – "Work Arrangements in times of Tropical Cyclones and Rainstorms"



Chapter 2

Safety and Health Guidelines for Workplace Environment

2

Safety and Health Guidelines for Workplace Environment

To put safety first in all your work

2.1 General Safety and Health

1. Put safety first in all your work.
2. Explain to the person responsible for the venue if any inconvenience caused to the venue is due to work safety arrangement. Report to your supervisor if the person responsible for the venue fails to understand and tie in with the arrangement. (The contractor should report to EMSD staff where necessary.)
3. Always be attentive and be aware of your own safety and the safety of your working partners and the public while at work.
4. Before commencement of work, ensure that you understand the related safety working procedures and OSH guidelines and instructions. If in doubt, consult your supervisor.
5. Co-operate with your supervisor by complying with the safety and health policies of EMSD and client departments as well as other safety regulations, guidelines and instructions.
6. Check, wear and use PPE properly. Do not tamper with or misuse any safety tools and equipment.
7. For work requiring a permit-to-work, obtain a valid permit relevant to the work before commencement and thoroughly understand and implement the safety procedures set out in the permit.
8. Follow all safety and warning signs and instructions displayed.
9. Report any hazardous or unsafe situations to your supervisor immediately.
10. It is prohibited to work while under the influence of alcohol or drugs.
11. If you feel unwell (such as headache, dizziness, allergies or other conditions) or detect any unusual operational condition, stop working immediately, leave and inform other colleagues as soon as possible.
12. It is prohibited to play in the workplace.
13. Do not run in the workplace. Remember to "watch your step and keep firm footing and balance" at all times.

14. It is prohibited to work with unsafe shortcuts. Always follow proper procedures, and use proper methods and tools to carry out your work.
15. Stop using and report to your supervisor if a tool is found to be damaged and thus requires replacement.
16. Do not tamper with, repair or operate the equipment or instrument which you are not familiar with.
17. Avoid touching all exposed moving parts of the machinery and check that they are appropriately guarded or shielded.
18. Wear suitable clothes and PPE for work. Do not wear loose clothes nearby a running machine.
19. Do not unnecessarily walk close to exposed live or moving parts of the machinery.
20. Do not walk or work underneath loads suspended from hoisting equipment.

Maintain lockers, changing rooms and toilets in a clean sanitary condition



2.1.1 Housekeeping

1. Keep the floor in a dry, non-greasy and non-slippery condition. Erect warning notice before the floor is cleaned and dried.
2. Keep all access, passageways and means of escape clear at all times.
3. Do not allow small tools or articles to lie around to avoid falling, slipping or tripping hazards.
4. Keep suitable dustbins or receptacles for disposal of waste materials and rubbish. Chemical wastes should be disposed of according to Chapter 4.2 of this handbook.
5. Dispose of scrap, waste and surplus materials properly when a job is completed.
6. Ensure that workplaces are adequately lit.
7. Clean and sweep the workplace regularly.
8. Maintain lockers, changing rooms and toilets in a clean sanitary condition.
9. Keep oil, grease or other materials that may pose hazards (slipping, fire, etc.) properly stored.
10. Remove or knock down protruding nails on timber boards or walls to prevent from puncturing others.
11. Store materials properly and safely so that they will not obstruct passageways or fire fighting equipment or creating falling hazards.
12. Maintain effective ventilation for the workplace.
13. Report to your supervisor of any irregularities that are beyond your control.

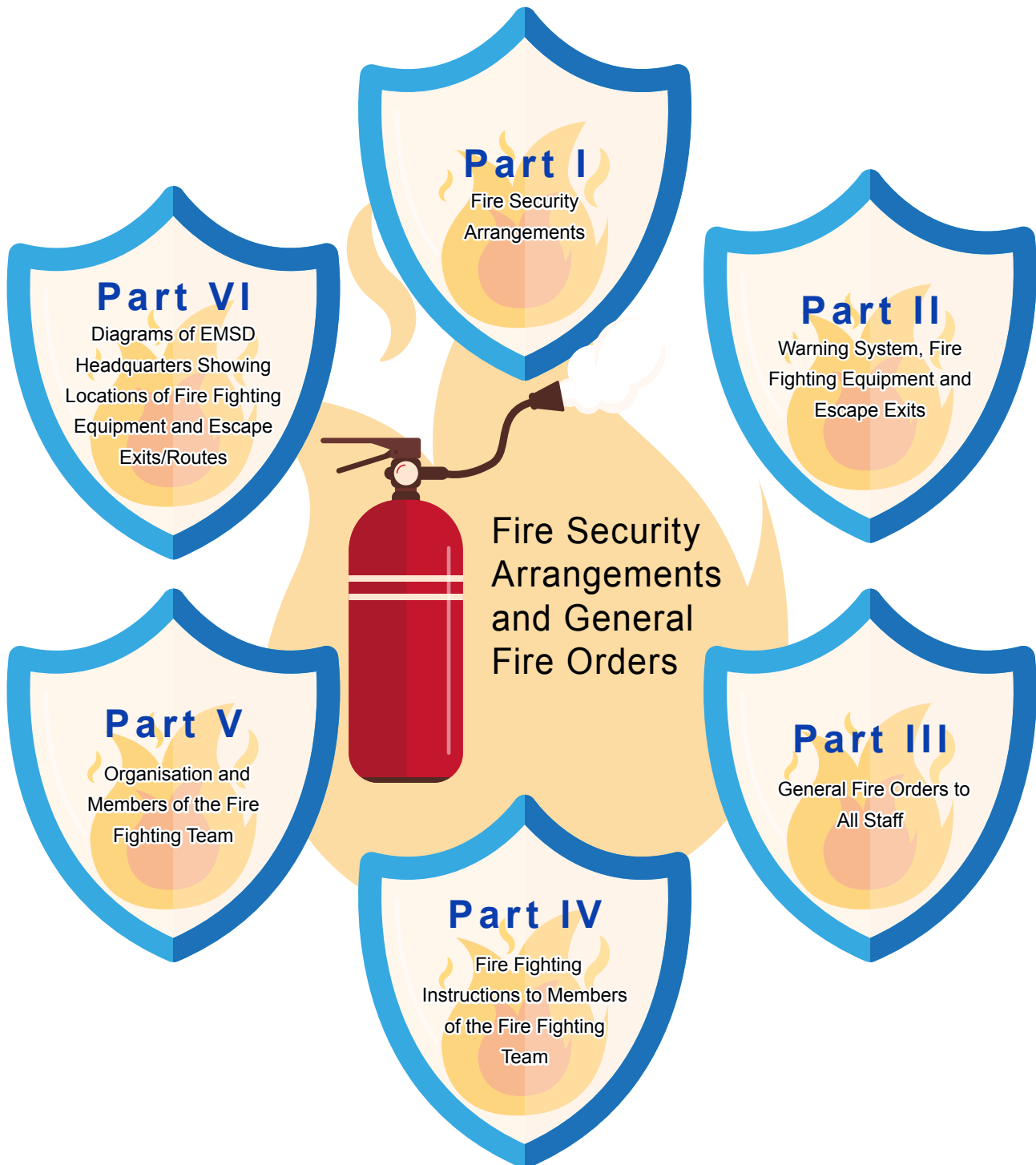
Clean and sweep the workplace regularly



2.2 General Fire Safety and Fire Precautions of the Venue

2.2.1 Staff Working in Headquarters Building

Observe the general fire orders stipulated in an EMSD General Circular No 3/2014 on "Fire Security Arrangements and General Fire Orders". The circular is presented in six parts:



2.2.2 Staff Working in Places Other Than Headquarters Building

A General Rules

1. Be familiar with the fire safety notices and fire exit map displayed in the workplace and consult your supervisor if in doubt.
2. Keep the fire escape routes and exits under the control or within the working area of the working staff clear and unobstructed at all times.
 - ◆ Ensure that emergency exit doors can be readily opened manually from inside the workplace (such as inside a machine room).
 - ◆ Keep smoke doors and smoke lobbies unobstructed. Do not use smoke lobbies as storage areas.
 - ◆ Keep self-closing fire/smoke doors closed at all times. Do not install locking devices at the doors or lock them up, and ensure that they can be opened outwards in case of fire.
3. Do not tamper with, modify or move away any fire fighting equipment and devices. Ensure that they are readily available for use.
 - ◆ Take note of the locations of and the ways to use the fire fighting equipment and devices (such as fire extinguishers, hose reels, sand buckets, etc.) in the workplace. Consult your supervisor if in doubt.
 - ◆ Ensure that the fire extinguishers and other fire fighting equipment and devices are not blocked/obstructed.
 - ◆ Check the fire extinguishers regularly. Immediately notify the person responsible for the venue if found expired.
4. Learn how to use the fire extinguishers.
5. Properly dispose of oily rags or cotton waste and rubbish contaminated with flammable substances.
6. Do not store excessive flammable substances inside the workplace. Subject to the quantities, keep them in flammable storage cabinets or dangerous goods stores.
7. Provide appropriate labels and covers to containers for flammable substances.
8. Use fire barriers to prevent the cause of fire due to sparks brought by welding or cutting. For example, remove flammable materials near heat sources while undertaking welding and cutting operations.
9. Do not overload a socket outlet. Ensure that all electrical equipment and electrical circuits under the control or within the working area of the working staff function properly. Switch off the electricity supply when the equipment is not in use.
10. Keep office equipment properly ventilated and clean.
11. Prohibit smoking in the workplace. Where smoking is allowed, dispose of lighted matches and cigarette remains properly.
12. Conduct fire drills regularly or participate in the fire drills organised by the person responsible for the venue.
13. Conduct inspections to the site (especially during lunch time and after office hours) so as to ensure that there is no risk of fire.

B Upon spotting a fire, keep calm and follow the fire reporting steps below:

1. Press the fire alarm button and shout aloud "fire" to instantly alert other people within the workplace.
2. Report to your supervisor or the person responsible for the venue and call the fire brigade.
3. For personnel with fire fighting training and under safe conditions, use fire fighting equipment to fight the fire. Leave the scene for personal safety in case there is foreseeable danger.

C Upon hearing a fire alarm, keep calm and follow the steps below when evacuation is required:

1. Stop your work and switch off any machine and equipment that you are using.
2. Leave by the nearest fire escape route, or as directed by the Fire Fighting Team members of the venue.
3. Proceed to the safe assembly area and report to your supervisor or other designated person.
4. Under safe conditions, close all doors and windows near your working location as far as practicable before you leave to confine the spread of fire or smoke.
5. Do not stay to collect personal belongings but lock up all confidential or important documents if you have been assigned to handle these documents.
6. Do not use lifts.
7. Do not return to the affected areas unless authorised to do so.

Ensure that the fire extinguishers and other fire fighting equipment and devices are not blocked/obstructed



2.3 Outdoor Work

2.3.1 General

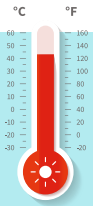
Coverage: The guidelines are applicable to outdoor inspection and maintenance or installation, addition or alteration work.

1. If the outdoor work involves inspection and maintenance or installation, addition or alteration of equipment, the staff responsible shall, before carrying out the work, learn about the type of the equipment to be worked on and the nature of the job, and make an assessment of the risks at work by referring to the design plan and testing report of the equipment, as well as the accident reports related to similar equipment (if any).
2. To make available an appropriate amount of first aid items. Bring along a small fire extinguisher where necessary.
3. Wear tidy working uniforms and suitable footwear in the workplace. Wear a safety helmet when entering a machine room with fixed electrical and mechanical facilities. Wear a safety helmet and fasten the chin strap.
4. Remain vigilant and beware of potential site hazards (such as the presence of stagnant water, sharp nails or hard objects on abandoned timber boards, loose aprons or side panels, energised and revolving parts of machinery, etc.) in order to protect falling of persons, drowning, electrocution and trapping by machinery.
5. When there is a rainstorm or typhoon, bring along your rain gear (such as raincoat) and wear rain boots. Remain vigilant and take heed of the on-site wind speed to make proper work arrangements.
6. Pay attention to whether the working area is well-lit and well-ventilated. Bring along a portable luminary/propeller ventilator where necessary.
7. If it is required to work on scaffolding or a working platform, check whether the scaffolding or working platform is properly and safely erected before carrying out the work. Wear a safety belt if necessary. In case of doubt about its structure, ask the person responsible for the scaffolding for its valid examination report or use other safe working platforms.
8. If the works area is attended, a warning notice shall be put up and fences shall be erected to enclose the area.
9. When getting in and out of the hoistway, be aware that the contrast in lighting level may cause temporary ocular discomfort. Tightly hold the handrails when climbing a ladder.
10. When working at a car park, pay special attention to the risk of being knocked over and injured by nearby reversing vehicles. Fence off your working area and wear a reflective tabard if necessary.
11. If you need to move backwards to facilitate observation or shooting of equipment, check the environment behind you before moving. Never walk backwards.
12. Stop looking at mobile devices while driving, walking or using staircases.

2.3.2 Outdoor and Countryside Work Safety

Heat Stroke

Heat stroke is caused by one's inability to regulate body temperature through transpiration at high ambient temperatures. Overheating of the body will lead to heat exhaustion which usually occurs when one is engaging in work in hot humid weather, especially when one fails to replenish his body fluid and salt lost. The symptoms are exhaustion, headache, dizziness, nausea, muscle spasms, paleness, clammy skin, rapid but weak breath and pulse, and probably with normal or dropped body temperature.



Symptoms include

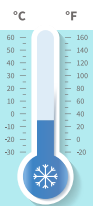
- feeling hot, dizzy, uneasy and even becoming unconscious
- having a body temperature which may exceed 40 °C
- dry and flushed skin
- accelerated breathing and pulse rate

Prevention and Management

- a. Rest at suitable intervals during work. Do not overstrain so to save energy. Arrange a suitable work-rest cycle.
- b. Wear light-coloured and loose clothing. Change the clothing if it is soaked with sweat.
- c. Avoid prolonged exposure to direct sunlight. Erect a tent where necessary
- d. Drink plenty of water to replenish the body fluid and salt lost. Bring along adequate drinking water.
- e. In serious cases, the patient may suffer from shock. Lower the patient's body temperature as quickly as possible and seek medical assistance.
 - i. Move the patient to a cool shaded place. Cool him off with a fan or an electrical fan. Remove his clothing and lay him down with feet elevated. Give him drinks if he is conscious. Prevent the patient from being surrounded by people as they may obstruct the natural ventilation.
 - ii. If necessary, sprinkle the patient with water and apply wet towels or ice packs wrapped in towels against the neck and under the arms of the patient, and apply other body-cooling techniques like immersion into water and wetting clothing until the symptoms disappear
 - iii. Continue to replenish water. If the patient sweats heavily and convulse, serve him with salt water in the ratio of half a teaspoon of salt to half a litre of water.
 - iv. Ask for help and call 999 immediately for an ambulance, so that the patient can get early treatment.

Hypothermia

It is caused by the drop of body temperature due to the lack of sufficient clothing in a cold place. It may be life-threatening if the situation persists. Even in summer, a rapid drop in temperature due to sudden cold rain or rainstorm will also cause hypothermia.



Symptoms of hypothermia

- fatigue, exhaustion
- clammy skin, stumbling
- stammering, hallucination
- shivering, muscle spasms, etc.

Prevention and Management

- a. Take enough rest and bring along sufficient warm protective clothing and high energy food (such as chocolate).
- b. Rest at suitable intervals during work. Do not overstrain so to save energy.
- c. Seek rain shelter.
- d. Change the wet clothes immediately.
- e. Cover your head, face, neck and body with clothing to keep warm.
- f. Take hot drinks and high energy food to maintain body temperature.

Hilly Paths

Workers may sustain a fall easily when going down a hilly path. Wet rock surfaces, muddy paths and sandy badlands pose similar hazards.



Prevention and Management

- a. Wear hiking boots or safety shoes with ankle support and corrugated soles.
- b. Bring a walking stick for use where necessary.
- c. Avoid walking on wet rock surfaces, muddy paths and sandy badlands.
- d. When someone has slipped, check if he has any sprain, fracture, abrasion or other injuries. Give first aid right away where necessary
 - i. Fractures may be difficult to detect. If painful swelling occurs, stop walking any further.
 - ii. If the injured person can walk, he should do so with the aid of a walking stick or with the support of other co-workers. He should, by no means, walk by himself as this would aggravate his injury.
 - iii. If the injured person has a severe sprain or difficulty in walking, use a mobile phone or send someone to seek help. Move the injured person to a shady, dry and flat ground. Cover him with clothing to keep him warm and wait for the rescue team.

Flash Flood

The devastating power and speed of flash flood should never be underestimated. A stream may overflow and become raging torrents due to heavy rain in the upper reaches, sweeping away the workers if it so happens that they are in the stream or catchwater, resulting in casualties within minutes.



Prevention and Management

- a. Unless necessary, do not work along any water course.
- b. Do not wade in the stream after heavy rain in summer.
- c. Do not stay at the water course for resting, especially in its lower reaches.
- d. When it rains, leave the water course immediately and head for a high spot ashore.
- e. Never attempt to cross any inundated bridges. Leave the water course immediately.
- f. Rapid flows, turbid water with sand and mud are early signs of flash floods. Leave the water course immediately.
- g. If you unfortunately fall into a swift flowing stream, grip or hold onto the rocks, branches or vines near the banks. Try to get ashore and wait for rescue by your companion.

Landslide

Landslides may occur when a large amount of rainwater has soaked a natural or artificial slope during a downpour or after days of heavy rain.



Prevention and Management

- a. Avoid going near or staying around steep slopes during a downpour or after days of heavy rain.
- b. The oozing out of a large quantity of muddy water from the base or the weep holes of a slope indicates that the slope is saturated with water. Exposure of inner soil and appearance of new cracks or formation of new stepped profile at the middle section or crest of the slope are early signs of a landslide. Keep away from the slope.
- c. Do not proceed by stepping on loose mud if the landslide blocks your way. Retreat or seek another safe route to proceed or curtail your journey.
- d. Do not try to rescue your co-workers buried in a landslide to prevent more casualties. You should immediately call for a fully equipped rescue team for help.

Hill Fire

Hill fire advances rapidly upward and windward on a steep grass slope in dry weather. Never underestimate its devastating power.



Prevention and Management

- a. For the sake of your own safety and the safety of others, handle kindling materials with great care at all times. Do not leave behind any kindling after work.
- b. Except at designated barbecue or camp sites, never light a fire for cooking.
- c. Smokers should refrain from smoking and all cigarette stubs or matches shall be totally extinguished before being discarded into rubbish bins.
- d. Hill fire is difficult to be detected during daytime. Always pay attention to flying ashes or burning smell. If a hill fire is spotted, leave the fire scene immediately.
- e. Do not underestimate the spreading speed of a hill fire. Do not continue your work in case of a fire nearby or you may get trapped in the fire.
- f. When there is a hill fire, stay calm and do not panic.
- g. Never attempt to extinguish a hill fire indiscriminately, except that
 - i. the affected area is very small
 - ii. you are undoubtedly in a safe place
 - iii. you can quickly evacuate from the fire scene

Evaluate the following points in evacuating from the fire scene

- i. The direction in which the fire is spreading - avoid escaping in the same direction of the prevailing wind
- ii. The gradient of the paths nearby - choose the one which is the easiest for escape
- iii. The height and density of the vegetation nearby - find a place with less vegetation for escape
- h. It is easier and quicker to escape through existing paths.
 - i. If the fire is imminent and there is no way out, you should cover your exposed skin with wet clothing and then make way to the already burnt area. This can minimise the chance of getting injured. To conserve energy, never run uphill if the situation permits.
 - j. Do not run into shrubs or grasslands, as fire usually spreads rapidly and the temperature may soar in these areas.

Water Front



Prevention and Management



- a. When work is being carried out overside or near waterfronts where there is a foreseeable risk of staff falling into the water and it is impracticable to provide guard-rails at the edges over water, each staff member there should wear a life jacket or use a buoyancy aid.
- b. The life jacket or buoyancy aid should have distinctive and easily visible colour. Retro-reflective material should also be affixed on its surface.
- c. To reduce tripping hazards, tools, ropes and other materials not in use should be stored away.
- d. For machinery which has a risk of oil leakage, a sand-filled drip tray should be placed underneath the machinery to retain the oil. This can reduce fire hazards and prevent oily and slippery surfaces.
- e. Permanent illumination should be provided for night work and in dark areas including immediate water surfaces

Each staff member there should wear a life jacket or use a buoyancy aid






2.3.3 Performing Outdoor Work When Air Quality Health Index is Reaching or Already at the "Very High" or "Serious" Category

A Prevention and Management

1. The Air Quality Health Indexes (AQHIs), ranging from 1 to 10+, are grouped into five categories according to their numerical values and potential effects on health. The AQHI is classified as "Very High" when it ranges from 8 to 10 and as "Serious" when it reaches 10+.
2. After learning that the AQHI of the working area is reaching or already at the "Very High" or "Serious" category, the officer-in-charge should take appropriate preventive measures to protect the safety and health of outdoor workers.
3. Outdoor work involving significant physical exertion should be rescheduled for another day as far as reasonably practicable. If the work is already underway, suitable rest breaks in indoor places or job rotation should be arranged.
4. Examples of the work involving significant physical exertion:
 - walking uphill for over 30 minutes
 - manual carrying of materials weighing 16 kg or above for over 30 consecutive minutes
 - climbing a continuous vertical ladder with a height of nine metres or above
 - manual operation of a manual winch for over 30 consecutive minutes
5. If the work involving significant physical exertion is unavoidable, the officer-in-charge should consider the following points and make reference to the preventive measures recommended by the Environmental Protection Department and Labour Department:
 - a. Avoid assigning the workers who are known to suffer from heart or respiratory illness (such as coronary heart or other cardiovascular diseases, asthma and chronic obstructive airway diseases like chronic bronchitis and emphysema) to carry out the work;
 - b. Prevent the workers from staying outdoors for too long, particularly working in areas with heavy traffic;
 - c. Prevent the workers from working alone in outdoor areas and maintain regular contact with them;
 - d. Provide additional manpower to reduce the amount and duration of outdoor work that involves significant physical exertion of the workers;
 - e. Provide suitable mechanical aids to reduce physical exertion of the workers;
 - f. Increase the frequency and duration of rest breaks at work;
 - g. Reduce the pace of outdoor work and allow more time for completion;
 - h. Remind staff members to stop work immediately if they feel unwell and take a rest in a shady and well-ventilated area. If necessary, seek medical treatment as soon as possible.
6. As a staff member, you should consult your doctor at regular intervals if you know that you suffer from heart or respiratory illness (such as coronary heart or other cardiovascular diseases, asthma and chronic obstructive airway diseases like chronic bronchitis and emphysema) and seek medical advice on working outdoors when the AQHI is at the "Very High" or "Serious" category. You should also submit the relevant documents (such as the medical certificate and doctor's note for light duty) to the officer-in-charge so to discuss work arrangements with him/her.

7. When the AQHI is reaching or already at the "Very High" or "Serious" category, appropriate preventive measures should also be taken for other outdoor work in addition to the work involving significant physical exertion. Low-priority outdoor work should be rescheduled for another time of the day or another day as far as reasonably practicable. As for higher priority outdoor work:
 - avoid assigning the workers who are known to suffer from heart or respiratory illness (such as coronary heart or other cardiovascular diseases, asthma and chronic obstructive airway diseases like chronic bronchitis and emphysema) to carry out the work
 - Prevent the workers from staying outdoors for too long, particularly working in areas with heavy traffic
 - increase the frequency and duration of rest breaks at work
 - reduce the pace of outdoor work and allow more time for completion
 - remind staff members to stop work immediately if they feel unwell and take a rest in a shady and well-ventilated area. If necessary, seek medical treatment as soon as possible
8. If prolonged outdoor work is unavoidable under the above circumstances, respiratory protection should be taken as appropriate. Staff members having doubt about their fitness to wear respirators should seek medical advice.

2.3.4 Recommended Precautionary Actions under Air Pollution

Health Risk Category	AQHI	People who are sensitive to Air Pollution		Outdoor Workers
		People with existing heart/respiratory illness	Children and the Elderly	
 低 LOW	1 to 3	No response action is required.		
 中 MODERATE	4 to 6	No response action is normally required. Individuals who are experiencing symptoms are advised to consider reducing outdoor physical exertion.	No response action is required.	No response action is required.
 高 HIGH	7	<p>People with existing heart or respiratory illness are advised to reduce outdoor physical exertion, and to reduce the time of their stay outdoors, especially in areas with heavy traffic.</p> <p>They should seek medical advice before participating in sport activities and take more breaks during physical activities.</p>	Children and the elderly are advised to reduce outdoor physical exertion, and to reduce the time of their stay outdoors, especially in areas with heavy traffic.	No response action is required.
 甚高 VERY HIGH	8 to 10	People with existing heart or respiratory illness are advised to reduce to the minimum outdoor physical exertion, and to reduce to the minimum time of their stay outdoors, especially in areas with heavy traffic.	Children and the elderly are advised to reduce outdoor physical exertion, and to reduce the time of their stay outdoors, especially in areas with heavy traffic.	Employers of outdoor workers performing heavy manual work are advised to assess the risk of outdoor work and take appropriate preventive measures to protect the health of their employees such as reducing outdoor physical exertion, and reducing the time of their stay outdoors, especially in areas with heavy traffic.
 嚴重 SERIOUS	10+	People with existing heart or respiratory illness are advised to avoid outdoor physical exertion, and to avoid staying outdoors, especially in areas with heavy traffic.	Children and the elderly are advised to avoid outdoor physical exertion, and to avoid staying outdoors, especially in areas with heavy traffic.	Employers of all outdoor workers are advised to assess the risk of outdoor work and take appropriate preventive measures to protect the health of their employees such as reducing outdoor physical exertion, and reducing the time of their stay outdoors, especially in areas with heavy traffic.

2.3.5 Work Safety during Lightning

Lightning normally strikes at the highest point of an object and the electric current is conducted to the ground via the least restrained path. Isolated tall trees or buildings are more likely to be struck by lightning. A person may be attacked by lightning if he/she has physical contact with or stands nearby an object struck by lightning, or if he/she is the highest object around the area.

A Thunderstorm Warning

- Thunderstorm warnings issued by the Hong Kong Observatory are intended to give short-term (within one to a few hours) notice of the likelihood of thunderstorms affecting any parts of Hong Kong. Thunderstorm warnings are issued irrespective of whether thunderstorms are widespread or isolated. For isolated thunderstorms, the warning issued by the Observatory will indicate the regions that will be affected during the warning period to alert members of the public to take appropriate precautions. If thunderstorms are expected to persist or affect other parts of the territory, the warning will be extended. When thunderstorms are widespread or the areas being affected vary, it will be mentioned in the thunderstorm warning that Hong Kong will be affected by thunderstorms without specific reference to individual regions.



- Take the following emergency measures during thunderstorm warnings

The immediate supervisor should notify the workers to suspend outdoor work until the warning is cancelled.	If the workers are working outdoors, they should stop work and take shelter in a safe place when circumstances allow.
If the workers have to work outdoors to carry out emergency repair work, they should wear safety gear (such as shoes or boots with rubber soles) and take preventive measures to avoid lightning strokes.	The management staff should take heed of the duration of the warning.

- The existing warning system adopted by the Airport Authority consists of two classes, namely amber and red. An amber warning is issued when lightning strokes are detected or expected within 5 kilometres of the airport. Workers should stay alert while working and be vigilant about the higher warning. A red warning is issued when lightning strokes are detected or expected to occur probably within 1 kilometre of the airport. No outdoor activities should be carried out. Staff members working at the airport should immediately take appropriate emergency measures when an amber warning is noted.

B Emergency Measures to be Taken When Struck by Lightning

If struck by lightning, people usually have the symptoms of muscle spasms, scalds, suffocation and cardiac arrest, but it may not be fatal. Many of them experienced an electric shock and suffered a minor burn injury only, and were able to survive. It may be fatal if the lightning strikes at the head and transmits the current to the ground through the body, with suffocation and cardiac arrest as the common causes of death. Lightning strokes may lead to fractures (due to muscle spasms caused by the electric shock), severe burns and other traumatic injuries. Besides, the clothing of the injured may catch fire and his/her metal ornaments and watch band may melt.

1. If the clothing of the injured catches fire, instruct him/her to lie down immediately to prevent the fire from spreading to his/her face. Otherwise, the injured may die of anoxia or burn injury.
2. If the injured is too shocked to follow the instructions, the only way is to cause him/her to stumble and fall or push him/her to the ground. Handle the injured with care so as to protect yourself from burn injury.
3. Splash water on the injured person or wrap him/her in a thick coat or blanket in order to put out the fire.
4. If the injured person has a cardiac arrest, immediately perform cardiopulmonary resuscitation on him.
5. Medical treatment should be sought at once after the lightning stroke, even if there seems to be no signs of injury.
6. Before the arrival of the medical personnel, pacify the injured person and keep him/her warm and make him/her feel comfortable as far as practicable.

Safety Precautions

It is highly unlikely to be struck by lightning during thunderstorm. Nevertheless, the phenomenon of lightning accompanied by peals of thunder cannot be accurately predicted, so it is advisable to maintain vigilance to minimise danger.

1. Take note of the weather reports on the radio or TV. Avoid working outdoors while a thunderstorm warning is in force.
2. Wear shoes or boots with rubber soles in outdoor areas. Wearing shoes or boots with rubber soles can provide some protection, but it is not a guarantee.
3. If your skin feels tingly or your hair stands on end when there is lightning accompanied by peals of thunder, this is indicative that a lightning stroke is about to occur.
4. Avoid staying in exposed areas
 - Do not stand at a location which is higher than the surrounding terrain or near any highly conductive objects. Keep away from trees and masts which are likely to be struck by lightning as far as possible. After striking an object, the lightning current will be conducted away through the ground. Therefore, you should not lie down especially when the ground is wet. Instead, you should crouch down to minimise the area of contact between you and the ground.
 - If you are in close proximity to large and tall objects like trees, masts, etc., get away from them immediately. Go to a low-lying area and crouch down. If there is not enough time for you to leave the large and tall objects, crouch down immediately and hug your knees to the chest with your head down as far as possible.
 - If you are in exposed areas and there is not enough time for you to leave, crouch down immediately and hug your knees to the chest with your head down as far as possible.
 - Seek shelter in buildings whenever possible.
 - Do not swim or engage in other water sports. Leave the water and seek shelter.
 - Stay in your car if you are driving. The compartment is an ideal place for avoiding lightning strokes. You will not get hurt even if the car is hit by the lightning bolt.

5. Avoid touching metal or wet objects
 - Stay away from iron fences or other metal installations. Temporarily remove all metal objects (e.g. gold ornaments) from your body.
 - Do not touch aerials, water pipes, wire fences or other similar metal installations.
 - As water can conduct electricity, wet objects are not insulated. As such, it is advisable not to hold onto wet objects and to get away from lakes, river courses or ponds.
6. Avoid using plugged-in electrical appliances in outdoor areas or inside village houses with electricity supplied by overhead lines.
7. Do not handle flammable materials in open containers in outdoor areas.

2.3.6 Site Safety During and After Typhoons and Rainstorms

A Working under Severe Weather Conditions

1. Provide safety equipment and PPE, such as safety helmets, waterproof safety boots, raincoats, etc. for the safety of staff who remain on duty.
2. Avoid working in dangerous areas (including edges of trenches, hill slopes, watercourses, nullahs, culverts and flood-prone areas) under severe weather conditions as far as practicable.
3. Be vigilant when staying near hill slopes. Take heed of any abnormal sound that may indicate a possible movement of debris, such as the sound of tree cracking or boulders crashing.
4. The work should be carried out by a minimum of two persons when the working area is far away from other personnel. Constant communication must be maintained with the supervisor.
5. Secure all machinery (such as lift trucks, suspended jibs) and loose objects or move them to a safe place and remove all canvas when typhoon, thunderstorm, rainstorm, landslide or flood warning signal is noted.
6. Ensure that all electrical equipment and cables are properly protected and all unnecessary power supply is cut off when flood warning signal is noted.

B Housekeeping of the Site

1. The site should be kept dry and skid-resistant. Drainage system or other appropriate measures (such as using hardcore to pave the entrance) should be adopted so as to ensure that the site is free of stagnant water and the access safety of site workers is protected.
2. Protruding nails on timber boards that are immersed in the stagnant water cannot be seen by site workers and thus should be removed or bent over.

C Electrical Safety

1. All outdoor sockets, connections and cables shall be weatherproof.
2. All outdoor cables should be hung high as far as practicable.
3. Adequate protective measures should be taken in respect of all outdoor electrical equipment so as to keep out wind and rain. Such equipment should be removed from flood-prone areas.
4. The power supply to all circuits or electrical equipment within the flooding area should be cut off. After typhoons or flooding, the temporary electricity supply system and all circuits and electrical equipment shall be inspected by an electrical worker before turning on the power again.

5. Ensure that the whole temporary electricity supply system and all electrical equipment (such as submersible pumps, lighting system, portable electrical tools, etc.) at the site are thoroughly checked by an electrical worker before use. The construction site shall be inspected on a monthly basis and the checklist items include earth electrode resistance, insulation resistance, earth fault loop impedance, continuity of circuit conductors, continuity of protective conductors, polarity, etc.

D Working on Highways

1. All workers working on highways shall wear appropriate PPE, including raincoats, safety shoes, and reflective tabards which meet the standards of the Highways Department, etc.
2. A vehicle should be parked between the vehicular traffic and the site, and a warning notice should be displayed at the rear end of the vehicle.
3. At least one worker should be assigned to monitor the traffic conditions and give warnings to other workers if any danger arises on the highway.

E Safety Precautions after Typhoon and Rainstorm

1. Electricity
 - ◆ Cut off the power supply to all circuits or electrical equipment. Keep workers away from any circuit and electrical equipment before the temporary electricity supply system and all circuits and electrical equipment are checked by a registered electrical worker.
2. Temporary Structures
 - ◆ All scaffolding, falsework, formwork, working platforms, temporary structures (such as storage sheds, site offices) are required to be checked by a competent person to ensure that they are secure and safe.
3. Stockpile
 - ◆ Check whether all the materials (e.g. pipelines) stockpiling at the site are secure.
4. Construction Machines
 - ◆ All mechanical equipment and machinery shall be checked by a competent person for safety before reuse.
5. Hygiene
 - ◆ Flooding may cause dangerous substances (like insecticide) contained or stored in water tanks, water buckets, water pipes and plants to spill out. Contact the Fire Services Department if any contents of unknown containers are found to have spilled onto the site.
 - ◆ Wear appropriate PPE when working within an area that may have been contaminated so as to avoid skin contact with dangerous substances or inhaling toxic gases.
6. Waterlogged Areas
 - ◆ Do not enter or drive any vehicles or construction machines into waterlogged areas before the depth of water is ascertained.
 - ◆ Avoid working alone. Whenever possible, wear a life jacket when working within or in the vicinity of waterlogged areas.
 - ◆ Pay attention if there is any cable immersed in stagnant water. Ensure that the power supply to the cable has been cut off before touching the water.
 - ◆ Resume a safe passageway for workers as soon as practicable and drain away the stagnant water to prevent breeding of insects or mosquitoes.
7. Drainage System
 - ◆ Check for blockage of drainage system within and in the vicinity of the site. Arrange to clear any blockage found in the system.

2.3.7 Prevention of Wasp Stings

Wasps will sting their enemies if they are being attacked or if their nests are disturbed. Being stung by a wasp is painful. The guidelines aim to advise workers on how to avoid wasp stings.

1. Wasps may live solitarily in ground holes, clay pots or bamboo stem cavities. Species that cause nuisance, however, are social insects and live in papery nests hanging from trees or building surfaces.
2. Most people who get stung will experience pain, swelling and itching at the sting areas. The severity of reaction depends largely on each individual's response. For cases with severe allergic reactions, seek medical treatment as early as possible.
3. Destruction of wasp nests requires professional knowledge. Pest control officers should be invited for carrying out wasp control work. However, aerosol knockdown insecticides with appropriate labels can be used against individual wasps.
4. Some precautions to avoid wasp stings are as follows:
 - a. Do not disturb wasps and more importantly, wasp nests. Any disturbance may provoke stinging.
 - i. Avoid intruding the territories of wasps. If there is a nest blocking the way, circumvent it and proceed.
 - ii. Use maintained trails. Do not venture new paths, and avoid going into flowering shrubs where insects and wasps inhabit.
 - iii. Do not strike bushes with a branch or stick.
 - iv. Avoid walking barefoot in vegetation.
 - b. Avoid using perfume or scented soaps, and avoid wearing brightly coloured or patterned clothing.
 - c. Keep rubbish in tightly sealed containers to avoid attracting wasps.
 - d. Remain calm and as long as your sightline is not blocked, move slowly away from the wasp when being approached by it. The wasp will eventually leave of its own accord. If there are only one or two wasps hovering above, ignore it/them and keep going as usual.
 - e. When attacked by a swarm of wasps, sit still and cover your head and neck with outerwear for protection, or lie curled on the ground and evacuate slowly after the swarm has dispersed.
5. Seek medical treatment after being stung by wasps.
 - a. Apply a cold compress lightly to the wound to soothe the pain.
 - b. Remove the sting with forceps if it is left in the wound. Do not squeeze the poisonous gland to prevent any residue poison from entering the body.
 - c. Seek medical treatment if stung seriously.



Apply a cold compress lightly to the wound to soothe the pain

2.3.8 Prevention of Snakebites

Common venomous snakes in Hong Kong include Banded Krait, Many-banded Krait, King Cobra, Chinese Cobra, Bamboo Snake, etc. They are more active in spring, summer and autumn. Almost all snakes are very afraid of humans. They will most likely run away if given the chance.

1. Wear trousers and ankle boots.
2. Use maintained paths. Do not venture new paths and avoid going into grass bushes and tall underbrush.
3. If you see a snake, keep calm and stay still. Let the scared snake run away. Snakes have good eyesight. Quick movements near them may irritate them and trigger an attack.
4. Points to note in case of snakebites:
 - a. Do not cut, suck or wash the wound. Keep the injured person lying down for rest. Do not elevate the wound. Avoid alcoholic drinks or unnecessary movement.
 - b. Whenever possible, use bandage to tie above the wound. Use a wide bandage if the wound is on the arm or leg.
 - c. Pacify the injured person.
 - d. Rush the injured person to the hospital for treatment. Whenever possible, identify the type, colours and patterns of the venomous snake. If the snake has been caught, bring it along to the hospital for identification by the medical personnel so that the right antivenom can be used.

Whenever possible, use bandage to tie above the wound



2.3.9 Prevention of Dog Bites

You may occasionally need to walk past rural areas when performing outdoor work. Be cautious when you see a dog, otherwise the chance of getting attacked may increase.

A General Safety Measures

1. If the route to the workplace is likely to cause you to confront dogs, work out if it is viable to change the route to minimise the chance of confronting dogs. Arrange for a vehicle to pick you up and take you to the workplace to reduce the chance of getting attacked by dogs on your way to work.
2. If the workplace is not an office (such as a hostel, a camping site, etc.), ask the person responsible for the workplace if dogs are kept on the site and request for effective isolation of the dogs before your arrival when making prior work arrangements.
3. When working in rural areas, avoid going into grass/fern bushes or tall underbrush. If you are required to enter a village house (for the purpose of making goods delivery or carrying out routine maintenance, etc.), carefully observe the environment at the scene for signs of dog activities (such as a "dog inside" warning sign, or a bowl, unfinished food, dog excreta or a dog collar, etc. being found on the ground) before entering the house. Watch out if these signs are noted.
4. Take note of its facial expression and behaviour when you see a dog. Do not go near an unfamiliar dog or a dog which is not accompanied by the person responsible, especially the one on a leash as it may become fiery and is more likely to attack strangers.
5. Do not disturb a dog that is eating, sleeping, gnawing on a toy or caring for puppies. When a dog is emotionally unstable, gnawing is a way to vent its emotion.
6. If it is unavoidable to enter a place where a dog is kept:
 - a. Notify the person responsible for the place (such as the owner or the caretaker) in advance if the date and time of visit are confirmed. While waiting for the person responsible to open the door, stand some distance away and enter the place only as instructed by the person responsible. Do not make an aggressive gesture. Walk and move slowly. Do not glare at the dog and run away out of fear.
 - b. Under no circumstances should you enter a place where a dog is kept without prior notification.
 - c. Take with you a long umbrella, a hiking stick or alike. If not, look for anything nearby that can be used to serve as a barrier between you and the dog and protect you in case the dog suddenly lunges at you.
 - d. Stay where you can be readily noticed by the dog owner at all times as the owner can immediately notice any abnormal behaviour of the dog and stop it.
 - e. When you see a dog in the course of your work, do not disturb it. Circumvent it and proceed.

B Measures to be Taken if a Dog Intends to Do Harm

1. Immediately make strange noises and body movements (like blowing a whistle, hitting the ground with a stick, holding up your hands, yelling, pretending to be a bear, etc.) to get out of the situation, or sternly and firmly command the dog to leave.
2. Stay calm and do not scream and run away out of panic. Do not hit or kick the dog.
3. Use your personal belongings, such as an umbrella, overcoat, handbag, backpack, clip board or anything, as protective equipment as long as they are effective in creating a barrier between you and the dog. When using the equipment for protection, stand sideways to the dog and put the equipment between you and the dog for it to bite. Slowly get the dog distracted from you so that you can get to safety. Leave the equipment for the dog to bite and leave quickly to a safe place.
4. Remember not to turn your back suddenly on the dog as it may perceive the gesture as a sign of attack.
5. Where practicable, give some food to the dog to divert its attention from you.
6. Avoid direct eye contact with the dog and slowly leave its territory.
7. In sum: Stay calm if attacked by a dog. Remember not to turn your back suddenly on a fierce dog. Remain standing and facing the dog, and sternly and firmly command it to leave. If you have something in hand that can be used as a barrier, stand sideways to the dog, put the barrier between you and the dog, and then slowly leave its territory.

C Actions to be Taken when Bitten by a Dog

1. If you fall to the ground, do not scream and roll around as chasing moving objects is a dog's instinctive behaviour. You should curl into a ball, put your hands and arms over your head, protect your ears and remain motionless.
2. If you unfortunately get bitten by a dog, give a command by saying "release" and take this opportunity to shake the bite area loose. Do not forcefully pull away to avoid the wound getting bigger.
3. In critical situations, hit the dog's nose instead of its body to achieve a greater deterrent effect. Where practicable, pour water down its nose or burn it with a lighter. Someone around can lift the dog off the ground by its ears, or grab both of its hind legs in a firm grip and swing it in a circle in the air.

D Actions to be Taken after Bitten by a Dog

1. In case you are bitten by a dog, clean the wound immediately and thoroughly with soap and warm water and rush to the Accident and Emergency Department for medical treatment.

2.3.10 Dealing with Nuisances Caused by Wild Pigs or Monkeys

A Ways to deal with wild pigs you encountered

1. Generally, wild pigs are afraid of human beings. However, if wild pigs are threatened or provoked such as being thrown at with objects, they can be aggressive. Therefore, if you see a wild pig, you should keep calm and do not approach or harass it.
2. If a wild pig intends to attack, you should not run away, because wild pigs run faster than human beings. You may hide in a safe place, such as behind a big tree or a boulder, or climb up to a high place such as a parapet or a fence, because wild pigs are not good climbers. Once the wild pig leaves, you may walk on.


B Ways to avoid nuisances caused by monkeys in the wild

1. Avoid staring at the monkeys as staring would provoke them.
2. If monkeys are approaching you, you should move slowly, stay at some distance from them and walk on quietly.
3. Do not throw any foods or objects at the monkeys
4. Hide all handheld plastic bags away in a backpack. Do not eat where there are monkeys around.
5. Do not make any loud noise. It would make monkeys nervous and cause conflicts between human beings and monkeys.

2.3.11 Mosquito or Insect Bites

Mosquito or insect bites may cause itching and burning pain as well as the transmission of diseases. Mosquitoes and insects are commonly found in densely vegetated areas, therefore preventive measures should be taken when working in the countryside so as to avoid mosquito or insect bites. Notify your supervisor or the relevant department to carry out pest control in case swarms of mosquitoes or insects are found in the workplace.

A Prevention



Prepare for
the work

1. Wear loose, light-coloured long-sleeved tops and trousers.
2. Wear shoes that cover the entire foot, and avoid wearing sandals or open shoes.
3. Tuck trousers into socks or boots to prevent arthropods from reaching the skin.
4. Apply suitable insect repellents on your body and clothing according to the instructions.
5. Avoid using fragrant skin care products.

During work

1. Stay on footpaths and avoid walking through vegetation. Do not brush along the vegetation at the sides of footpaths.
2. Avoid resting on vegetation, or at humid and dark places.
3. Do not hang clothing on vegetation.
4. Do not feed wild or stray animals.
5. Avoid handling soil, vegetation/plants with bare hands and avoid direct contact with mosquitoes or insects like red fire ants.
6. Re-apply insect repellents according to instructions.

After work

1. Inspect body parts and clothing. Clear any attached arthropods.
2. Take a soapy shower and wash the clothes.
3. For severe reaction following a suspected mosquito or insect bite, seek medical treatment.

If an attached tick is found

Remove the tick by grasping with tweezers or fine-tipped forceps onto the head of the tick close to the skin and gently pulling it with constant pressure.

Do not crush or twist the tick during removal.

After removing the tick, disinfect the bite area and wash hands with soap and water.

B Tips for Using Insect Repellents

1. Apply insect repellents containing DEET to exposed parts of the body and clothing in accordance with label instructions and precautions.
2. Applying insect repellents containing DEET on clothing or exposed parts of the body can protect the skin from mosquito or insect bites directly or indirectly through lightweight and thin clothing. Read the descriptions on the product and follow the instructions on the label before application. Insect repellents containing 5% to 35% DEET can be used. The concentration of DEET in a product reflects its duration of protection. A higher concentration of DEET does not indicate a greater effect but a longer duration of protection.
3. Roll-on preparations are preferable to sprays.
4. Spray insect repellents in open areas.
5. Limit application to the skin and reinforce application to clothing.
6. Use soap and water to wash the clothes exposed to insect repellents.

C Means to Seek Help in Case of Accidents in the Wilderness

1. Immediately give first aid to the persons who sustain serious injury in the countryside.
2. Dial the emergency call 999 until the arrival of a rescue team.
3. Whenever possible, at least one companion should stay behind to accompany and look after the injured person while the other two should go together to seek help.
4. To avoid delay in rescue, the person who goes to seek help should write down information regarding the details and the location of the accident as well as the condition of the injured. The co-ordinates marked on the location map/number of the nearest distance post should also be written down to reduce the inaccuracy of the distress message delivered by him/her due to tension, getting lost and trapped or his/her unclear verbal communication.
5. The essential information to be provided while seeking for help in mountaineering accidents:

- ✓ Nature/cause of the accident
- ✓ Time/location of the accident
- ✓ Location/grid reference/number of the nearest distance post
- ✓ Terrain/special landmarks in the vicinity
- ✓ Personal particulars of the injured including his/her name, age, gender
- ✓ Extent of injury
- ✓ First aid given
- ✓ Weather condition
- ✓ Condition/intention of other companions
- ✓ Contact telephone number

2.4 Construction Sites

2.4.1 General Safety Guidelines on Entering a Construction Site under the Charge of Other Person(s)

1. Discuss the detailed arrangements of the works (including the location, time, nature and arrangements of the work) with the person responsible for the site, and obtain permission for access to the workplace.
2. Receive basic safety training provided by the site and observe the safety rules at the site.
3. Wear appropriate PPE like safety shoes, a safety helmet, etc. and carry a valid "Green Card". Ensure that sufficient PPE, tools and equipment are provided and that they function properly.
4. A "Green Card" is valid for three years with its expiry date specified on the card. The holder of a "Green Card" has to attend the Safety Training Certificate Revalidation Course and apply for renewal before it expires in order to renew his "Green Card".
5. A pre-work inspection should be carried out in order to ensure that the working environment and conditions are suitable for the work.
6. Before commencement of work, check the condition of the site again so as to ensure that no other hazardous work processes are being carried out near and above the site.
7. If unsafe or potentially unsafe condition are detected, stop the work and report to your supervisor immediately.
8. Upon completion of work, report to your supervisor and clean up the site. Notify the person responsible for the site before you leave.

2.4.2 Layout of a Construction Site

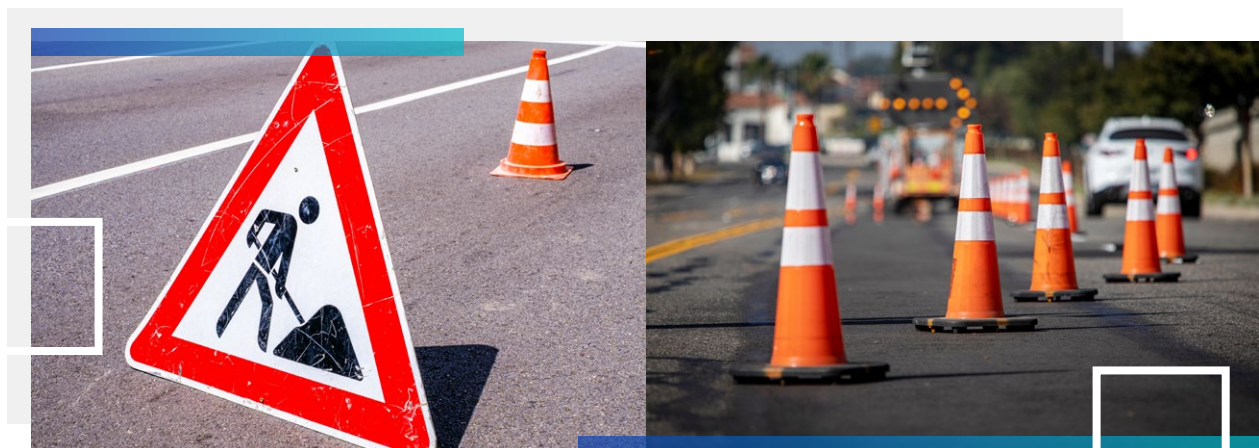
Before commencement of work, the following provisions shall be made:

Arrange perimeter fencing or hoarding where appropriate.	Make appropriate arrangements of storage, transport and the use of: <ul style="list-style-type: none"> • fuel • other flammable materials • explosive materials and obtain the necessary licences from appropriate authorities.
Ensure clear and safe access at site entrances.	
Provide adequate warning signs at the entrances and exits where necessary.	
Provide designated areas for loading and unloading, storage of materials, plant and machinery.	
Post emergency procedure and statutory notices at conspicuous locations.	Work out fire escape routes and locate first aid facilities and fire fighting equipment.
Arrange suitable operation areas for hoists and cranes.	Separate the site into different areas like access roads, storage areas for materials and working areas, and also provide plant movement areas.
Provide welfare facilities at offices, compounds and workshops and secure adequate ventilation and lighting.	Provide wheel-washing basin for vehicles at exits of the site (if necessary).
Arrange electrical supply requirements and incoming mains.	Provide adequate warning of overhead or underground utilities.
Provide refuse hoppers or dumping areas for rubbish and waste materials, and arrange their clearance on a regular basis.	Provide and maintain proper drainage and means of sewage disposal.

2.4.3 Roads and Traffic on a Construction Site

The immediate cause of most traffic accidents on a construction site is human error: careless/reckless driving in places with special hazards (for instance near power lines or excavations), carrying unauthorised passengers, poor maintenance of vehicles, overloading or improper stacking or securing of loads.

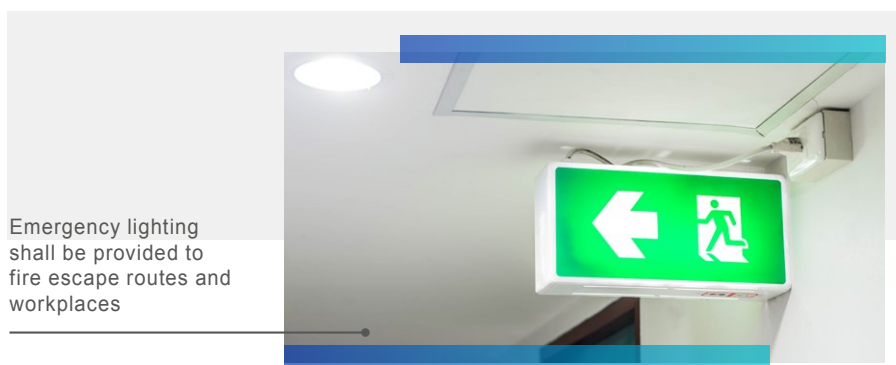
1. Site traffic routes should be clearly indicated and maintained as level as is consistent with the traffic safety standards, and should be carefully planned taking account of potential hazards such as overhead lines, temporary falsework, steeply sloping ground and the movement of workers to and from different working locations. Whenever possible, a one-way system should be implemented.
2. Establish and display clearly speed limits on site and erect notice boards/signages to draw the drivers' attention to areas of potential hazards.
3. When vehicles have to go onto public roads, drivers are responsible for ensuring that the wheels and tyres are cleaned of mud so that the public roads will not be contaminated and no skidding hazards will be created by mud deposited on the roads near site entrances. They are also responsible for ensuring that their load is secure and does not pose a risk to other road users.
4. Protect workers from the risk of being struck by vehicles if they have to work on the roads of the site. Display warnings where drivers can see them in good time; cone off the working area; and request that the workers wear fluorescent or reflective clothing.
5. Engage low gear and wherever practicable, drive the vehicle up or down a slope rather than across.
6. Provide passageways of suitable widths and steps or stairs of suitable construction for the safe passage of persons and materials.
7. Properly maintain all floors, passageways, doorways, steps and stairs to ensure that they are free from any obstructions, protruding objects, slippery substances and other materials that may constitute tripping or slipping hazards.
8. Provide rigid handrails on every staircase and guard rails on the suspended side of the staircase to prevent people from falling off from that side.
9. Segregation of workers and vehicles.



Establish and display clearly speed limits on site and erect notice boards/signages to draw the drivers' attention to areas of potential hazards

2.4.4 Ventilation, Temperature and Lighting on a Construction Site

1. Provide ventilation installations for confined workplaces to supply fresh or artificially purified air to the workplaces through air changes at a rate of not less than five times per hour.
2. Provide and maintain an efficient mechanical exhaust system at the point of origin of the dust or fume or other impurities to prevent them from polluting the air in the workroom.
3. Maintain a reasonable temperature in every workplace.
4. Provide suitable and sufficient lighting, either natural or artificial, in every part of the premises where people work or pass by.
5. Ensure that windows and skylights used for lighting are kept clean and free from obstruction.
6. Install all lighting systems in such a way as to ensure even distribution and absence of glare.
7. Emergency lighting shall be provided to fire escape routes and workplaces.
8. Low voltage should be used for temporary lighting, particularly in confined and damp conditions.
9. The light contrast should not be more than 30% between the workplace and the surrounding area.



The following light intensities may be taken for reference:

Job nature	Light intensity in the workplace (lux)
General work, site clearance	100 lux
Craft work: concreting, scaffolding	100 lux
Fine craft work: joinery, work with power tools, plastering, electrical, plumbing and shopfitting	300 lux
Workshop	600 lux
Site drawing office	750 lux
Precision	1000 lux

Note: The above referenced light intensities are for both indoor and outdoor areas, and to be adjusted according to brightness at the edge of the working area.

2.4.5 Fire Prevention on a Construction Site

1. Store flammable materials in dangerous goods storage cabinets and provide fire fighting equipment nearby. Post "Dangerous Goods" and "No Smoking" warning notices on the cabinets to raise safety awareness.
2. Electrical equipment that must be placed near flammable materials shall have special safe designs (such as with explosion-proof design) so that in no circumstances will it cause explosion.
3. Do not provide any energised parts/equipment (such as motor brushes or open circuit breakers) near storage places for flammable materials as arcing or sparking may occur.
4. Properly handle lint, rags or other objects contaminated with flammable substance.
5. Do not use water or foam fire extinguishers on electrical equipment related fires. Instead, use carbon dioxide fire extinguishers. Whenever possible, cut off the power supply to the electrical equipment before fire fighting.



2.4.6 Housekeeping of a Construction Site

1. Maintain lockers, common rooms, canteens and washrooms in a clean and sanitary condition at all times.
2. Keep all passageways, staircases, landings, and means of escape clear and unobstructed at all times.
3. Properly store raw materials and finished products so as to ensure that the passageways and means of escape remain clear.
4. Do not leave tools on the floor, or in any location where they can be easily dislodged. Provide proper storage, such as tool boxes or containers, for tools and equipment.
5. Do not tamper with lighting, ventilation, power supply and fire fighting equipment.
6. Keep windows and lighting fittings clean.
7. The floors of workplaces should be kept dry and in a non-slippery condition.
8. Provide and maintain proper drainage system to prevent water ponding.
9. Use lidded metal bins for oily and greasy rags and store all flammable materials in appropriate bins, racks or cabinets.
10. Protruding nails on boards should be removed or bent over so that they do not constitute hazards to people.
11. Store dangerous chemicals in dangerous goods metal storage cabinets of the appropriate category.
12. Post "No Smoking" signs in areas with high fire risks, e.g. paint stores, woodworking area, etc.

2.4.7 Noise Control on a Construction Site

Some indications that the noise level at a workplace may cause damage to hearing:

- you have to shout to be heard
- your hearing is dulled just after work
- you get head noises or ringing in the ears after work
- you have difficulty hearing what people are saying



Possible effects of hearing impairment:

- Accidents may happen because the worker cannot hear instructions or emergency alarms clearly while at work.
 - The worker is prone to traffic accidents when crossing the road because of reduced alertness to any warning signals issued by vehicles.
 - The social life of the worker may be affected because his/her ability to communicate with friends and families is compromised.
1. Use sound level meters to measure A-weighted sound level with its unit expressed in dB(A). Preventive measures should be taken if an employee is exposed to noise over 85 dB(A) (first action level) while at work. For example, wear ear muffs and ear plugs in accordance with the employers' instructions. Ear muffs and ear plugs shall be of types approved by the Labour Department.
 2. Prolonged exposure to noise over 90 dB(A) (second action level) or up to 140 dB(A) (peak action level) can cause permanent hearing loss. Excessive noise can cause a person to be irritable and tired. It also increases the chances of accidents as it distracts people's attention and makes them harder to hear warnings or alarms given by other persons.
 3. The site personnel should be made aware of noisy areas by suitable warning signs. Where the daily personal noise exposure may exceed 90dB(A), the area shall be identified and demarcated as an Ear Protection Zone and the site personnel entering the zone is required to wear ear protectors.
 4. Whenever possible, reduce noise at source by engineering methods, such as improving the maintenance work, replacing noisy machines by quieter ones, screening with noise absorbing materials, making changes to the work processes, controlling machine speed or using lubricating oil.
 5. Appoint a competent person to carry out a detailed noise assessment of the workplace and designate the Ear Protection Zone. He/she shall give instructions on the necessary precautionary measures to be observed by the site personnel, including the use of suitable types of ear protections.
 6. Wear and maintain ear muffs and ear plugs in accordance with the manufacturers' instructions. Ear muffs and ear plugs shall be of types approved by the Labour Department.
 7. During construction or repair work, noise should be kept to a low level to avoid disturbance to local residents.
 8. Keep doors of mechanical installations closed.
 9. To avoid working in a noisy environment for a prolonged period of time, consider having regular rest breaks or intermittent job rotation.

The following table gives a general guide on noise levels and exposure time that will not cause harm to most people:

Sound level dB(A)	Duration (hours/day)
90	8
92 (air compressor)	5
95 (air drill)	2.5
97	1.6
100 (machine shop)	0.8 (48 minutes)
102	0.5 (30 minutes)
105 (circular saw)	0.25 (15 minutes)
115 (diesel engine)	0.025 (1.5 minutes)

Note: In accordance with Clause 14 (3) of Appendix III - Particular Specifications on Site Safety in Chapter 3 of the CSSM, approved ear protectors shall be provided whenever the noise level exceeds 90 dB(A).

2.4.8 Dust Control on a Construction Site

1. The common hazardous dusts which may be encountered on site are: asbestos dust, silica dust, cadmium dust, lead dust, pulverised fuel ash, gypsum, cement, stone-fines and saw dust.
2. Control and minimise dust hazards by having materials pre-cut off-site; by isolating dust work; by removing the dust at source using local exhaust ventilation and/or vacuum cleaners; and by watering, such as spraying water at the entrances and exits of the construction site.
3. All exposed persons must wear appropriate respiratory protection equipment. Nevertheless, respirators are not an effective means of control for persons doing manual work.
4. Removal of asbestos materials shall be carried out by a specialist contractor under the supervision of a competent asbestos supervisor.
5. Screen or cover loose materials.
6. Clean up mud and slurry spills before they dry up to avoid being blown away by wind.
7. Use a vacuum instead of an air blower to remove the dust.
8. Use water to damp down concrete when drilling for starter bars or scabbling.

2.4.9 Welfare Facilities on a Construction Site

1. Provide appropriate protective equipment for those who have to work in wet, dirty or under other adverse conditions.
2. Provide the following for staff to be relieved from the heat stress in hot weather:
 - Provide ventilation equipment such as fans.
 - Wherever possible, set up temporary sunshade such as a sun umbrella to block direct sunlight.
 - Arrange for staff to take rest breaks in covered and cooler areas whenever possible during very hot periods.
 - Supply water for staff to drink at any time.
3. Provide places for staff to have shelter during inclement weather, such as heavy rain, thunderstorm, typhoon, etc. to ensure staff safety.
4. Provide facilities for showering, changing, drying and storing clothes, if the situation warrants.
5. Provide first aid boxes and adequate rescue equipment.
6. Provide sufficient toilets, hand-washing facilities and other sanitary fittings.
7. Provide a room for staff to take meals.

2.4.10 Protection Against Adverse Weather on a Construction Site

1. Wear suitable protective clothing, including a safety helmet with a chin strap, rubber boots and a raincoat.
2. Secure loose materials to prevent objects from falling from height and take extreme care when working in rear lanes.
3. For the sake of safety, avoid working in potentially hazardous locations, including slopes, watercourses, nullahs, culverts and flooded areas. If it is required to work in these locations, risk assessments shall be conducted and safe working procedures shall be put in place.
4. Keep clear of trees, overhead power lines and poles, exposed open space or high level areas in the event of lightning.
5. When working in isolated locations, work in groups of at least two persons as much as possible.
6. Maintain communication with the officer-in-charge and act according to the relevant departmental emergency response procedures and system.
7. Provide and maintain proper drainage system, temporary surface channels and sump pits.
8. Provide precautionary measures against heavy rain, such as temporary surface protection and temporary drains for soil slopes under construction.
9. Isolate all electrical circuits not in use.

2.5 Road Work

1. The workflow and points to note shall be clearly explained by the supervisor or an experienced staff member to those inexperienced in road work.
2. The staff do not show any obvious signs of being physically unfit for the work.
3. In addition to the staff responsible for the repair and maintenance work, assign at least one additional staff member to monitor the traffic conditions on the road and give warnings to the working staff if emergency situations arise.
4. Perform safety checks and complete the "Pre-work Safety Checklist (Road Work)" before carrying out any road work (see 2.5.1).
5. Apply to the Highways Department for an expressway works permit before carrying out maintenance works on expressways and carry out such works (including road closure arrangement) in accordance with the conditions of the permit. Place appropriate road works signs under the direction of the traffic police officer.
6. If a power-driven mobile lift is to be used, the operator must have received the relevant training. Check the mobile lift before use. The mobile lift shall be kept away from the overhead power lines with a minimum horizontal distance of six metres.
7. Use a working platform or mobile lift truck when carrying out traffic signal work. If it is impracticable (due to site or space constraint), follow the guidelines or instructions to decide whether a ladder equipped with extra safety protection should be used for the sake of safety, taking into account the individual circumstances of the case and the nature of the work. Visually check the ladder and extra safety protection to ensure that they are safe, secure and suitable for use in the work. Remind the staff to take heed of the points to note as specified in the guidelines or instructions.
8. Provide sufficient traffic signs, traffic cones, lighting equipment and informatory signs such as "Road Works", "Works in Progress", etc.
9. Use suitable works vehicles that are fitted with amber flashing roof beacons and alternate red and yellow fluorescent and reflectorised rear markings.
10. Place traffic cones on the carriageway as appropriate to fence off the works area.
11. If it is necessary to occupy a carriageway in carrying out the repair works, prior notification of the location and period for carrying out such works should be given to the Transport Department and the traffic control room under the relevant Regional Command and Control Centre of the Police Force. Arrange for the works vehicle to park upstream of the carriageway to protect the safety of the maintenance personnel. Place adequate traffic signs, traffic cones, lighting equipment and informatory signs under the direction of the traffic police officer on site.
12. When carrying out works on a dual carriageway, or on a single carriageway where the alignment is poor or there is insufficient width for two-way traffic, advance warning to traffic in each direction should be given by a "Road Works" sign.
13. The works vehicle should be parked at a location which has minimal impact on the traffic. Follow the directions given by the traffic police officer on site (if any) in parking the works vehicle.

14. A clear separation distance of 0.5 metres should, as far as practicable, be maintained between the works area and any part of a carriageway with heavy traffic.
15. Consult the railway company or the management company of the relevant tunnel or control area before carrying out repair works within or in the vicinity of railway lines, tunnels or control areas, and carry out such works with their assistance/under their direction.
16. Take heed of the outdoor weather conditions to see if there are strong winds, rain or thunderstorm warning, etc. and consider whether it is suitable to carry out the work (refrain from work when a black rainstorm warning signal or tropical cyclone warning signal No. 8 or above is in force).
17. Take care of the safety of road users.
18. Wear a reflective vest, a safety helmet and safety shoes (or safety boots) when carrying out road work. Subject to operational needs, wear other appropriate PPE like a dust mask, cut resistance gloves, a safety belt, etc.
19. Stop work under inclement weather conditions and resume work only after the weather is clear. In case of doubt, seek advice from your supervisor.



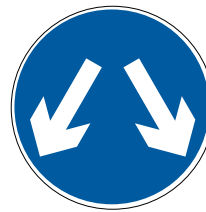
Road Works

The first sign to be seen by drivers as they approach an obstruction



Road Narrows on Right/Left Ahead

The road will narrow ahead



Pass Either Side

This sign indicates that drivers may pass on either side of a temporary obstruction



Keep Left/Right

Drivers must pass on the side that the arrow points to

2.5.1 Pre-work Safety Checklist (Road Work)

Job Number: _____ Date: _____

The checklist is applicable to the repair and maintenance work of traffic signals, high pole lights and road monitoring system, but not to the work that requires road closure arranged by the Highways Department.

Checklist Items		Read Already
People	1. The workflow and points to note shall be clearly explained by the supervisor or an experienced staff member to those inexperienced in road work.	<input type="checkbox"/>
	2. The staff do not show any obvious signs of being physically unfit for the work.	<input type="checkbox"/>
	3. In addition to the staff responsible for the repair and maintenance work, assign at least one additional staff member to monitor the traffic conditions on the road and give warnings to the working staff if emergency situations arise.	<input type="checkbox"/>
	4. Wear appropriate PPE and check it before use.	<input type="checkbox"/>
Equipment	5. Check that the tools and equipment are in good physical condition and suitable for use in the work.	<input type="checkbox"/>
	6. If a power-driven mobile lift is used, the operator must have received the relevant training. Check the mobile lift before use. When in use, the mobile lift shall be kept away from overhead power lines with a minimum horizontal distance of six metres and in compliance with the guidelines of the Division.	<input type="checkbox"/>
	7. If a folding step-ladder is required to be used for traffic signal work and the standing position is less than two metres from the ground, remind the staff to maintain a three-point contact with the ladder when climbing up and down and that a minimum separation of one metre between the top of the ladder and the foot rest position is maintained. Never overstretch the body to either side of the ladder and do not carry out any work which may impose side force.	<input type="checkbox"/>
	8. If a rung ladder is required to be used for traffic signal work and the standing position is less than two metres from the ground, fasten and secure the ladder as far as practicable. The ladder shall lean against the support at a proper angle of approximately 75 degrees (or rise to base ratio of 4:1). Remind the staff to maintain a three-point contact with the ladder when climbing up and down and that a minimum separation of one metre between the top of the ladder and the foot rest position is maintained. Never overstretch the body to either side of the ladder and do not carry out any work which may impose side force.	<input type="checkbox"/>
	9. If the standing position for traffic signal work is two metres or above from the ground, appropriate working platform or mobile lift truck should be used.	<input type="checkbox"/>
	10. If the standing position for traffic signal work is two metres or above from the ground, a working platform or mobile lift truck should be used. If it is impracticable (e.g. due to site or space constraint), follow the guidelines or instructions of the Division to decide whether a ladder equipped with extra safety protection should be used for the sake of safety, taking into account the individual circumstances of the case and the nature of the work. Visually check the ladder and extra safety protection to ensure that they are safe, secure and suitable for use in the work. Remind the staff to take heed of the points to note as specified in the guidelines or instructions.	<input type="checkbox"/>

Object	11. Provide sufficient traffic signs, traffic cones, lighting equipment and informatory signs such as "Road Works", "Works in Progress", etc.	<input type="checkbox"/>
	12. Use suitable works vehicles that are fitted with amber flashing roof beacons and alternate red and yellow fluorescent and reflectorised rear markings.	<input type="checkbox"/>
Method	13. Place traffic cones on the carriageway as appropriate to fence off the works area.	<input type="checkbox"/>
	14. If it is necessary to occupy a carriageway in carrying out the repair works, prior notification of the location and period for carrying out such works should be given to the Transport Department and the traffic control room under the relevant Regional Command and Control Centre of the Police Force. Arrange for the works vehicle to park upstream of the carriageway to protect the safety of the maintenance personnel. Place adequate traffic signs, traffic cones, lighting equipment and informatory signs under the direction of the traffic police officer on site.	<input type="checkbox"/>
	15. When carrying out works on a dual carriageway, or on a single carriageway where the alignment is poor or there is insufficient width for two-way traffic, advance warning to traffic in each direction should be given by a "Road Works" sign.	<input type="checkbox"/>
	16. The works vehicle should be parked at a location which has minimal impact on the traffic. Follow the directions given by the traffic police officer on site (if any) in parking the works vehicle.	<input type="checkbox"/>
	17. A clear separation distance of 0.5 metres should, as far as practicable, be maintained between the works area and any part of a carriageway with heavy traffic.	<input type="checkbox"/>
	18. Consult the railway company or the management company of the relevant tunnel or control area before carrying out repair works within or in the vicinity of railway lines, tunnels or control areas, and carry out such works with their assistance/under their direction.	<input type="checkbox"/>
Environment	19. Take heed of the outdoor weather conditions to see if there are strong winds, rain or thunderstorm warning, etc. and consider whether it is suitable to carry out the work (refrain from work when a black rainstorm warning signal or tropical cyclone warning signal No. 8 or above is in force).	<input type="checkbox"/>
	20. Take care of the safety of road users.	<input type="checkbox"/>
	21. Wear the following PPE when carrying out road work (subject to operational needs, wear other appropriate PPE): a reflective vest, a safety helmet, safety shoes (or boots); and if necessary, a dust mask, cut resistance gloves, a safety belt.	<input type="checkbox"/>

Please briefly state here your comments on the safety measures in the workplace:
(or directly give your comments to DivSO or DSO)

Remarks:

- The user of the checklist should be the on-site supervisor of the team responsible for the job.
- For other safety check items applicable to work of different natures (such as outdoor work safety), and safety measures on work other than road work (such as work involving the use of chemicals), please refer to the safety guidelines or procedures of the relevant Divisions.
- For enquiries on the safety measures of a job, please direct to your immediate supervisor.
- The Quality and Safety Sub-division encourages frontline staff to make recommendations on the safety measures in the workplace to DivSO (or DSO at 2808 3700).

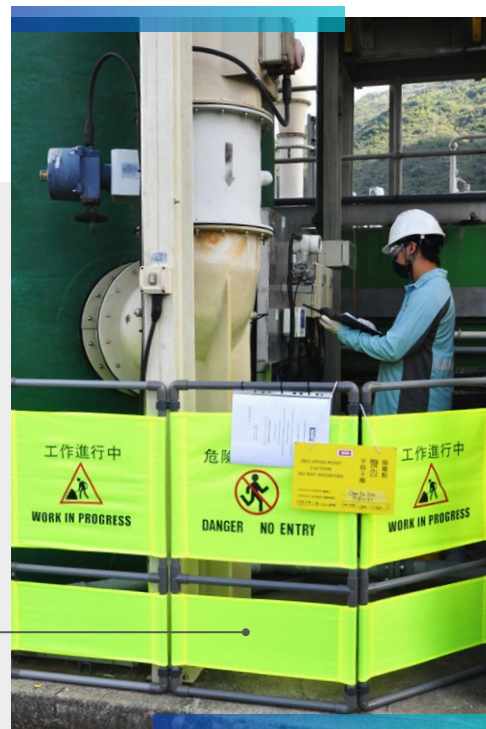
2.5.2 Work Safety Zone

1. Demarcate and isolate the work areas by suitable and adequate warning lights, warning signs and barriers in accordance with the established safety procedures/relevant codes of practice to safeguard staff safety by ensuring that no one shall enter or stay in the work safety zone while works are in progress.
2. An effective communication system among different levels of management or supervisory personnel and staff should be established and maintained, to ensure full appreciation of potential hazards about certain operations, such as entering a confined space for work, installing and repairing electrical installations, etc., and clear understanding of the associated hazard control programme and delineation of safety responsibilities.
3. For street works, use work zone protection barriers designed to appropriate standard for absorbing the energy of colliding vehicle(s) and arrange for the operation to be performed with staff facing the oncoming traffic as far as possible, in order to minimise damage and injuries to the staff.
4. For road works, arrange for the staff who control traffic to carry out their duties at safe positions as far as possible and provide them with suitable PPE as necessary, such as high visibility reflective clothing and traffic control baton, and ensure their proper use of the equipment.
5. When works are in progress, a work safety zone such as an unobstructed passageway of not less than 600mm wide should be maintained between any moving part of a lifting appliance liable to move and any nearby fencing or other fixture. The safety zone should also be fenced off to avoid accidents caused by falling parts.

Staff training

6. Staff and supervisory personnel shall have received proper training of the following:
 - Knowledge of potential risks
 - Safe working procedures
 - Correct use of protective equipment
 - Evacuation procedures
7. The emergency rescue team shall have received proper training of the following:
 - Knowledge of potential risks
 - Emergency rescue operation
 - Use of rescue equipment
 - First aid

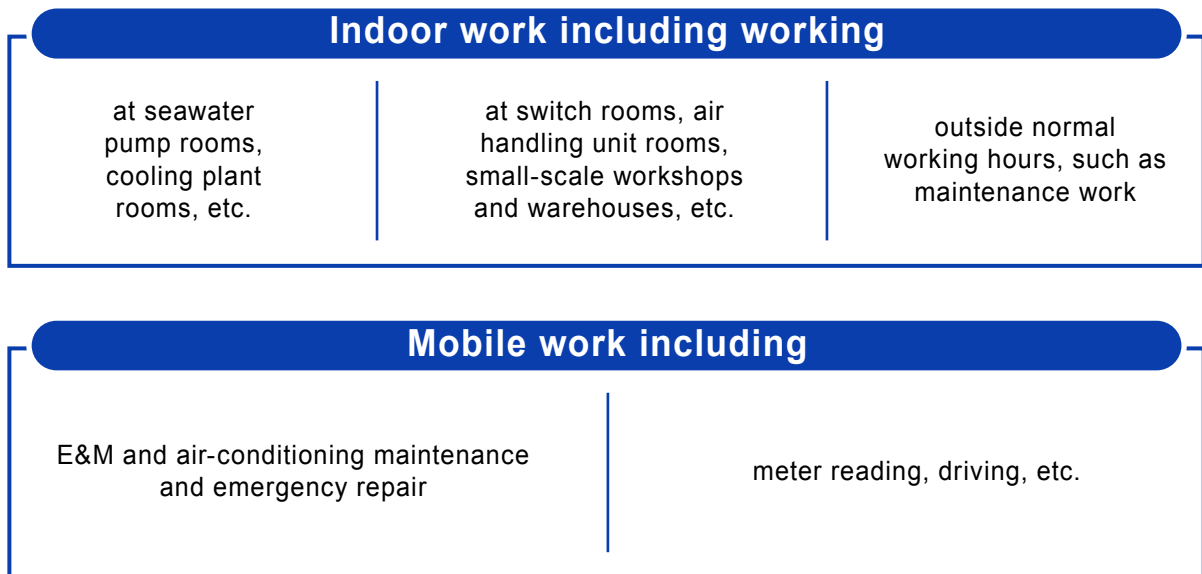
Work Safety Zone



2.6 Working Alone

Working alone not only refers to completing a task on one's own, but also includes working in an environment with no co-workers, passers-by or members of the public in its surroundings. In the event of an accident, the employees may be left unnoticed, causing delay of rescue. These guidelines mainly focus on a number of issues regarding the safety of lone workers, and also set out work arrangements for safeguarding the safety of lone workers.

2.6.1 What Types of Work Are Considered to be Lone Working?



2.6.2 Safety Problems During Lone Working

Lone workers may encounter the following situations at work. In case of an accident, a lone worker may not be able to cope with it or notify others on his/her own.

- violence, intimidation and harassment
- working at height and entering confined spaces for work
- handling electrical and mechanical installations
- using chemicals and pesticides
- handling and carrying objects

2.6.3 Safety Arrangements

As regards the problems encountered when working alone, apart from the nature of the work, higher mobility and environmental changes may also lead to a change of the overall objective environment. In working out arrangements and plans for lone working, relevant control measures should be taken having regard to these environmental changes:

<p>Agree on ways of keeping in contact with other co-workers</p>	<p>Pay attention to any automatic operating devices within the workplace</p>	<p>Assess whether those general hazards encountered during lone working can be eliminated</p>
<ul style="list-style-type: none"> • Before carrying out lone work, report to the contact persons (e.g. duty officers of relevant Divisions) on inspection routes, locations of workplace and estimated completion time, etc. using walkie-talkies, mobile phones or telephones installed therein • If you are unable to operate communication devices at the workplace, agree with your co-workers on the designated time for making contacts upon job completion or during lone working 	<ul style="list-style-type: none"> • If there is any automatic operating device posing hazards to lone workers, cut off its power supply and lock the switch • If there is any automatic gas-type fire extinguisher, switch it to the mode of manual operation and put up a notice on it • If there is any automatic operating devices emitting noise, bring along ear protectors 	<ul style="list-style-type: none"> • Will the working environment pose any unusual risks and affect the safety of employees? • Are there any safe access points at the workplace? Are the ladders and tools provided to the employees safe and suitable for use? Is it safe when using them during lone working? • Is it possible for a lone worker to safely operate or handle all machinery, equipment, substances and goods? Are the goods too big or too heavy for a lone worker to handle? • Will the incident of violence, intimidation or harassment occur at the workplace of lone workers? • Are female and young employees exposed to greater risks when working alone? • What are the physical and mental health conditions of the employees?



Before carrying out lone work, report to the contact persons using walkie-talkies, mobile phones or telephones installed therein

2.6.4 Risk Assessment and Hazard Control

1. If the employees are unfamiliar with the entire working procedures and its hazards during lone working, they should clarify with their section heads or make reference to relevant risk assessment reports.
2. If the employees are required to undergo some high-risk processes, the employers should engage additional staff to assist in performing the high-risk tasks. For example, when carrying out lone work in confined spaces, at least one staff member should stay outside of the confined spaces for back-up purpose. Installation and maintenance of electrical devices may also need additional staff support. In making staff deployment arrangements, the employers should take into consideration the risks associated with the work.
3. When entering the workplace, the lone workers should:
 - a. ensure the safety of the workplace.
 - i. Adequate ventilation - check if the ventilation facility functions properly. If there is an operating generator or vehicle near the exhaust trunk or access, the quality of ventilation within the workplace will be affected;
 - ii. Adequate lighting - bring portable lighting if no emergency lighting system is installed;
 - iii. Normal temperature – the temperature does not become too high or too low due to the malfunction of any facility;
 - iv. Free and clear access – ensure that the access is not blocked or locked;
 - v. Impact of the weather - if heavy rain, high tide or typhoon are expected, the lone worker should consider not entering the site in view of the possibility of flooding, and consider whether electric shock will be caused by wet clothes when touching live instruments;
 - vi. External impact – the lone worker should ascertain that no works posing safety issues are underway in the vicinity. Uncovered drains or damaged gas welders may cause accumulation of noxious vapour within the site;
 - b. The lone worker must not enter the workplace if it is unsafe. No entry is allowed until the condition has improved or a qualified person has made an assessment.

2.6.5 Other Points to Note

1. Comply with the provisions or guidelines as set out in individual contracts. For example, only those employees holding valid passes are allowed to enter the switch rooms of the Airport Authority fitted with FM200 or CO2.
2. Smoking is prohibited within the site.
3. If you feel unwell (such as headache, dizziness, allergies or other symptoms) or detect any unusual operational conditions, stop lone working immediately, leave and inform other colleagues as soon as possible.
4. If the colleagues staying outside detect any accident within the workplace, they should immediately call for help. If safety is unsure, they should not enter the site to rescue people.

2.7 Infectious Diseases

2.7.1 Prevention of Infectious Diseases

1. Handwashing, when done correctly, is a good personal hygiene practice to effectively prevent contracting and spreading infectious diseases. Diseases will be spread easily if hands are contaminated with viruses, bacteria or respiratory secretions and not thoroughly washed.
 - a. Wet hands under running water.
 - b. Apply liquid soap and rub hands together to make a soapy lather.
 - c. Away from running water, rub the palms, backs of hands, between fingers, back of fingers, thumbs, finger tips and wrists .
 - d. After rubbing for at least 20 seconds, rinse hands thoroughly under running water.
 - e. Dry hands thoroughly with a clean towel, paper towels or a hand dryer.
2. Viruses and bacteria can enter the body easily through the eyes, mucous membrane of the nose and mouth. Always remember to wash hands before touching the eyes, nose and mouth.
3. Wash hands after touching public items, such as escalator handrails, lift control panels or door knobs, which are commonly used by many people and can easily gather bacteria.
4. Always carry a handkerchief or some tissue paper for covering your nose and mouth when sneezing or coughing. Wrap secretions in tissue paper and throw it into lidded rubbish bins, wash hands immediately afterwards to avoid spreading bacteria via respiratory droplets.
5. Towels should never be shared. Personal towels to be reused must be stored properly and washed thoroughly at least once daily. It is even better to have more than one towel for frequent replacement.
6. Keep the toilet rim clean for your benefit and the benefit of others. Flush the toilet and wash hands after using the toilet.
7. Wash hands with liquid soap, then dry with a clean towel/tissue paper or a hand dryer. Do not use communal towels.
8. Be considerate. Do not make the floor wet when washing your hands or discard used tissue paper outside the rubbish bin.
9. When hands are not visibly soiled, disinfect them with 70-80% alcohol-based handrub.
10. Dirt or germs can be found everywhere on the street, or on objects that you come into contact with outside. Remember to clear away the dirt or germs remained on your body and clothes.
 - a. When you come home, wash your hands and face immediately.
 - b. Wash clothes or air them in a well-ventilated place for at least one day.
 - c. Clean shoes and put them in a well-ventilated place. Wash your hands immediately afterwards.
11. Protect yourself and avoid spreading diseases to others.
 - a. Consult a doctor promptly if you feel unwell. Wear a face mask if you have symptoms of a respiratory tract infection.
 - b. If you have a fever, do not go to work.
 - c. Wear a mask when visiting hospitals or clinics. When you arrive home, take a bath and wash your hair.

12. Guidance on the use of masks



Choose surgical masks of appropriate size.



Attain good seal with the face by minimising air leak from edges.



Fit the mask securely to the head with ear loops or ties.



Mould the metallic strip over nose bridge so that the mask fits snugly over the face.



Extend the mask to fully cover mouth, nose and chin.



When taking off a tie-on surgical mask, unfasten the ties at the nape first, then unfasten the ties at the crown of head.

If well-fit cannot be attained



Wear a mask fitter or brace over the surgical mask to reduce air leaks around the edges of the mask, or



Wear an additional cloth mask over the surgical mask to reduce air leaks around the edges of the mask.

Guidance on the use of masks	
When to Use	<ul style="list-style-type: none"> • To avoid contracting SARS • When staying at a place where you think you are vulnerable to infection • For general personal hygiene • When entering hospitals • When entering premises with a high risk of infectious diseases
Purposes	<ul style="list-style-type: none"> • Avoid being affected by respiratory droplets • Avoid contact made by hands • Prevent respiratory droplets from affecting others • Prevent the germs exhaled from affecting the health of others • Avoid inhaling fine particles
Types of masks to be used	<ul style="list-style-type: none"> • Surgical masks or cup-type masks meeting N95 standards • Surgical masks • Cup-type masks with high filtering efficiency (such as those meeting KF94, N95, N99, N100, HEPA standards) • 3D masks (or fish-shaped 3D masks) • 3D masks with low Delta P
Remarks	<ul style="list-style-type: none"> • Surgical masks do not perform any special filtering function, but are designed for comfortable use over a long period of time • Using a cup-type mask meeting N95 standards will increase the effort of breathing as the exhalation resistance generated is higher. Try it at a safe place to see whether it is suitable for you • Mask models with activated carbon can reduce foul smell but do not have any filtering function • Try the mask at a safe place to see whether it is suitable for you

2.7.2 Sites with a High Risk of Infectious Diseases

1. Upon entering a high-risk site for carrying out maintenance work, you should wear PPE (see Note 4).
2. PPE includes N95 respirators, disposable hooded protective coveralls, shoe covers, goggles and protective gloves (rubber gloves for general medical use).
3. Before fixing any apparatus, obtain confirmation from the person-in-charge of the premises with a high risk of infectious diseases that disinfection has been carried out therein.
4. If necessary, maintenance personnel may clean the surface of the apparatus to be fixed before carrying out maintenance work (see Note 1).
5. If replacement of the replaceable components of the apparatus (e.g. circuit board) is required, dismantle the replaceable components in accordance with the procedures recommended by the manufacturer and put them into a labelled plastic bag and seal it immediately, treating it as clinical waste.
6. If the dismantled replaceable components need cleaning or fixing before reuse, you should bring them back to the workshop, keep them in an appropriate designated location (see Note 2) for about three days, and conduct surface cleaning (see Note 1) before proceeding with the work.
7. Those tools, equipment or apparatus used in high-risk areas should be kept in a sealed and labelled plastic bag and brought back to the workshop for subsequent surface cleaning (see Note 1) before proceeding with the work.
8. Before leaving a high-risk site, maintenance personnel should follow the procedures as set out in the "Procedures for Removing Personal Protective Equipment" (see Note 5) to remove, discard and clean the personal protective equipment (see Note 4).
9. Further repairs of the parts should be carried out within a designated special maintenance zone (see Note 3).



Notes

1. Suggested methods of surface cleaning are as follows

- Clean (wipe) non-metallic surfaces with a diluted household bleach solution in the ratio of 1:49, then rinse with water and wipe dry.
- For metallic surfaces, clean (wipe) with 70% alcohol.
- If surface cleaning is conducted in the workshop, the maintenance personnel should wear N95 respirators, goggles and protective gloves (rubber gloves for general medical use) and protective gowns.

2. Appropriate locations

- These generally refer to areas with fewer people and good ventilation such as a location in the workshop where fewer staff members have access. It is suggested that the area should be exposed to sunlight or UV light. A room equipped with an independent exhaust system is more desirable.
- A notice should be properly put up to prevent unauthorised entry.
- Tools, equipment, apparatus or replaceable components stored therein should be clearly marked with the storage date and time.
- The air exhaust of the respective exhaust systems should not be positioned at the air intake of other exhaust systems.

3. Special maintenance zone

- These generally refer to areas with fewer people and good ventilation such as a location in the workshop where fewer staff members have access. A room equipped with an independent exhaust system is more desirable
- A notice should be properly put up to prevent unauthorised entry
- The air exhaust of the respective exhaust systems should not be positioned at the air intake of other exhaust systems
- As for the working surface of the zone concerned, impermeable materials such as melamine and fire-resistant plastic floorings, instead of permeable wooden board, should be used. If a metallic board is used as working surface, the electrical hazards posed by the working processes should also be considered
- Avoid keeping unnecessary tools and items on the working surface of the concerned zone so as to facilitate subsequent cleaning after completion of the work
- For those tools, equipment or apparatus used in the designated special maintenance zone, surface cleaning (see Note 1) should be carried out before and after every use

4. Personal Protective Equipment (PPE)

There are eight steps for wearing or putting on a full set of PPE. The employees should follow the step-by-step instructions below. They may need to wear / put on a full set or part of the PPE according to different periods (initial, peak or late periods for outbreak of an infectious disease), working environment and the requirements of working procedures (refer to the relevant safety guidelines on premises exposed to a high risk of infectious diseases to ascertain what PPE is required). Therefore, the employees only need to follow the applicable steps below when wearing or putting on PPE:

- wash hands thoroughly with liquid soap or clean hands with wet wipes containing approximately 70% alcohol
- wear an N95 respirator / surgical mask
- wear standard industrial goggles
- wear disposable hooded protective coveralls or other protective clothing designated for premises exposed to a high risk of infectious diseases
- if necessary (subject to the requirements made from time to time by the premises exposed to a high risk of infectious diseases), wear a disposable protective gown and an additional protective hood on top of the disposable hooded protective coveralls
- put on shoe covers
- wash hands thoroughly with liquid soap or clean hands with wet wipes containing approximately 70% alcohol
- wear medical gloves
- enter the workplace

5. Procedures for removing personal protective equipment

Likewise, there are ten steps for removing a full set of PPE. As the employees may wear / put on a full set or part of the PPE while working, they should follow the applicable instructions below step by step to remove the PPE.

- Remove shoe covers (discard them into a designated waste bag)
- Remove gloves (discard them into a designated waste bag)
- wash hands thoroughly with liquid soap or clean hands with wet wipes containing approximately 70% alcohol
- remove the disposable protective gown, wash hands thoroughly, and then remove the additional protective hood (discard them into a designated waste bag) – only applicable to those who have already put on such protective equipment
- remove disposable hooded protective coveralls or other protective clothing designated by laboratories (discard them into a designated waste bag)
- wash hands thoroughly with liquid soap or clean hands with wet wipes containing approximately 70% alcohol
- remove goggles (keep them in a designated plastic bag and bring them to goggles disinfection zone for disinfection with alcohol; discard the plastic bag into a designated waste bag)
- remove the N95 respirator / surgical mask (discard them into a designated waste bag)
- wash hands thoroughly with liquid soap or clean hands with wet wipes containing approximately 70% alcohol
- employees are advised to wear surgical masks when leaving the workplace
- when removing gloves, protective gowns and hooded protective coveralls or other protective clothing and gloves designated for premises exposed to a high risk of infectious diseases, you should cautiously fold them outwards ("reverse") to minimise exposure of "the outside", which is susceptible to contamination, to the physical environment, and then discard them at a designated area



Wear disposable hooded protective coveralls or other protective clothing designated for premises exposed to a high risk of infectious diseases

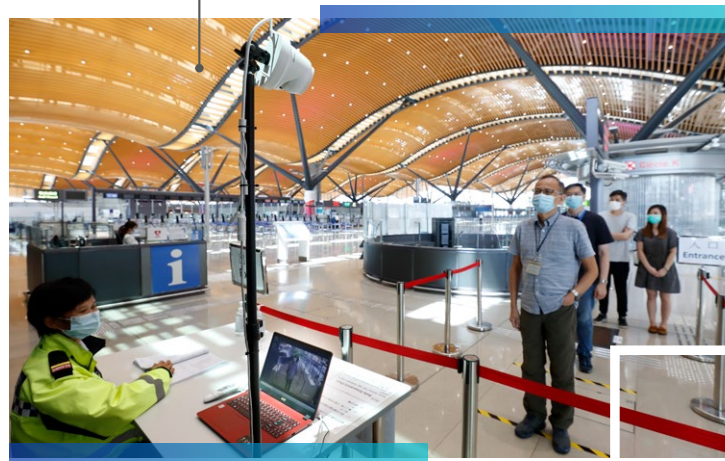
2.7.3 Prevention of Dengue Fever and Mosquito-borne Diseases

Tidying up of workplaces	
Regularly remove stagnant water and keep the area clean and tidy.	Apply larvicidal oil to the surface of stagnant water that cannot be removed.
Cover tightly all water containers, wells and water tanks.	Top up defective ground surfaces to prevent the accumulation of stagnant water.
Properly dispose of empty boxes, unwanted items and rubbish that can accumulate water.	Place mosquito coils and electric mosquito mats or apply mosquito repellent liquid near possible entrances to indoor places (e.g. windows) where mosquitoes can fly through.
Keep all drains free from blockage.	

Working in the countryside
Wear light-coloured, long-sleeved shirts and trousers. Apply mosquito repellents containing DEET on exposed skin.



Maintain adequate social distance from others in common facilities



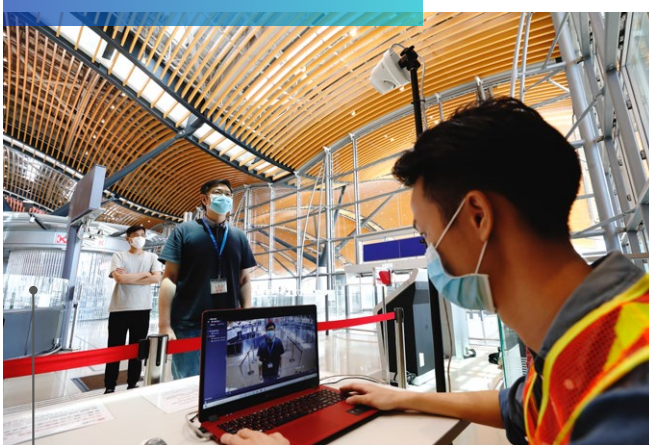
2.7.4. Prevention of COVID-19

General Principles

- Maintain good personal hygiene, wash hands frequently and avoid touching eyes, nose and mouth.
- Check body temperature regularly. Those with fever or respiratory symptoms or sudden loss of taste/smell should refrain from work, wear a surgical mask, avoid going to crowded places and seek medical advice promptly.
- Wear a mask at all times and maintain adequate social distance from others in common facilities (e.g. rest rooms, changing rooms, conference rooms, pantries, etc.) of the workplace, if so instructed by the Centre for Health Protection and Department of Health.
- Complete the entire Coronavirus Disease 2019 (COVID-19) vaccination series as far as possible.
- Build up good body immunity by having a balanced diet, regular exercise and adequate rest, do not smoke and avoid alcohol consumption.

Special points to note for construction sites

- a. Staff using cargo containers to have meals, change clothes or take rest should follow the following practices:
 - i. Keep adequate social distancing
 - Limit the number of staff in the same container at the same time.
 - ii. Keep adequate ventilation
 - Open windows if feasible.
 - Turn on the air conditioner and exhaust fan to facilitate air circulation inside the cargo container.
 - Ensure the air conditioner is functioning properly. Change filters and clean/disinfect the air conditioner regularly.
- b. Smoking is bad for health and is prohibited in most workplaces. When smoking, keep a social distance of at least 1.5 metres, do not pull down the mask to the chin and avoid chatting. Wear mask and wash hands immediately after smoking.
- c. The employer should put in place a mechanism to monitor compliance of preventive and control measures applicable to construction sites.
- d. Post up health education materials on hand hygiene, cough etiquette and COVID-19 in conspicuous locations to raise awareness among staff and visitors on the prevention of COVID-19.



The employer should put in place a mechanism to monitor compliance of preventive and control measures applicable to construction sites

Keep adequate social distancing



2.8 Others

2.8.1 Handling Violent Incidents

Basic Principles

1. Lone workers should be equipped with all necessary communication devices for the work.
2. When a violent incident occurs, pay attention to your personal safety. If there is a threat to your personal safety, go to a safe place as quickly as possible.
3. When a violent incident occurs, take care of other people in need if circumstances permit. Help others get to a safe place whenever necessary.
4. Avoid being alone with the aggressors, seek prompt help from the colleagues nearby, notify your supervisors and seek their support or further instructions. Report the case to the police if necessary.
5. After the incident of violence, pay attention to the reactions and emotions of the attacked employees and counsel them if necessary (injuries resulted from an attack during work are considered "job-related injuries" and protected by labour legislation).



2.8.2 Tips on How to Cope with Violence

Pay attention to those displaying abnormal behaviour. Most of the aggressors will show the following signs before violence erupts:

1. Possible warning signs before violence erupts	
Early Warning Signs	Red Face
	Tightening jaw
	Flexing arms
	Increased physical tension
	Expression of wariness
Strong Warning Signs	Flushed face
	Increased pitch, faster tempo and change of speech pattern
	Increased body movement, leaning forward, interruption of dialogues
	Finger waving
	Clenched fists
	Invasion of personal space of others
	Accelerated breathing rate
	Direct and prolonged eye contact
	Kicks to the ground or wall
	Unusual behaviours, e.g. breaking the pen in hand
Dangerous Warning Signs	Further escalation of the above behaviours
	Shouts and screams
	Speech incoherence
	Adopting sideways stance and getting ready to attack, such as raising hands, tensing shoulders and leaning the head forward
	Glancing around for possible targets

2. General assault process and response to assaults	
Baseline Phase	Pay attention to possible signs before violence
Trigger Phase	Be attentive to the aggressor, show support and approval, do not judge
Escalation Phase	Handle the case in a positive manner, give clear and concise instructions, set limitations, suggest reasonable and feasible solutions
Crisis Phase	Put safety first, pay attention to the techniques of breaking away and suppressing violence
Recovery Phase	Establish peaceful relationship, redirect his/her mind, make verbal agreement, but pay attention to change of behaviour
Post-crisis Depression Phase	Show support, help the aggressor restore calm, work out solutions

3. Use verbal and non-verbal skills to reduce the arousal of anger and hostility of the aggressor

Verbal skills	ask more open-ended questions
	use empathy to express sympathy and shared feelings
	learn to control tone and pitch
Non-verbal skills	leave the aggressor some personal space
	adopt a posture of being an attentive listener
	keep silence as appropriate
	keep appropriate eye contact
	use appropriate facial expressions
	adopt an appropriate sitting or standing posture

4. Tactical communication

Calm the aggressors down, de-escalate the tension, open up communication channels
Engage in dialogue with the aggressors and clarify the dilemma
Resume discussion and figure out an acceptable solution under controlled circumstances

5. Post-incident debriefing

Arrange a meeting session for an open discussion after the incident of violence to review the incident and share feelings and reactions. Make referrals to expert consultation and report to safety officer if necessary.

2.8.3 Work Safety during Large-scale Events, Public Assemblies or Processions

A. Information Enquiry and Assessment

Enquire for information from relevant organisations (e.g. the Hong Kong Police Force and the Transport Department) as early as possible.

1. Find out the number of participants in the event as estimated by the police or relevant organisations.
2. Find out the location or the route of the event and assess whether any preparation should be made if the event is to be held in the vicinity of the workplace.
3. Find out the boundary of the restricted area delineated by the Police or other road closure measures. Depending on the traffic condition, the Transport Department will take other appropriate traffic diversion measures and adjust public transport services nearer to the time of the event.
4. Find out the location, date and time of the event and assess whether it will affect the employees' trips to and from work or their daily work.
5. Find out the nature of the event. For example, if the event is related to controversial issues, the participants may show radical acts. Keep watching over the surrounding area to ascertain whether it is the target of the radical participants.



B. Preparation in advance

1. If the workplace is within a designated restricted area, or if it is considered necessary for the staff to apply for a permit, contact the Police. Access to the area outside the restricted area boundary delineated by the Police is normally allowed.
2. If the traffic is anticipated to be busy in the vicinity of the venue during the event, the staff who are required to visit or pass through such area shall allow more time for travel. Choose suitable transport means and plan trips as appropriate.
3. The frontline management shall ensure that the staff members are aware of the alternative public transport options in case of disruption to public services.
4. Communicate and co-operate with the management company and security personnel for compliance with the guidelines on security.
5. Heighten security alertness and keep trespassers out. Get familiar with all exit routes. Close the doors when going in and out.
6. All chemicals and inflammable items should be properly stored or locked up.
7. Hand tools should be properly placed to prevent participants from having easy access to them.
8. Inspect all electrical facilities to prevent participants passing by from having easy access to power sockets or exposed wires.
9. Ensure that all fire extinguishers are in good working conditions. Keep means of fire escape clear and fire doors closed at all times.
10. Ensure all employees are familiar with the directions, routes and assembly points of means of fire escape.
11. Check whether the items in the first aid kit are sufficient.
12. Prepare an emergency contact telephone list and ensure all employees are familiar with the contact mechanism and emergency evacuation procedures in the event of any incidents.
13. Regularly inspect all plant rooms, such as switch rooms, chiller rooms, emergency generator rooms, air-handling unit rooms, fire service pump rooms and different types of water pump rooms. Ensure the doors are closed and locked when leaving the above plant rooms.
14. If the department has formulated a special contingency plan for the event, all staff members should strictly follow it.

C. Points to note during the event

1. Avoid going to the vicinity of the venue unless necessary.
2. Stay tuned for updates on notices, latest radio and television broadcasts or latest information released on the website of the Transport Department on demonstrations, road blockage, as well as interruptions to the public transport system, etc. Relevant knowledge and suitable instructions will be provided to staff members from time to time.
3. Allow more time for travel so as to cater for any unexpected delays.
4. If there is any unexpected incident or event affecting normal work, keep in touch with your supervisor and seek his/her instructions. Take measures according to the contingency plan for the event (if any).
5. If you encounter radical acts, keep calm, look for a safe route and leave the scene of the dispute as soon as possible. Stay away from the scene, and listen to the advice given by the police officers at the scene.
6. If any suspicious object is found, you should keep calm. Consider evacuating from the scene if necessary. Remember not to close the doors and windows. Upon arrival at a safe place, call 999 to notify the Police. Do not touch the object, or have it covered. Pay extra attention to suspicious objects. Never ignore their existence and take no actions.

D. Public safety

1. Set up fencing and/or hoardings and erect clear warning signs and maintain sufficient lighting around the perimeter of construction sites to protect pedestrian safety.
2. Perform hazardous operations at places away from the public as far as possible, and fence the work sites.
3. If roadwork is involved, pay special attention to the safety of pedestrians and traffic, especially at work sites located in crowded areas. To ensure public safety, make special arrangements including setting up firm fences and erecting clear warning signs, providing stable temporary access, and removing unnecessary equipment and materials.

E. More information

The Police and the Transport Department will devise a contingency plan in advance or take immediate actions in the light of the prevailing situation at the scene. The relevant messages will be disseminated through the radio and television to keep the public informed.

Chapter 3

Safety and Health Guidelines for Equipment and Tools

3

Safety and Health Guidelines for Equipment and Tools

PPEs are the last resort and shall be used only where the identified hazards cannot be eliminated or controlled by other means

3.1 Personal Protective Equipment

3.1.1 General

1. PPEs are the last resort and shall be used only where the identified hazards cannot be eliminated or controlled by other means. Seek advice from your supervisor if in doubt.

PPEs include safety helmets, protective gloves, goggles, protective masks, ear protectors such as ear muffs and ear plugs, face masks and respiratory protectors such as respirators and breathing apparatus, safety shoes, protective clothing, full-body harnesses, reflective jackets and belts, life jackets, etc.

2. Use and maintain the PPE according to the manufacturer's recommendations and instructions where applicable. Do not tamper with or modify the PPE.
3. Use only approved type of PPE (see the relevant list below) and be aware of its validity period.
4. Report to the supervisor for defects in the PPE or when replacement is necessary.
5. Make enquiries to the safety officer or Quality and Safety Sub-division when in doubt about the specifications of PPE or how to select one.
6. Regularly clean the PPE as a soiled PPE might cause dermatitis.
7. Apart from the PPE provided, inform the supervisor if you consider that other PPEs should be available for a particular job or activity.
8. Wear the PPE according to the requirements of the specific trades under the following circumstances:
 - a. Wear long-sleeved protective heat-resistant gloves, masks, appropriate protective clothing and shoes when performing maintenance work on pressurised steam equipment.
 - b. Wear insulating gloves and other required PPE when performing unavoidable live work.

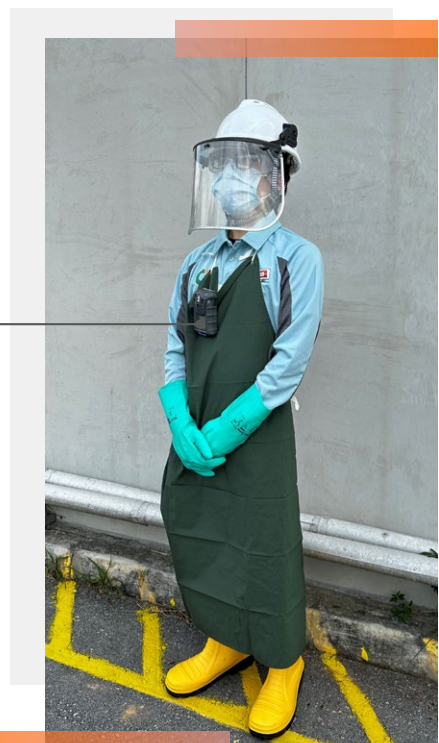
3.1.2 Eye Protection

1. A particle, however tiny, can cause serious consequences if got caught in the eye. Never take the eye protectors off while within dangerous areas.
2. Seek help from trained officers – rather than any colleague – to help clear the extraneous particle from your eye.
3. Eye protectors should be distributed to all working officers if the work has potential eye injury risks.
4. Make sure sufficient goggles/eye masks are provided.
5. Keep the goggles clean and suitable for wear.
6. All safety glasses, goggles and masks must comply with the European Standard: Personal Eye Protection – Specifications (EN166) or equivalent standards.
7. Welding masks and goggles must meet the European Standard: Personal Protection - Equipment for Eye and Face Protection during Welding and Allied Processes (EN175) or equivalent standards.
8. Suitable goggles must be carefully selected.



Personal Protection
Equipment

Keep the goggles clean and
suitable for wear



9. Suitable goggles or face mask should be worn when carrying out the following tasks:
 - Grinding and cutting with motor abrasive wheels
 - Grinding of abrasive wheels
 - Internal and external turning, other than precision turning, of non-ferrous metal and cast iron
 - Welding and cutting
 - Loading or unloading of cartridges of cartridge-operated tools, the operation of cartridge-operated tools, and maintenance or examination of cartridge-operated tools
 - Handling of sewage, molten metal, acids or alkalis, and other dangerous or corrosive materials, including liquids and solids as these materials may cause harm to the eyes
 - Steam cleaning of grass swards and dust, etc.
 - Any procedure involving the use of laser
 - Cutting or breaking of stones, metals, clay, cast iron, concrete or glassware, and works related to the chipping or removal of loose stones / scaling
 - Cutting out or cutting off of rivets or bolts from boilers, vessels or mechanic installations
 - Chipping, scaling or scraping of boilers or vessels
 - Sand blasting
 - Any work that could cause particulates to fly and injure the eyes
10. The strong light emitted during the welding process would impair vision. Therefore, do not watch the welding process with the naked eye unless goggles are worn.

3.1.3 Head Protection

1. No person may enter the work site unless he/she is wearing a suitable safety helmet as stipulated in section 48(2) of the Construction Sites (Safety) Regulations.
2. Safety helmets are used to prevent injuries to the head by objects falling from height or from heavy impact, and must meet the European Standard: Specification for Industrial Safety Helmets (EN397) or equivalent standards. For impact-resistant hats that offer protection against minor impact, the specifications of European Standard: Industrial Bump Caps (EN812) must be met.
3. Chin strap is an integral part rather than an accessory of a safety helmet for better head protection to the workers. The proper use of chin strap is important to keep the helmet in place to prevent it from dropping off and thus enhances the protection against impact on the workers' heads, especially in a fall from height.
4. A safety helmet must be worn with a chin strap fastened under the following circumstances:
 - A safety helmet must be worn before entering a mechanical and electrical equipment room for work.
 - Whenever work related to construction is being carried out, a safety helmet must be worn whether the construction-related work is conducted in a new or existing work site.
 - A safety helmet must be worn wherever the head is susceptible to injuries (e.g. objects falling from height, getting bruised by fixed or moving objects).
 - Inclement weather conditions.

4. A bump cap may be used in carrying works other than those mentioned above or in routine inspections or record-taking of equipment operation at machine rooms under EMSD's purview.
5. A bump cap or safety helmet must be worn when working at or passing any place with insufficient headroom and where your head might bump into hard and protruding objects.
6. Properly adjust the straps of the safety helmet, so that they would not be too loose to cause the helmet to fall off when you bend over or too tight to leave red marks on your forehead.
7. Check for cracks or damage from impact or mishandling on the helmet every time before use. All worn-out, defective or damaged safety helmets must be destroyed, disposed of and replaced. In addition, the safety helmet should no longer be used after the expiry date and must be replaced even if intact.
8. Destroy any safety helmet that has sustained heavy impact for its protective capacity might have been significantly compromised even if there is no apparent exterior damage.
9. Avoid dropping or throwing the safety helmet or using it as support.
10. Ensure that the safety helmet and straps are in good condition and replace any damaged parts immediately.
11. Do not place the safety helmet at the rear window shelf of the car, lest sunshine undermine its protective capacity. Besides, in the event of emergency braking or accident, the safety helmet placed at the rear window shelf might fly off and cause danger.
12. Proper storage shelves or lockers should be provided at the work site for the storage of safety helmets.
13. The lifespan of a safety helmet is contingent on a number of factors, including the materials used, quality control, the manner in which it was used, maintenance and repair, etc. The lifespan of most safety helmets is generally two to three years.

Safety helmets are used to prevent injuries to the head by objects falling from height or from heavy impact



3.1.4 Protection for Work at Height

1. Under any circumstances, a safe working platform should be provided as much as possible. If, for the reasons of work nature that a working platform is not available, scaffolding should be built and other fall arresting equipment, suitable and sufficient safety nets or full-body harnesses should be provided. If safety nets are not available, suitable and sufficient full-body harnesses must be provided. Full-body harnesses should be used only when other fall arresting measures are not feasible and they must be tightly hitched to the suitable anchorage points.
2. Wearing full-body harnesses can cushion the impact on the waist from falling and hence alleviate the injury. In addition, use buffer devices as much as possible.
3. Full-body harnesses must be worn with the safety belt hitched to the suitable anchorage point when conducting the following tasks:

✔ Working at a suspended working platform, suspended cage or Power-operated Elevating Work Platforms

✔ Climbing fixed ladders with fall arresting equipment

4. Properly repair the fall arresting safety nets, full-body harnesses and other equipment.
5. The full-body harness must be directly hitched to the anchorage point above the working spot with the guy shortened as far as possible. All anchorage points must meet the European Standard: Protection Against Falls from a Height - Anchor Devices (EN795) or equivalent standards.
6. All full-body harnesses must meet the European Standard: Personal Protective Equipment Against Falls from a Height - Full Body Harnesses (EN361) or equivalent standards.



3.1.5 Ear Protection

1. Ear protectors must be worn when entering ear protection zones designated by a competent person after carried out a detailed noise assessment, or working within specified areas indicated by the warning labels on noisy machinery or equipment. Under the Factories and Industrial Undertakings (Noise at Work) Regulation (Cap. 59T), the common types of approved ear protectors include:



3M 1100 ear plugs



3M Brand #1425
Reusable ear muffs



Bilsom Leightning
L1



Ear protectors must be worn when entering ear protection zones or working within specified areas indicated by the warning labels on noisy machinery or equipment

2. Apart from the use of approved models of ear protectors, consult your supervisor for other practicable means to reduce daily personal noise exposure (e.g. noise treatment at its source).
3. The Commissioner for Labour has provided a list of approved ear protectors under section 7 of the Factories and Industrial Undertakings (Noise at Work) Regulation (Cap. 59T). For details, please refer to the Labour Department's webpage (http://www.labour.gov.hk/eng/faq/pdf/earprop_e.pdf).

Remarks: For more information about ear protection, please refer to Chapter 2.4.7 of this handbook.

3.1.6 Respiratory Protection

1. Wear respirators for protection when conducting the following work or under the following circumstances:
 - Sanding and rubbing down woodwork, and handling fill materials and old paint
 - Spray painting
 - Steam cleaning
 - Cleaning cooling coils and filters with high pressure jets
 - All processes involving asbestos or asbestos-based products, lead, and harmful or toxic chemicals not stored in a sealed vessel
 - All processes that may give out silica dust or mercury vapour
 - All works in a confined space
 - The atmosphere contains polluted, harmful or toxic dusts or gases
 - During rescue operations
2. Ensure sufficient protection is provided by suitable respirators. The degree of protection provided by a respirator is measured by the amount of inward air leakage that occurs when used. For the maximum allowable amounts of inward leakage for the various types of respirators, please refer to the relevant standards.



3. The amount of inward leakage depends on:
 - the tautness of the respirator on the face (facial hair, wearing of glasses, etc. can significantly affect whether the respirator is snugly strapped to the face)
 - the functionality of the filter or canister (if any)
 - the functionality of the exhalation valve (if any)
 - the maintenance of the respirator and its accessories
4. Provide training to all persons using the respirators on their correct fitting, use, limitations and symptoms of exposure.
5. The Commissioner for Labour has approved a list of respiratory protective equipment for protection of workers against inhaling asbestos dust under section 4 of the Factories and Industrial Undertakings (Asbestos) Regulation (Cap. 59AD). For details, please refer to the Labour Department's webpage (http://www.labour.gov.hk/eng/faq/oshq9_whole.html).
6. The Labour Department has approved a list of breathing apparatuses to be used in confined spaces under section 12 of the Factories and Industrial Undertakings (Confined Spaces) Regulation (Cap. 59AE). For details, please refer to the Labour Department's webpage (<http://www.labour.gov.hk/eng/faq/pdf/BreathApparatus.pdf>).
7. All respirators, with the exception of disposable types, require cleaning and inspection after use and before the use by another person. Cartridges and filters have a limited service life which can vary depending on the environment in which they are used. Manufacturer's recommendations should be strictly followed.
8. Suitable masks must be worn according to the direction of Divisions whenever working in medical environments.

A. Guidelines on wearing surgical masks

A. Guidelines on wearing surgical masks	
Wearing surgical masks	<ul style="list-style-type: none"> • Wear the mask with the metallic nose bridge support facing upwards • Tie the two head straps at the back of the head and neck respectively • Press the metallic strip on the nose bridge with the fingertips of both hands until it moulds to the nose bridge • When finished, the mask should cover the nose and chin and fit snugly over the face
Proper ways to use surgical masks	<ul style="list-style-type: none"> • Reuse of disposable masks is not recommended. If necessary, put the mask into a paper bag or plastic bag to prevent contamination • A mask must be replaced if it is found to be soiled or damaged • Masks are for personal use only and not to be shared with others • Used masks must not be taken outside of the hospital area • Avoid touching the mask after wearing it so as to not undermine its protective capacity. If one must touch the mask, wash hands thoroughly before and after touching it • When taking off the mask, avoid touching its exterior part as it may have been contaminated with germs • After the mask is taken off, fold the mask inside out (with the exterior part of the mask facing inwards) before wrapping it in a plastic bag or paper bag for disposal in a lidded rubbish bin

B. Guidelines on wearing N95 masks	
Wearing different kinds of N95 masks	<ul style="list-style-type: none"> First, pull the top head strap over the head and let it rest at the back of the head. Then, pull the bottom head strap over the head and let it rest at the back of the neck. Adjust the head straps properly and do not crisscross them Place the fingertips of both hands on the nose bridge, press inward and slowly move the fingertips downwards along the metallic strip until it is pressed into the shape of the nose bridge Conduct FIT CHECK (Required each time the respirator is worn) Positive pressure test: cover the respirator with both hands and exhale deeply. If leakage of air at the edges of the respirator is detected, it means it is not properly worn and the head straps will require readjustment Negative pressure test: cover the respirator with both hands and inhale deeply. The respirator should collapse at the centre. If inflow of air at the edges of the respirator is detected, it means it is not properly worn and the head straps will require readjustment
Proper ways to wear N95 masks	<ul style="list-style-type: none"> Before the mask is adjusted to the proper position, do not enter areas with air pollution Disposable N95 masks are recommended to be properly disposed of after use. If necessary, put the mask into a paper bag or plastic bag to prevent contamination. Wear the mask again whenever needed Replace the mask with a new one if it is soiled or damaged, causing difficulties in breathing and giving off foul smell A N95 mask can be used multiple times. It is advised that the period of usage should not be longer than one month A mask is for personal use only and not to be shared with others



3.1.7 Foot Protection

1. Suitable footwear (e.g. meta/fiber toecap safety shoes or safety waterproof boots) must be worn under circumstances in which workers are susceptible to foot injuries, such as being crushed by fallen heavy objects, slipping on the floor, handling dangerous goods, etc., and ensure that all safety shoes meet the European Standard: Personal Protective Equipment - Safety Footwear (EN 20345) or equivalent standards.
2. Use safety footwear on site or in other dangerous areas. Foot injuries account for a lot of industrial accidents and safety footwear would prevent most of them.
3. Wear suitable safety shoes or boots when working anywhere where there is a high risk of foot injuries from slippery or uneven ground surface, sharp objects, falling objects, etc.
4. All safety footwear, including safety shoes, boots and rubber boots, shall be fitted with meta/fiber toecaps. Where there is a risk of treading on protruding nails or sharp objects, the footwear shall be fitted with penetration-resistant soles, and be identified with a symbol "P" in accordance with the European Standard: Personal Protective Equipment - Safety Footwear (EN 20345) or equivalent standards. For electrical workers, safety footwear fitted with electrical-resistant soles must be worn as appropriate.
5. Avoid wearing flip-flops, high-heeled shoes, slippers, light sport shoes, etc. in situations where there is a risk of foot injury.
6. Keep shoelace knots tight.

3.1.8 Hand Protection

1. Wear suitable gloves in the following situations and clean after use:

Working or handling sheet metal and other objects with sharp edges or corners	✓
Cutting with a knife or other cutting edges	✓
Operating a chainsaw	✓
Rolling films	✓
Welding and cutting	✓
Avoiding electric shock	✓
Providing a better grip while handling oily components	✓
Providing a better grip while lifting manhole covers and engaging in manual handling of materials and equipment	✓
Avoiding heat burn and direct contact with dye or other chemicals	✓

2. Do not wear gloves where there is a risk of them getting entangled in moving parts of machinery (e.g. abrasive wheel machines, drills, etc.).
3. Avoid direct contact with rattan rods for drainage use, water jetting hoses and other drainage equipment.
4. Wash hands thoroughly with disinfectant soap and clean water before eating and drinking. Wash hands immediately after each operation on site when the situation warrants.

3.2 General Mechanical and Hand Tools

3.2.1 Mechanical Plant and Equipment

Check that all safety devices are functioning properly before starting the machines. Report to the supervisor immediately if any malfunction occurs.

Ensure that safety guards are in suitable positions for all dangerous parts of power-driven machines that are accessible (e.g. lift motor belts, bits of drilling machines, and exhaust fan blades, etc.).

Check and maintain the machines regularly by a competent person.

Ensure that effective switches are available for starting or stopping the electric motors operating the machines. The switches should be readily accessible and easily operable by the operators.

Do not operate a machine that you are not familiar with. Ask for assistance from the supervisor where necessary.

Before carrying out maintenance or repair works on a plant/equipment, ensure that the respective power supply (e.g. electricity, steam, compressed air, etc.) is isolated and locked out, and appropriate warning signs are displayed.

Secure the workpiece in a drill press with a vice or clamp, instead of holding it by hand.

3.2.2 Hand-held Tools

1. Select the correct weight, size and kind of tool for the work.
2. Keep the tools clean and in good condition. Store them in a safe place when not in use.
3. Ensure that the handles have a smooth finish and are easy to grasp and free of sharp edges or corners.
4. Handle all sharp tools with care. Properly wrap all sharp edges up if not in use.
5. Keep tools off ladders or high locations.
6. Use spark-resistant tools where flammable gas may be present.
7. Use effective insulated tools for work on or near electrical apparatus.
8. Keep cutting edges sharp for precision in cutting and to avoid the need to exert unnecessary pressure.
9. Never use chisels, punches or riveting dollies with mushroomed heads.
10. Never use files without a handle.
11. Never use a chopper as a hammer.

12. Never use a screwdriver with a dull blade, bent shank, or split handle.
13. Always use a spanner of a correct size. Never use packing pieces.
14. Never use a hammer or extension handles on the spanner for tightening up nuts. Where a jammed nut must be loosened, a striking-face spanner should be used after applying penetrating oil to the end of the thread.
15. Hold securely the work in a vice and use a proper tap wrench (never an adjustable spanner) when taps and dies are used. Freshly-cut threads can be sharp and may cut hands and arms.
16. Ensure that there is nobody around when swinging a hammer.
17. Avoid static load at the shoulders or arms due to continuous holding of a tool at a raised position or the gripping of a heavy tool.
18. Avoid awkward wrist angles while using tools such as snips and pliers.
19. Check the hand-held tools regularly. Damaged or worn-out tools (e.g. splitting of wooden handles, insecure or loose hammer heads, etc.) should be replaced immediately.
20. Check the insulated shell of electric portable tools and replace them immediately if found damaged or split.
21. Damaged or worn-out tools should not be haphazardly placed and should instead be placed at specific locations with the "Do not use" warning sign on display.
22. Use the correct tools for the work. For example, do not substitute pliers for hammers, screwdrivers for chisels, etc.
23. Follow the correct ways of using the tools. For example, keep a firm footing when using a wrench and pull the tool gradually to avoid loss of balance, and be mindful of people around when using a hammer, etc. Ask your supervisor for advice in case of doubt.
24. When securing a workpiece with a wrench, it must be ensured that the workpiece has been securely fixed on the wrench. If necessary, suitable supplementary workpieces should be used for assistance (e.g. securing circular workpieces such as pipes or moving spindles, etc. with the help of V-shaped channels).



Keep the tools clean and in good condition

3.3 Power Tools

3.3.1 Woodworking Machines

1. Keep the circular saw blades sharp at all times, and properly adjust the riving knife and top guard. Use a saw blade of suitable diameter and adjust it properly so that the saw teeth can cut vertically downward.
2. Use a push stick to prevent the hand from coming into contact with the blade of a circular saw, planing machine or vertical spindle moulder.
3. Provide fire extinguishers adjacent to the work location. Remove sawdust regularly to minimise fire hazard.
4. Never remove the sawdust from under a saw bench until the machine has come to a standstill and the power supply has been switched off.
5. Tighten all nuts and set screws on saws and cutters and ensure all cutting tools are sharp.
6. Ensure that every woodworking machine is adequately guarded and is provided with a readily accessible emergency stop button. Weatherproof on/off switch shall be used if the machine is located outdoors.
7. Never use a woodworking machine until you have been properly trained in its use.
8. Ensure that the working space around a machine is unobstructed and the floor is clean and not slippery.
9. Wear a face mask and ear muffs when operating woodworking machinery.
10. Ensure that the workplace is well ventilated to avoid accumulation of wood dusts which cause health and fire hazards.
11. Do not leave the woodworking machine running unattended.
12. Maintain and clean the tools, blades and cutting equipment regularly.
13. Check that a crown guard on the top of the bench table of the circular saw and an underbench plate are available.

3.3.2 Air Compressors and Air Receivers

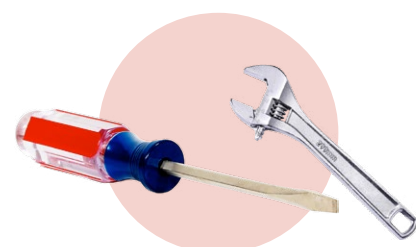
1. Ensure that air compressors and air receivers are operated only by authorised persons who are adequately trained, and be conversant with the control, start-up and shutdown procedures including emergency operation and shutdown procedures.
2. Check that the air receiver, pressure vessel or boiler has been registered with a valid Form 2 Certificate of Fitness for a Pressure Vessel as stipulated in the Boilers and Pressure Vessels Ordinance (Cap. 56). No air receiver may be operated without a valid certificate, unless exemption has been obtained from the Labour Department.
3. Ensure that the pressure relief and/or safety valves are periodically checked by a competent person to prevent operating above maximum permissible pressure and that they are sealed against unauthorised pressure re-setting.
4. Ensure that all moving parts are guarded and covered by protective shields and that the latter are not removed during operation.
5. When using an air compressor indoors, ensure that there is good ventilation.
6. Do not carry out inspection or repair work when the air compressor or the air receiver is in operation.
7. Ensure that the procedures for safe operation and maintenance are followed and that the instruction and service manuals are readily available.
8. Wear protective ear muffs when necessary during the operation of an air compressor in order to guard against excessive noise exposure.
9. Do not use compressed air for any other purposes other than that for which it is intended. Never direct compressed air at people or use it to blow dust off clothes or hair. Never use compressed air to clean down machines, workpieces or working benches.
10. Make sure that the compressed air tools, hoses and fittings are in proper working conditions. Report any damage or failure to the supervisor.
11. Always close the hose by the valve. Never kink the hose.
12. Do not leave hose lines lying around to prevent tripping.
13. Ensure that the receiver in operation does not exceed the maximum permissible working pressure.
14. Drain the air receiver regularly to prevent carrying over of condensate, oil or impurities into the compressed air pipeline.

3.3.3 Electric Tools

Workers may need to use different tools (for example, screwdrivers, wrenches, drills, power chain saws, etc.) to carry out different types of work. Workers should learn to use electric and hand tools correctly, develop a sense of responsibility for work safety and strengthen their safety awareness, so as to avoid injuries.



1. The voltage of portable and hand-held tools and temporary site lighting used at work sites shall be 110V or less and supplied from isolation transformers with output windings centre-tapped to earth. Hand-held lamps of less than 110V are preferable. In confined and damp surroundings, e.g. inside metal vessels, sump pits and tunnels, the voltage of hand-held tools and temporary lighting should not exceed 25V.
2. Use approved-type weatherproof socket/adaptor for extension of power cable.
3. Check the defective or damaged cables, plugs, sockets and damaged or worn tools. Carry out periodic maintenance and repair for the tools.
4. Report any defects at once and do not allow the tools to be used by affixing warning labels and setting the tools aside until the repair work has been done.
5. Practise good housekeeping, for example, hang the cables and keep loose cables off the floor and away from the pedestrian passage as far as possible.
6. Choose tools with the right functions, shapes or sizes for the work to ensure that the tools in use are suitable for the work.
7. Switch off the electrical supply before making repairs and adjustments.
8. Ensure that electrical equipment is effectively earthed in accordance with the Code of Practice for the Electricity (Wiring) Regulations.
9. Do not withdraw a plug from a socket by pulling the cable.
10. Ensure that all electrical equipment is dry and clean unless it is of special construction and installed and protected to prevent electrical accidents while operating in certain harsh environments.
11. Ensure that staff are equipped with the necessary knowledge to use the tools.
12. Maintain good posture when using the tools.
13. Return the used tools to the designated areas.
14. When working at height, use a tool lanyard that meets the safety standards (ANSI/ISEA 121-2018) or equivalent to prevent wireless electric tools and hand tools from falling from height and hitting passers-by. Learn about the operating load of the tool lanyard before use to ensure that the weight of the tool does not exceed the load.
15. Secure the lanyard to fixed anchorages such as eye bolts when using wireless electric tools and hand tools weighing more than 2.3 kg (approximately 5 lbs).



3.3.4 Abrasive Wheels and Portable Grinders

1. All abrasive wheels shall be mounted by competent persons who have been appointed in writing by the employer. They should be well trained, have practical experience in mounting jobs, and possess the valid certificate for replacing abrasive wheels.
2. Only trained persons shall be allowed to use abrasive wheels and cutting discs.
3. Run a new or replaced abrasive wheel for at least one minute before use.
4. Abrasive wheels shall be clearly marked in Chinese and English the maximum permissible speed in rounds per minute (rpm) by the manufacturer. A notice, in English and Chinese, stating the specified maximum permissible speed of the abrasive wheel shall be permanently fixed in the room or area where the abrasive wheel is used. For every power-driven machine, the spindle on which an abrasive wheel is mounted shall be marked with the maximum working speed of the spindle. Where there are special arrangements for operating the spindle at multiple working speeds within a specific range, the maximum and minimum working speeds of the spindle shall be specified. Check that the operating speed of the spindle of a machine does not exceed the maximum permissible speed of the wheel as specified by the manufacturer.
5. Ensure that the guard is in position and properly adjusted.
6. Adjust the work rest as close to the face of the wheel as possible, in any case not exceeding 3.2 mm to the wheel.
7. Never use the side of an abrasive wheel for grinding.
8. Check that the spindle does not become overheated due to the lack of lubrication.
9. Do not stop a wheel by forcing pressure onto the wheel.
10. Never exert undue pressure onto the wheel when grinding.
11. Wear high impact-resistant goggles even if a protective screen is fitted to the machine.
12. Ensure that the correct grade of wheel for the work is in hand.
13. Ensure that the floor in the vicinity of the grinding machine is in good condition, free from obstruction and not slippery.
14. Examine a dropped abrasive wheel very carefully before using it again. If you are in doubt about its condition, destroy it and obtain a new wheel.
15. Report any malfunction or unusual signs of the machine to the officer-in-charge immediately.
16. Keep fingers away from the cutting edge when operating the abrasive wheels.
17. Switch off the power and stop the operation of the abrasive wheel when not in use.



Do not stop a wheel by forcing pressure onto the wheel





3.4 Hoisting and Lifting

3.4.1 Lifting Appliances

1. There are many different kinds of lifting appliances, including crabs, cranes, excavators, winches, hoists and pulley blocks, etc.
2. The safe working load of lifting appliances and lifting gear must be capable of handling the weight of loads and leave enough margin to avoid overloading.
3. Use suitable lifting appliances (e.g. slings) that have been examined and inspected when hoisting.
4. Ensure the load is tightly roped and is properly hoisted and balanced so that it does not slip or move during the hoisting process.
5. During the hoisting process, no one may enter the hoisting zone without permission or stay below the load being hoisted.
6. Inspect the worksite environment such as the ground condition, high voltage cables and obstacles in the vicinity, as well as the weather condition before carrying out the hoisting procedure. Rain, thunderstorm and strong winds may affect the safety of hoisting operation. Stop the work in the event of strong winds which may jeopardise the hoisting operation.
7. Operators should maintain effective and clear communication among themselves and ensure the same hand signals are adopted by everyone during operation. If communication by hand signals is made impossible due to distance or other reasons, operators should adopt other effective means of communication such as walkie-talkies or telephones.
8. A clearance of at least 600 mm should be maintained between a lift appliance having a travelling or slewing motion and any unmovable object to prevent anyone from getting injured. Switch off the engine of the crane when it is left unattended.
9. Set up barriers to separate cranes from overhead power lines. The barriers shall have a horizontal clearance of at least 6 m plus the jib length from the power lines. Mark the danger zones with permanent stakes, flags or high visibility tapes.
10. When there are several cranes on site, they shall be sited clear of each other.
11. Site the crane away from excavation sites, slopes, underground facilities or soft ground with outriggers fully extended. Use grillages to distribute the load where appropriate.
12. All lifting equipment should be tested and examined by a competent examiner periodically.
13. Ensure that only trained and competent operators over 18 years of age and holding a valid certificate recognised by the Labour Department (such as certificates issued by the Construction Industry Council) operate the cranes. As for all power-driven lifting appliances (except cranes), their operators must be over 18 years of age and are trained with adequate capability to operate such appliances, except for the purpose of training in which case each trainee shall be under the on-site supervision of a qualified person.
14. A crane shall not be used if the report on weekly inspection, the report of result of thorough examination and the certificate of test and thorough examination are not available. A notice to prohibit its use shall be prominently displayed in the operator's cabin.



15. Ensure that the crane operator has:

Inspected the whole machine including ropes, tyres/tracks, lifting gear, and chains	Checked that the automatic safe load indicator and load/radius indicators are working properly	Put the crane through all its movements to check brake and clutch operation
---	--	---

16. Ensure that the loads are only lifted vertically and not pulled, dragged or swung sideways or in line with the jib of the crane.

17. Ensure that the weight of any load to be loaded is accurately determined but not relied on guesswork.

18. Ensure that the platform provided in a crane for use by the operator or banksman is:

Of sufficient space	Either plated or closely planked	Provided with a safe means of access
---------------------	----------------------------------	--------------------------------------

19. Provide and affix a guard rail of adequate strength and of a height of not less than 900mm to the platform and any raised standing place of a crane.

20. Provide and place toe boards of not less than 200 mm in height above the level of the platform and any raised standing place of a crane and in a position that will prevent the fall of persons, material, and tools from the platform.

21. Do not use the rails on which cranes are mounted or the sleepers supporting the rails as anchorage for the cranes.

22. Affix a suitable diagram or notice to cranes indicating the position and amount of weights to be used to secure their safe use.

23. Do not use cranes under adverse weather conditions which will likely endanger their stability.

24. Clearly and legibly mark on cranes:

The safe working load at various radii of jibs, trolleys and crabs	The maximum radius at which the derrick jib may be operated
--	---

25. Fit the crane with an accurate indicator, clearly visible to the operator, which shows the radius of jibs, trolleys or crabs and the safe working load applicable to that radius.

26. Ensure that the crane is equipped with an automatic safe load indicator and that the outriggers for supporting the crane are fully extended and secured on sleepers resting on firm ground before any lifting work. Outriggers shall not sit directly on asphalt pavements or concrete footpaths.

27. Arrange for a banksman if the view of the crane operator is restricted.
28. Establish a safe system of work in case the operating spaces of two cranes overlap with each other. The following aspects must be checked:

An audible or visual warning system is considered a minimum requirement to signal the operator when approaching the overlapping area	Assign a staff member to be the Overlapping Area Lifting Supervisor (OALS) to ensure the co-ordination and proper management of the lifting operation within the overlapping area	An OALS would be optional if an automatic control system is put in place to avoid the overlapping of lifting areas	Sufficient buffer zones should be allowed on both sides of the lifting area to prevent the suspended load from swinging due to inertia following a sudden stop of the crane
--	---	--	---

29. If lifting of load near places with people is necessary, sufficient distances should be maintained and the lifting area should be enclosed where permissible.
30. All detection/warning/control devices must be checked for functionality before any work may commence.

3.4.2 Slings

1. Only use slings which have been tested and marked with its safe working load. The slings shall be thoroughly examined by a competent examiner in the preceding six months before it is used.
2. Do not overload a sling. Before lifting, find out the weight of the load and the safe working load of the sling.
3. Use the correct type of sling of a suitable length for the job.
4. Pad the sharp corners of the load to prevent damage to the sling.
5. Do not use a sling which is damaged or when there are broken strands.
6. Always use suitable guide ropes to prevent the load from spinning or swinging while being lifted.
7. Properly position the slings so that the tension is evenly distributed across each sling immediately upon lifting.
8. Never let any person stand below a suspended load, and warn others to keep away.
9. Slings should be coiled or hung up after use and stored away from hot and damp places.
10. For wire ropes, regularly apply lubrication to ensure long service life and smooth operation.
11. Do not twist up a wire rope or drag it on the floor. Place wire ropes on wooden planks.

3.5 Forklift Trucks

3.5.1 Operation of Forklift Trucks

1. Forklift trucks must be operated by authorised persons who hold a valid operation training certificate.
2. Forklift trucks must not be used for hoisting purposes, with the exception of those which have been issued with valid lifting appliance certificates by registered professional engineers.
3. Any person who has not received formal training or authorisation must not operate a forklift truck.
4. Before daily operation, check the parts of the forklift truck including the controller, brake, tyres, horns and other moving parts. Use the check sheet where possible to avoid omission.
5. If any defect or damage is detected on a forklift truck, stop using it and report to the supervisor right away to arrange for timely repair.
6. Do not overload a forklift truck. Start carrying and unloading only when the load is properly secured.
7. Do not carry loads that are loose or improperly stacked. Use the suitable cargo pallets on which the loads should be evenly placed.
8. Avoid sudden acceleration, crash stopping or abrupt veering. Inspect the site for potential hazards before driving. Drive at an appropriate speed in light of the environment.
9. The forklift fork should be elevated 10 to 15 cm from the ground when driving.
10. Do not hoist the load and make turns on steep and uneven road surfaces.
11. No one may go under an elevated forklift fork.
12. A forklift truck should be fitted with a back-rest extension and protective canopy to prevent objects falling from height from causing injuries to the operator.
13. Be focused when driving and do not look around.
14. When the visibility is poor (in places such as corners), drive slowly and honk.
15. When driving a forklift truck on a ramp, the forklift fork should always face up-slope when loaded, or face down-slope when not loaded.
16. If vision is blocked by the load when ascending a slope, seek assistance from colleagues.
17. Make sure the bridge deck has sufficient loading capacity before passing through it.
18. Forklift trucks must not be used for carrying passengers or used as a hoist.
19. Upon completion of work, park the forklift truck at the designated location. Before leaving the vehicle, the operator should pull the parking brake, disengage gear and remove the car key.
20. Check the safety condition of the forklift truck after work every day.
21. Operators should learn to use the fire extinguisher on the forklift truck and keep in mind the emergency procedures.

Do not overload a forklift truck. Start carrying and unloading only when the load is properly secured



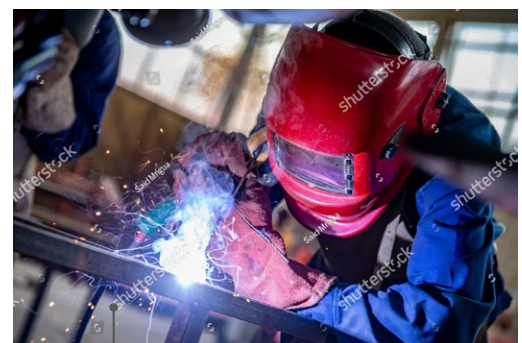
3.6 Welding and Cutting

3.6.1 General Safety Matters

1. For welding or cutting operation to be conducted within risky areas (e.g. plant rooms or switch rooms), risk assessment must be carried out and a valid hot work permit must be issued by a competent person prior to the commencement of work.
2. Do not carry out welding or cutting operation near combustible materials, or within environment with the risk of fire, explosion, etc.
3. Ensure that the workplace is properly ventilated to prevent accumulation of toxic fumes and gases from the welding or cutting operation.
4. Check that adequate fire extinguishers are in place.
5. Do not carry out welding or cutting operation on containers that have once contained dangerous substances unless the containers have been completely emptied, cleaned and purged to prevent risk of fire, explosion or emission of toxic gases.
6. Keep away from any person. Provide shields or screens to protect workers and passers-by from glare, welding sparks and hot slag.
7. Where necessary, use suitable PPEs, e.g. goggles or face shields fitted with suitable filter glasses, welder's screens, gloves, protective clothing and aprons, respirators, etc.
8. Wear plain safety goggles when chipping off weld slag or burr.
9. Keep trailing hoses or cable lines clear of passageway to avoid damage and tripping hazards.
10. Inspect and clean up the site after the welding or cutting operation.

3.6.2 Electric Arc Welding

1. Operators should be equipped with the following PPEs when welding:
 - a. face or handheld shields shall be fitted with filters and meet the European Standard: Personal Protection - Equipment for Eye and Face Protection during Welding and Allied Processes (EN175) or equivalent standards;
 - b. goggles meeting the European Standard: Personal Eye Protection – Specifications (EN166) or equivalent standards must be used when chipping slag;
 - c. gloves long enough to protect wrists and forearms against heat, sparks, molten metal and radiation;
 - d. high-top boots to prevent sparks from entering the footwear.




Operators should be equipped with the following PPEs when welding


2. Ensure that welding machines having a maximum current output exceeding 30A single phase or half the maximum demand of an installation in any one phase are directly connected to the mains on a three-phase supply.
3. Screen off the work area with sturdy opaque or translucent materials because glare within 60 metres can cause eye injury and severe pain for 24 to 48 hours.
4. Keep the workplace dry, secure, free from combustible materials and keep pathways clear.
5. Ventilate the workplace using air blowers and exhaust fans to remove poisonous fumes and gases that are given off during welding.
6. Make sure that an enclosed vessel, tank or cylinder, which may have contained petrol oils, spirits, paint, or any inflammable or explosive materials, contains no trace of the substances, explosive vapour or flammable vapour, and has been cleaned to make it safe for welding.
7. Take precautions against flying sparks and hot slag where welding is being done near flammable materials and check the area before leaving to ensure safety.
8. Do not weld materials degreased with solvents until completely dry.
9. Workpieces should be effectively earthed and all equipment should be earthed and insulated.
10. Always cut off the current to the electrode holder when you put down or change electrodes.
11. Do not change weld electrodes with bare hands or with wet gloves, and do not stand on the floor that is wet or with earthed cables on the surface. If the floor is wet, stand on an insulated mat or wear rubber shoes as appropriate when welding. Do not carry out electric arc welding work outdoors when raining.
12. Check the integrity of the cable used in electric arc welding.
13. Turn off the welding machine when left unattended.
14. Learn the first aid treatment for electric shock to perform first aid on anyone suffering from electric shock in time.
15. Use a welding machine of the enclosed type, and ensure that the terminals of the welding machine are properly protected to avoid accidental contact.
16. Insulate the exposed terminals connecting the electrode and return cable holders.
17. The welding machine must be equipped with a voltage-reducing device to automatically reduce the output voltage at no-load condition.
18. Check that the cables and connections are in good condition before use.
19. Place the electrode holder safely on an insulated hook/holder when not in use.
20. Switch off and isolate the electricity supply when the welding equipment is not in use.

3.6.3 Gas Welding

1. Individuals carrying out gas welding and flame cutting must meet one of the following requirements:



One must be aged 18 or above and hold a valid Certificate for Gas Welding Safety Training Course



The individual is receiving training in gas welding and flame cutting under the supervision of a person holding a valid Certificate for Gas Welding Safety Training Course

2. Operators should be equipped with the following PPEs when welding:
 - a. face or handheld shields that are fitted with filters and meet the European Standard: Personal Eye Protection – Specifications (EN166) and European Standard: Personal Eye Protection – Filters for Welding and Related Techniques – Transmittance Requirements and Recommended Utilisation (EN169) or equivalent standards;
 - b. goggles meeting the European Standard: Personal Eye Protection – Specifications (EN166) or equivalent standards must be used when chipping slag;
 - c. gloves long enough to protect wrists and forearms against heat, sparks, molten metal and radiation;
 - d. high-top boots to prevent sparks from entering the footwear.
3. Screen off the work area with sturdy opaque or translucent materials because glare can cause eye injury.
4. The key for opening the acetylene cylinder valve must be kept on the valve stem while the cylinder is in use so that the cylinder valve may be immediately shut off in case of emergency.
5. Ventilate the workplace using air blowers and exhaust fans to remove poisonous fumes and gases emitted during welding.
6. Make sure that an enclosed vessel, tank or cylinder, which may have contained petrol oils, spirits, paint, or any inflammable or explosive materials, contains no trace of the substances, explosive vapour or flammable vapour, and has been cleaned to make it safe for welding.
7. Take precautions against flying sparks and hot slag where welding is being done near flammable materials and check the area before leaving to ensure safety.
8. Do not use cylinders for supporting work or as rollers.
9. Do not forcefully open the valves if they are stuck. Always open cylinder valves slowly.

10. Ensure that the appropriate type of regulators and flash back arresters are installed and maintained in sound condition.
11. Open the regulator screw on a welding torch before opening the cylinder valve. Open the cylinder valves slowly and shut all valves when the equipment is not in use.
12. Ensure that the hose lines are in sound condition and properly installed to avoid damage.
13. Examine for leaks in equipment by using a solution of soapy water.
14. Shut the cylinder valve if acetylene from a cylinder catches fire at the valve or regulator due to leakage at a connection.
15. Treat all gas cylinders as "full" unless you are certain otherwise.
16. Never attempt to transfer acetylene from one cylinder to another or attempt to refill an acetylene cylinder.
17. Always lift gas cylinders wholly when carrying them. Do not drag them on the ground or drop them from trucks.
18. Keep gas cylinders in an upright position both in storage and when in use.
19. Keep the workplace dry, secure, free from combustible materials and obstruction.
20. Store the acetylene and oxygen cylinders separately.
21. When the numbers of oxygen and acetylene cylinders exceed the exempted quantities (i.e. two cylinders for each type of gas), store the cylinders separately inside approved dangerous goods stores.
22. Keep the gas cylinders away from sources of heat, flammable materials, corrosive chemicals and fumes.
23. Do not take gas cylinders into a confined space.
24. Shut off the cylinder valves when the cylinder is not or temporarily not in use.

3.7 First Aid Equipment and First Aiders

3.7.1 First Aid Boxes

1. Each first aid box must be readily accessible, of adequate capacity, and plainly marked with "FIRST AID" in English and "急救" in Chinese.
2. A first aid box must contain adequate amount of the required first aid items, which include gauzes, adhesive wound dressings, triangular bandages of unbleached calico, adhesive plasters, absorbent cotton wool, pressure bandages and safety pins. For details, please refer to the table on items required for first aid box below.
3. The first aid items must be maintained in good condition at all times.
4. The employer/company must designate a team of responsible persons to be in charge of the first aid boxes.
5. The employer/company must ensure that at least one member of such team is always readily available during working hours.
6. Each first aid box must be affixed with a notice specifying the Chinese and English names of the members of the team in charge.

Required Items		Quantity		
		less than 10 employees	10 to 49 employees	50 or more employees
This booklet/copy of this booklet		1	1	1
Sterile unmedicated dressings e.g. gauzes	Small size of injured fingers	6	12	24
	medium size for injured hands or feet	3	6	12
Adhesive wound dressings of assorted sizes		12	24	36
Triangular bandages of unbleached calico with the longest side not less than 1.3mm & each of the others side not less than 900mm		2	4	8
Rolls of adhesive plaster(Zinc oxide) 4.5m (L) x 25mm (W)		1	1	2
Packets of absorbent cotton wool of 30g		3	6	12
Pressure bandages		1	1	1
Safely pins		A sufficient supply		

Remark: One first aid box for each 100 employees, or part of that number

First Aid Box



3.7.2 Automated External Defibrillator (AED)

An automated External Defibrillator (AED) is simple and easy to use. An ordinary person without any relevant training can operate the device simply by following the built-in instructions. That said, if the rescuer has received AED training and is proficient in its operation, the whole rescue process will go more smoothly when he/she is confronted with emergency situations which require delivering defibrillation shocks to the patient. For details, please refer to the "Five Steps to Save A Life" flowchart below.



An ordinary person without any relevant training can operate the device simply by following the built-in instructions

What to do when someone collapses?

1

Check if the patient is unconscious

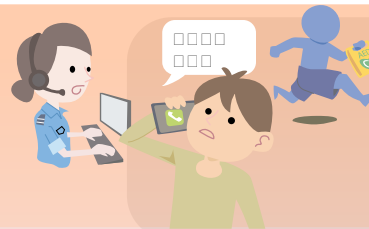
The patient is considered unconscious if he/she responds to neither voice nor pain.



2

Call 999

Have bystanders go get an AED



3

Check the patient's breathing

Check for 10 seconds to see if there are any visible rises and falls of the patient's chest



4

Administer CPR

The three keys of compression:

Fast, Hard, At the Right Spot

Fast - Push at a rate of two times a second

Hard - Push down 5 to 6cm

At the Right Spot - Correct hand position



5

Follow the instructions from the AED

"Turn on" the machine



"Attach" the electrode pads



"Shock"



3.7.3 First Aiders

1. It is mandatory for all factories and industrial undertakings or workplaces to have first aiders and first aid facilities if a particular number of employees is reached. A certain number of first aiders are needed for a particular number of employees, depending on the industry type.
2. A qualified first aider must be trained in first aid.
The following three categories of persons are qualified first aiders provided in the law:
 - i. A person who has a valid certificate of competency in first aid issued by the St. John Ambulance Association, the Auxiliary Medical Services or the Hong Kong Red Cross
 - ii. A person who has completed a training course in first aid and holds a certificate issued by an organisation approved by the Commissioner for Labour
 - iii. A nurse registered under the Nurses Registration Ordinance
3. Under the Factories and Industrial Undertakings (First Aid in Notifiable Workplaces) Regulations (Chapter 59D) A qualified first aider should be designated and a separate first aid box maintained for every 100 employees or part of that number
4. Under the Factories and Industrial Undertakings (Cargo and Container Handling) Regulations (Chapter 59K)
 - i. Where 30 or more but less than 100 persons are employed at a worksite the proprietor shall ensure that at least 1 person trained in first aid is always readily available during working hours
 - ii. Where the workforce is 100 or more, at least 2 such persons must be always readily available
5. Under the Construction Sites (Safety) Regulations (Chapter 59I)
 - i. Where 30 or more but less than 100 persons are employed at a worksite the proprietor shall ensure that at least 1 person trained in first aid is always readily available during working hours
 - ii. Where the workforce is 100 or more, at least 2 such persons must be always readily available
6. Under the Quarries (Safety) Regulations (Chapter 59F)
 - i. Where less than 50 persons are working in a quarry, 3 persons or such lesser number of persons trained in first aid as the Commissioner for Labour may specify in writing in any particular case.
 - ii. Where 50 or more persons but less than 300 persons are working in a quarry, 3 persons must be trained in first aid
 - iii. Where 300 or more persons are working in a quarry, 5 persons must be trained in first aid
7. Under the Occupational Safety and Health Regulation (Chapter 509A)
The person responsible for a workplace must ensure that, for each 150 employees employed in the workplace (except the above locations), at least one of those employees is a person trained in first aid.



Chapter 4

Safety and Health Guidelines for Various Tasks

4

Safety and Health Guidelines for Various Tasks

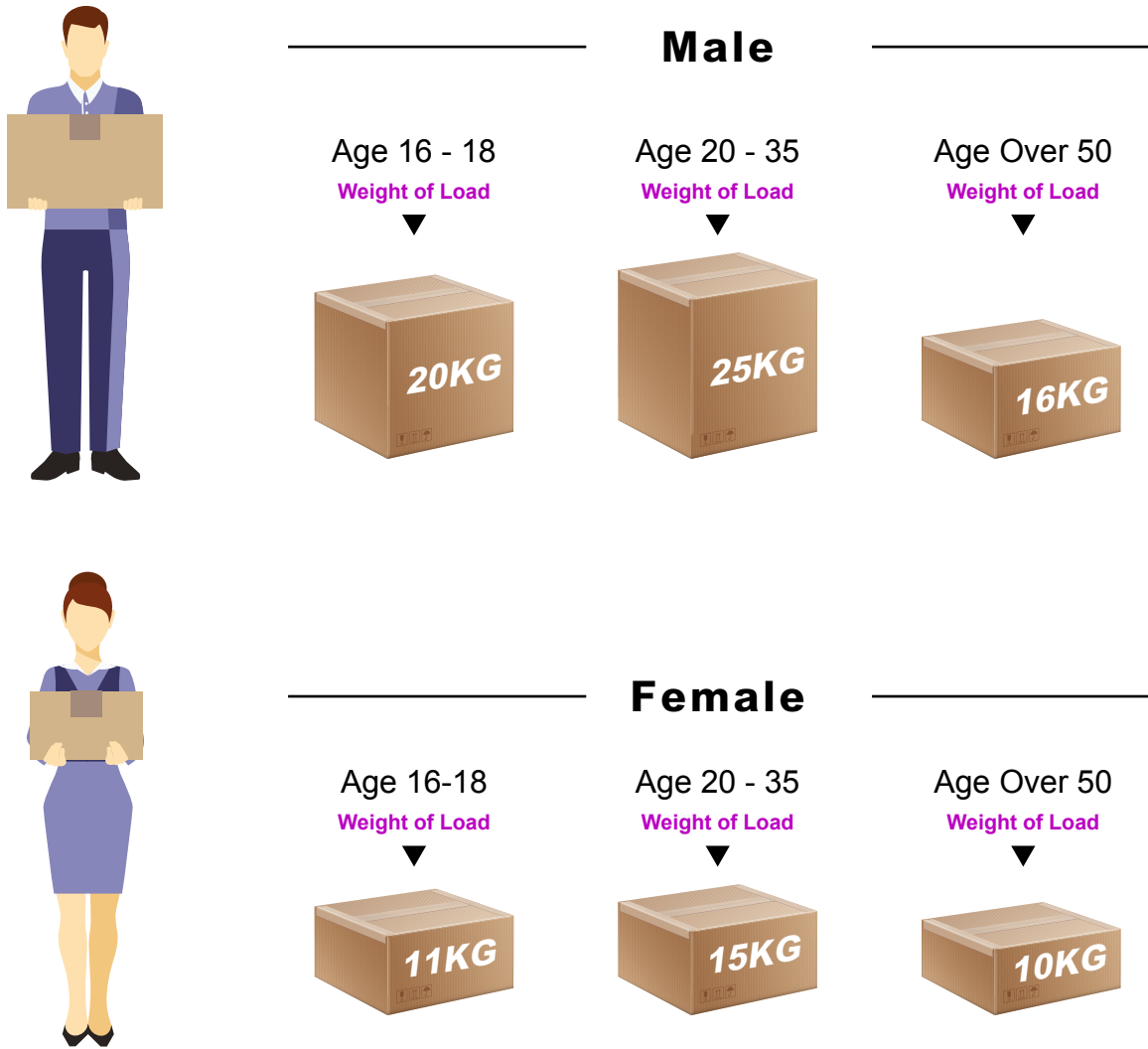
Carry out risk assessments on hazards that may be posed by manual handling operation, including potential hazards to muscle health.



4.1 Manual Handling Operation

1. Always use mechanical equipment in place of manual handling operation as much as possible, e.g. make use of mechanical aids such as trolleys, pulleys, conveyor belts, etc.
2. Carry out risk assessments on hazards that may be posed by manual handling operation, including potential hazards to muscle health.
 - Size up the load and check the overall conditions
 - Do not attempt to lift an object that is excessively bulky or heavy. Ask for assistance where necessary
3. Where teamwork is required,
 - Select the persons whose age and physical build are compatible for teaming up. Ensure that one of them should be responsible for coordinating and directing the movement and pace during the lifting operation
 - All relevant persons shall be trained in the proper methods of lifting and carrying
4. Always lighten or suitably shape the load for manual handling as much as possible. Keep a lookout for splinters, sharp edges, loose banding and nails. Make it easier to grasp by adding handholds or hand grips.
5. Keep pathways clear of obstruction and tripping hazards. Check whether vision is blocked and ensure that the delivery route is not obstructed nor slippery.
6. Use proper PPE such as gloves, safety shoes, etc.
7. Follow the procedures below whenever you lift a load:
 - Stand close to the object. Have a firm footing with feet spread on each side of the load
 - Bend the knees in a squatting position and keep your back as straight as possible
 - Grasp the object firmly. Be sure the grip will not slip
 - Breath-in and throw the shoulders backwards
 - Straighten the legs, while keeping the back as straight as possible
 - Hold the object close to the body firmly
 - Always lift in smooth movements. Avoid jerky motions. When turning around, move the feet instead of twisting the waist. When putting down the object, bend both knees. Do not bend the torso or twist the body

8. The following table lists a rough guideline on the weight of load that can be carried safely by people of different gender and age group if it is handled properly. However, when the handling is regular and frequent, the weight of load should be reduced by at least 25%.



Source: UK Confederation of Trade Unions

Please refer to the "Manual Handling Operation Guidelines" issued by the Labor Department



4.2 Chemicals and Dangerous Goods

1. Provide appropriate labels to containers holding different types of chemicals: explosive, flammable, oxidising, toxic, corrosive, harmful and irritant.
2. Do not store excessive amounts of chemicals in the workplace. Store them in approved dangerous goods stores of appropriate categories.
3. Be familiar with and follow the chemical manufacturer's guidelines and instructions on the safe use of chemicals, including instructions and precautionary measures for transporting, storing, using and the final disposal of all waste. If in doubt, seek advice from the supervisor.
4. Do not smell, taste or touch any suspected dangerous chemicals. If in doubt, seek advice from the supervisor.
5. Store chemicals in a cool, ventilated and sheltered place. Do not expose them to direct sunlight.
6. Do not store chemicals of different categories within the same place. Refer to the manufacturer's instructions and recommendations.
7. Take care of personal hygiene and safety. For example,



avoid collision with chemical containers and contact with spill over



wash hands after handling chemicals or before eating



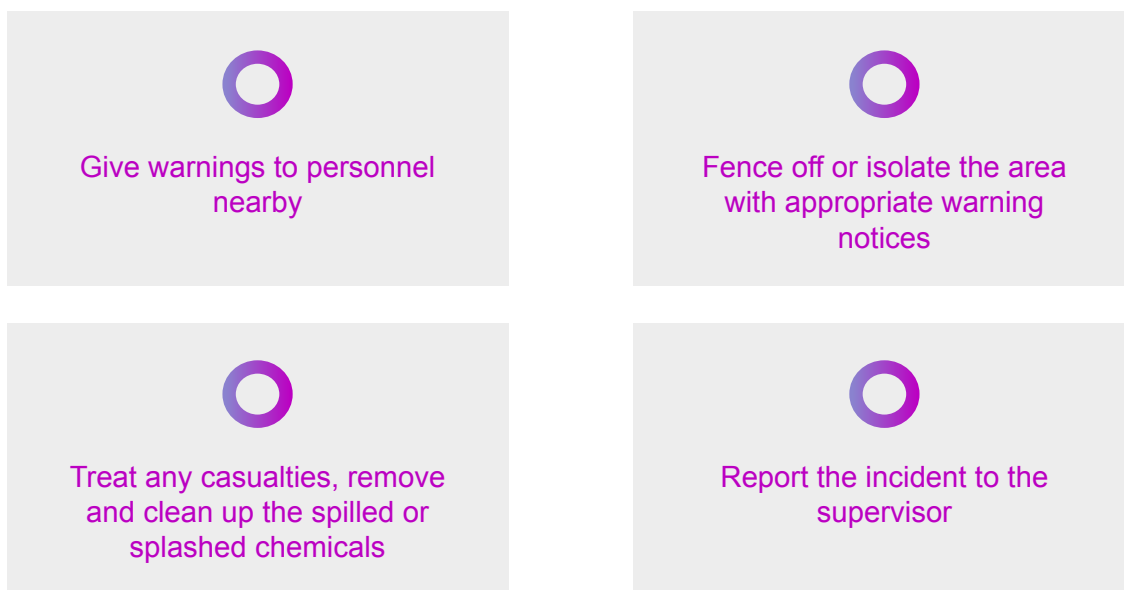
do not smoke, prepare food or eat in areas where chemicals are stored



wear protective clothing, appropriate types of protective gloves, chemical-proof goggles, and respirators which can filter out chemicals, etc.

8. Wash and clean the PPE (protective clothing, gloves, goggles, etc.) after use.
9. Use suitable tools and containers when delivering chemicals.
10. If you are accidentally splashed with chemicals, wash the affected spot with a continuous stream of water immediately.
11. Keep floor clean and dry to avoid slipping when conveying or handling chemicals.
12. Ensure proper disposal of chemical waste.
13. Substitute the use of toxic chemicals where possible.
14. Before conducting work on chemicals and dangerous goods, conduct safety checks and complete the "Pre-work Safety Checklist" (See 4.2.3).

15. Be familiar with contingency measures for emergencies related to chemicals. In the case of leakage:



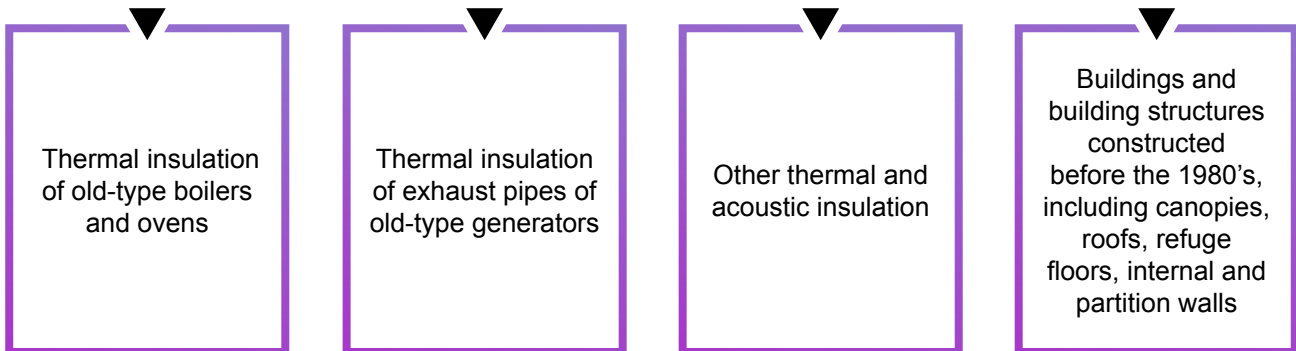
16. Dangerous goods exceeding the exempt quantity should be stored in dangerous goods stores of the appropriate classes and categories.

Please refer to the Dangerous Goods (Application and Exemption) Regulation 2012 (Cap. 295E) published by the Security Bureau for the latest information on the classification, categories and exempt quantity of dangerous goods. <https://www.elegislation.gov.hk/hk/cap295E@2022-12-08T00:00:00.pdf>

4.2.1 Asbestos

1. Asbestos in dust form (fibres) can cause adverse health effect such as asbestosis and lung cancer, etc. Hence, the use and handling of asbestos or materials containing asbestos are under strict statutory control.
2. Report any instance of suspected presence of asbestos (e.g. encountered during your work) to your supervisor for necessary action. For personal safety, do not carry out any further work unless appropriate safety precautionary and control measures are in place.
3. Before work commencement, a risk assessment on the exposure or potential exposure of workers to asbestos shall be conducted by a competent person.
4. Be appropriately equipped before carrying out any work involving asbestos, e.g. wearing approved types of respiratory protective equipment and protective clothing and footwear, etc.

5. You may find asbestos in the following mechanical and electrical equipment and building structures:



6. Arrange a Registered Asbestos Consultant to conduct analysis and prepare an asbestos investigation report if you are not sure whether the material and boarding contain asbestos.
7. As soon as asbestos is identified, the concerned area shall be closed off and any work in this area shall only be carried out by approved specialist contractors and a Registered Asbestos Supervisor must be present for continuous and close supervision of the work.
8. Use working methods that can keep asbestos dust levels as low as possible (e.g. use hand tools and avoid breaking the boards).
9. Wear suitable protective clothing including respirators when conducting work involving asbestos.
10. Provide washing and changing facilities for workers, and arrange to handle protective clothing separately. The cleaning of protective clothing shall be carried out in a suitably equipped facility located on the premises where work with asbestos is being done or in a suitably equipped laundry elsewhere. Protective clothing waiting to be cleaned or disposed of shall be packed in a suitable and labelled container.
11. Do not eat, drink or smoke in areas with suspected presence of asbestos dust.
12. Pay attention to the waste collection and disposal to avoid the increase in atmospheric concentration of asbestos fibres. Put the waste in an impervious sack and bury it in a controlled tipping site. Asbestos collection and disposal shall only be carried out by approved specialist contractors.
13. Refer to the following published safety guidelines and requirements for handling asbestos:
Labour Department's Code of Practice: Safety and Health at Work with Asbestos, pursuant to the Factories and Industrial Undertakings (Asbestos) Regulation, describes the necessary measures to protect workmen from being exposed to asbestos dust at work.

4.2.2 Work with Fibreglass

1. Wear protective clothing and gloves to prevent direct contact with fibreglass which may be irritant to the skin. Wash with water and mild soap if fibreglass dust comes into contact with unprotected skin.
2. Wear a protective mask or respirator to prevent inhalation of fibreglass dust into the respiratory system.
3. Wear safety goggles when handling or using fibreglass. Rinse the eyes with water should fibreglass dust deposit into the eyes.
4. Store fibreglass in a dry and sheltered area as wetted fibreglass can be a breeding ground for molds, fungi and vermin.
5. Keep the work area clean. Dispose of scrap fibreglass properly and do not let them accumulate on the floor. Use filtered vacuum machine or wet sweeping for cleansing.
6. For work areas with excessive fibreglass dust, use a dust collection system to collect the airborne dust.

4.2.3 Pre-work Safety Checklist (Use of Chemicals)

Job Number : _____

Date : _____

This checklist is applicable to work involving the following chemicals (i.e. materials with chemical labels):

1. Add chemicals for water treatment and repair the related pumps.
2. Add chemicals (boiler powder) to boilers and repair the related pumps.
3. Add chemicals to swimming pool water treatment systems and repair the related pumps.
4. Add chemicals to water scrubbers in kitchen.
5. Use more than one litre of non-water-soluble paint for paint work.
6. Work requiring the use of this checklist as specified by the Division.



Checklist items		Read already
	1. Check the chemical label of the material to confirm its category (explosive, oxidising, flammable, toxic, corrosive, harmful, irritant) and understand the indications on the label.	<input type="checkbox"/>
	2. If the material is a familiar chemical, take specified control and protective measures in accordance with the established practice, and pay attention to the following general notes on "people, equipment, object, method and environment". If in doubt, consult your immediate supervisor (or the DivSO).	<input type="checkbox"/>
	3. If the material is an unfamiliar chemical, consult your immediate supervisor (or the DivSO) about the control and protective measures required. If the leader of the operation is of the inspectorate grade, he/she should check the "Material Safety Data Sheet" (MSDS) and, where necessary, consult the DivSO.	<input type="checkbox"/>
People	4. The workflow and points to note shall be clearly explained by the supervisor or an experienced staff member to those inexperienced in using the chemical.	<input type="checkbox"/>
	5. Explain the main risks of the chemical, control and protective measures, emergency plan and first aid treatment to all staff members.	<input type="checkbox"/>
	6. The staff do not show any obvious signs of being physically unfit for the work.	<input type="checkbox"/>
	7. Do not eat in places where chemicals are stored or used. Wash hands after using chemicals.	<input type="checkbox"/>
	8. Wear appropriate PPE as necessary and check before use. Wash and clean it properly after use.	<input type="checkbox"/>
Equipment	9. Check the air ventilation.	<input type="checkbox"/>
	10. If the chemicals to be used are flammable, avoid switching on electrical machinery or carrying out work involving naked flame nearby.	<input type="checkbox"/>
Object	11. Check and ensure that the chemical container is not damaged and has been labelled.	<input type="checkbox"/>
	12. Cover the chemical container well when the chemical is not in use.	<input type="checkbox"/>
	13. Check and ensure that the container for disposal of chemical-tainted materials is not damaged and has been labelled.	<input type="checkbox"/>
	14. Make sure that the container is properly placed so that it will not be kicked or knocked over.	<input type="checkbox"/>
Method	15. Take note of the working methods, tools and handling of leakage and spillage.	<input type="checkbox"/>
	16. Double-check that the material being poured, injected or added is correct and is the same as the original material.	<input type="checkbox"/>
	17. Pay attention to the delivery arrangements for chemicals.	<input type="checkbox"/>
	18. Clean the used working plate, injector and bleeder. Put them in an appropriate container or bag.	<input type="checkbox"/>

Environment	19. Make sure that no one is working in the vicinity of the leeward side of the ventilation equipment. Where necessary, enclose the leeward side and display warning signs.	<input type="checkbox"/>
	20. Where necessary, enclose dangerous areas and display warning signs to prevent unauthorised entry.	<input type="checkbox"/>
	21. Check the on-site first aid facilities (e.g. eye-washing facilities).	<input type="checkbox"/>
	22. Get familiar with the on-site fire service equipment and escape routes.	<input type="checkbox"/>
	23. Check whether the lighting on site is insufficient (especially the place where the material is being poured, injected or added), and arrange temporary lighting as necessary.	<input type="checkbox"/>
	24. Where necessary, notify other people at the site.	<input type="checkbox"/>
	Where necessary, wear the following PPE when carrying out work involving the use of chemicals: (subject to operational needs, wear other appropriate PPE) Chemical-proof gloves, overalls, protective shoes, masks, goggles, and respiratory protective equipment	<input type="checkbox"/>

Remarks:

- The user of the checklist should be the on-site supervisor of the team responsible for the job (If there is only one staff member at the site, then he/she should complete the checklist).
- There are many types of chemicals and different scenarios of using chemicals, which may involve the maintenance of certain facilities using chemicals or the use of chemicals to handle objects (such as conducting painting work). Therefore, apart from the above general notes on "people, equipment, object, method and environment", which serve as a general reminder, staff members should take other necessary control and protective measures having regard to individual scenarios and the types of chemicals.
- For other safety check items applicable to work of different natures (such as outdoor work safety), and safety measures on work other than that involving the use of chemicals (such as work at height), please refer to the safety guidelines of the relevant Divisions.
- The Quality and Safety Sub-division encourages frontline staff to make recommendations on safety measures in workplace to DivSO.

4.3 Confined Spaces

1. Only certified workers and competent persons who have received adequate training and instruction can enter or work in a confined space.
2. A risk assessment for works in a confined space should be conducted by a competent person.
3. No person is allowed to enter a confined space unless the following measures have been taken:
 - A risk assessment report on the confined space has been prepared by the competent person
 - All the mechanical equipment which may cause danger inside the confined space has been shut down and the power supply has been switched off and locked out
 - If the material inside any pipes or supply pipes may cause danger, they must be properly enclosed
 - Effective steps have been taken to prevent the ingress of hazardous gas, vapour, dust or fume
 - Connections and channels that lead to in-rush of mud or water have been shielded off effectively
 - Tests have been done on the confined space to ensure that no hazardous gas is present and that oxygen is not deficient or the level of it is not too high
 - The confined space has been sufficiently purged, cooled and ventilated having regard to its individual circumstances to ensure the safety of the workplace
 - Adequate supply of respirable air and effective forced ventilation have been provided and maintained in the confined space
 - Staff members have been deployed to station outside the confined space to maintain communication with the workers inside
 - All necessary safety precautions have been taken regarding the hazards mentioned in the risk assessment report. The authorised person has issued a permit-to-work to certify that all necessary safety precautions have been taken and state the time period that one may remain safely in the confined space
 - Workers entering the confined space must be certified workers
 - Equipped with all necessary PPE as specified in the risk assessment report before entering the confined space for work, e.g. safety belt, mask, ear protector, breathing apparatus, etc
4. Do not smoke inside a confined space. Bring along appropriate fire extinguishers if welding or cutting works are to be carried out therein.
5. Stop working immediately when you feel uncomfortable (e.g. headaches, dizziness, irritation or other ill effects) or when unusual conditions occur. Ask for help and leave the confined space as soon as possible.
6. In case you notice any accidents inside the confined space, ask for help immediately. Do not enter the confined space to attempt rescue unless you are adequately equipped and safe to do so.
7. The following equipment should be made available at any time:
 - Sufficient quantity of appropriate approved breathing apparatus
 - Sufficient quantity of various types of gas detectors
 - Sufficient quantity of explosion-proof light fittings and torches
 - Lifting tripods, safety harnesses and life lines for use in rescue operations
 - Static warning type of personal alarms
 - Stretchers and recovery equipment
 - Alarms for use by workers in confined spaces to alert others outside
 - First aid facilities
 - Safety helmets



Only certified workers and competent persons who have received adequate training and instruction can enter or work in a confined space

4.4 Painting

1. Wear protective clothing, gloves and eye protectors when handling paint. Do not touch your eyes and mouth with your gloves. Replace the protectors if they get contaminated.
2. Wear a fume mask to prevent inhalation of harmful fumes. Do not paint in a poorly ventilated area unless an air fed hood or self-contained respirator is worn.
3. Remove paint splashes on the skin with soap and water or an industrial cleanser. Do not use paint solvent for cleansing.
4. If splashed into the eyes, wash up with clean water and seek medical consultation.
5. Wear eye protectors and dust filtering masks when chipping off dried paint from surfaces.
6. Take note of the following during spray painting:
 - Carry out spray painting in a well-ventilated spraying room or an area with spray booth, and check that the ventilation fans are operating properly prior to spray painting.
 - Do not store excessive amounts of flammable liquids inside the spraying room or area as prescribed by the Dangerous Goods Ordinance.
 - Use a metal box or container, with appropriate identification, to store flammable liquids. Ensure that the box or container is closed properly when the paint is being sprayed.
 - Wear airline breathing apparatus if toxic paint materials are being sprayed.
 - Check that the metal surfaces to be spray-painted are electrically bonded and earthed.
 - Check that the painting appliance working under pressure is equipped with necessary fittings such as a reducing valve and pressure gauge.
 - Adjust the atomisation pressure of the spray gun so as to not create excessive mist.
 - Ensure that no person is in the space between the spray gun and the ventilation fan when paint is being sprayed.
 - Ensure that the construction of electrical equipment and accessories within the spraying room or area or in the vicinity (6 m) to the spraying booth open face will not create sparks that may ignite the flammable vapour from the painting process.
 - Dispose of properly into metal containers with self-closing lids and remove solid waste, oily waste and cleaning rags from the spraying room or area regularly.

Wear protective clothing, gloves and eye protectors when handling paint



4.5 Accumulation of Gas

1. The area with gas hazards in E&M facilities and pump rooms refer to places where flammable and combustible gases may accumulate, such as drainage facilities, ozone rooms and the internal parts of pipe galleries and their vicinity.
2. Smoking is strictly prohibited in the above places.
3. Do not allow any work that requires the use of naked flame.
4. Check and monitor constantly the concentration of flammable gases in the air.
5. Provide compulsory ventilation to remove all hazardous substances and supply sufficient fresh air to the staff working inside the facility.
6. Ensure that only staff who are properly trained and have experience can enter the facility to work and provide them with adequate information and guidance.
7. Prevent workers from working alone. A stand-by staff member should be deployed to station outside the facility during the work to maintain communication with the workers therein.
8. Ensure that effective communication is maintained between the workers working inside and outside the facility.
9. Formulate and implement appropriate emergency procedures, including the provision of appropriate and adequate rescue equipment and maintain a rescue team that is proportionate to the scale of work. The stand-by staff should not enter the facility, even in the event of an emergency. They should be stationed outside the facility and call the rescue team and public rescue services (i.e. the Police and fire services) for assistance.
10. Only use tools which do not produce sparks.
11. The electrical equipment used in works shall be explosion-proof.
12. All line conductors and accessories, including joints, end boxes, cable glands, etc., should be fire resistant.
13. All metal parts should be connected and equipotential bonding should be performed.
14. It is advisable to place the circuit control units away from areas with gas hazards.



4.6 Batteries

1. Except for gas-tight "maintenance-free" batteries, charging of batteries would generate hydrogen and oxygen gases, which may cause explosions when mixed with the air in the presence of naked flame, sparks or other ignition sources.
2. Regarding the handling of large batteries, the following precautions should be taken to prevent gas explosion, electric faults and other accidents during battery charging:
 - Charging of batteries should be carried out in designated areas in the workplace used exclusively for the purpose
 - Suitable and adequate ventilation should be provided and maintained in the battery room or in designated battery charging areas so as to prevent any accumulation of explosive gases. Unless there is reliable and adequate natural ventilation, mechanical ventilation should be provided in the battery room and the workplace
 - Smoking and the use of naked flame are prohibited in the area for battery charging and in the workplace. It is possible that combustible gases would be released slowly from the battery subsequent to the charging operation. Hence, it should be assumed that explosive gases are always present in the space surrounding the battery top
 - Suitable and adequate lighting should be provided and maintained in the battery room and the workplace. The lighting and electrical appliances used in areas with foreseeable accumulation of explosive gases should be explosion-proof
 - All the hand tools used on batteries should be of the insulated type. They should be checked regularly to ensure the integrity of the insulation
 - Do not place any conductive parts or metal tools on the battery top to prevent short circuit of the batteries

4.6.1 Charging

1. Fully understand the information provided by the battery manufacturer so as to take all safety measures;
2. The battery charger should be switched off or disconnected from its power supply before making connection with battery cables for battery charging and disconnection of battery cables after battery charging;
3. When removing the battery cable, disconnect the ground terminal (usually the negative terminal) of the battery first;
4. Check that the polarities of terminals of the battery and the battery charger are correct before connecting the two for charging. The positive terminal of the battery should be connected to the positive terminal of the charger, and the same applies to the negative terminal.
5. If there is insufficient electrolyte, top up the battery with distilled water (if applicable) before charging and PPE (e.g. goggles and gloves) should be used;
6. Battery charging should be conducted according to the voltage, speed and time recommended by the battery manufacturer and good ventilation should be maintained;
7. Smoking, naked flame, sparks and the use of mobile phones are strictly prohibited. The battery charger should be switched off before removing the battery cables to avoid producing sparks;
8. When charging is completed, unsealed batteries should be left idle for at least 20 minutes before removing the charging cable;
9. When reconnecting the battery to the device, the ground terminal (usually the negative terminal) of the battery should be connected last;
10. Keep the battery terminals clean and make sure that the cable connection is firmly in place.

4.6.2 Handling of Batteries and Lithium Batteries

1. Musculoskeletal disorders may be caused if workers do not transport the batteries properly. Hence, suitable lifting equipment should be provided and used.
2. When handling batteries, the batteries should be kept in an upright position and care should be taken to avoid spillage of electrolyte.
3. When storing or disposing of batteries, the terminals should be shrouded by insulating covers.
4. Do not expose the batteries to rain or dripping water, such as condensate from air conditioning systems, to prevent short circuit.
5. Do not stack the batteries to avoid short circuit or leakage of acid solution from broken battery cases due to squeezing.
6. Do not store the batteries near areas with high temperature to avoid case ruptures due to heat.
7. Store batteries separately from other chemical waste.

4.6.3 Correct Ways to Dispose of Old/Damaged Batteries and Lithium Batteries

1. To prevent safety risks caused by inappropriate contact between batteries, cover the contact areas of both terminals of each battery with insulated tape before disposal.
2. If there is a battery leakage, wash any part of your skin or objects that may have come in contact with the battery acid immediately, in order to avoid injuries. Put the batteries into a plastic bag before disposal.
3. Collection and delivery of waste battery
 - i. Hire licensed waste collectors to collect and transport waste batteries to approved treatment facilities for treatment
 - ii. Import and export of chemical wastes and waste batteries
 - Any person conducting import and export of chemical waste must obtain a permit from the Environmental Protection Department (EPD) in accordance with the Waste Disposal Ordinance (Cap.354).
 - Hire licensed chemical waste collectors to collect and transport chemical wastes to import/export handling facilities, and show the permit issued by the EPD.

Suitable and adequate ventilation should be provided and maintained in the battery room or in designated battery charging areas



4.7 Safety of Working at Height

Scope of application: This Guideline applies to staff who are required to carry out maintenance inspection, installation, alteration, supervision and inspection work above ground.

4.7.1 Code of Practice for General Safety

When conducting work at height, one must comply with the Occupational Safety and Health Ordinance and the Factories and Industrial Undertakings Ordinance and their relevant subsidiary regulations, and should work according to various safety guidelines and requirements regarding work at height issued by the Labour Department.

4.7.2 Risk Assessment of Work at Height

1. As regards the safety of work above ground, one should conduct task-specific risk assessment, formulate safe work methods and implement safety precautions and procedures as appropriate to prevent and eliminate hazards related to work above ground;
2. Avoid work above ground where possible by, for example, setting up and using specific tools to allow the work to be done on the ground;
3. If work above ground cannot be avoided, a suitable working platform (e.g. mobile working platform) should be used;
4. Before carrying out work above ground at a standing position of a height of two metres or above, the safety check concerned should be carried out and the "Pre-work Safety Checklist (Work at Height)" (see 4.7.7) should be completed;
5. In case of unavoidable use of ladders for work above ground, risk assessment should be conducted with use permission granted beforehand and all safety measures related to the use of ladders taken.
6. The contractor should, with reference to the above, set up a relevant regulatory system to ensure the work safety of staff.

4.7.3 Safety Measures to be Taken When Carrying Out Work at Height

1. When carrying out work at a standing position of a height of not more than two metres, a suitable working platform should be used. For light duty work to be carried out in a special work environment (for example, with restrictive space) where a suitable working platform cannot be erected, a light-duty working platform with guard rails (e.g. a suitable step platform or hop-up platform) should be used as appropriate;
2. Refrain from using ladders for work above ground unless all the above measures are not feasible and the use of ladders is permitted with risk assessment conducted and all safety measures related to the use of ladders taken.
3. Before carrying out work that may have the risk of "falling after an electric shock", a "contactless voltage detector" should be used for carrying out detection on the equipment (e.g. the metal casing of lighting, suspended ceiling, etc.);

4. If any risk other than "falling after an electric shock" is involved, work at height must be carried out in accordance with the relevant guidelines and safety measures drawn up in this handbook;
5. When carrying out work at a standing position of two metres or above, a suitable working platform should be used in accordance with the law;
6. During work at height, one should wear a safety helmet with the chin strap fastened and a pair of anti-slip safety shoes.

4.7.4 Points to Note When Using "Light-duty Working Platforms"

1. The working platforms must comply with the relevant international/national safety standards and the requirements of the safety legislation of Hong Kong;
2. Each working platform can only be used by one person;
3. The users must have received appropriate safety training, such as erection and dismantling of the relevant working platforms;
4. Detailed inspection (including visual check) must be conducted before use to ensure that the working platforms are in good condition;
5. The working platforms must also be properly stored, maintained and regularly checked after use;
6. The working platforms must be used on a level and firm ground;
7. A working platform is not allowed to be erected and used in a place where it may be hit by moving objects;
8. The place where a light-duty working platform is placed should be free from any potential live metal parts or exposed live conductor parts so as to avoid the risk of electric shock to the user;
9. Before using a step platform, ensure that the legs and hinges have been fully extended. For a hop-up platform, ensure that the folding hinges between the platform panel and the legs have been locked firmly and will not be loosened accidentally. The outriggers should be fully extended;
10. One must face the working platform by maintaining a three-point contact when ascending or descending. Do not ascend or descend with your back facing the working platform;
11. The user must keep his/her centre of gravity within the working platform, and must not overstretch the body outside the working platform or lean on the guard rails, resulting in overturning due to outward shifting of the centre of gravity;
12. Before moving the light-duty working platform, make sure that no one is standing or no miscellaneous articles are placed on the working platform;
13. If any damage is found on the working platform, stop using it immediately and post a warning notice on it;
14. For enquiries concerning repair and maintenance, please refer to the manual provided by the manufacturer or contact the manufacturer/supplier.

4.7.5 Points to Note When Using "Mobile Working Platforms"

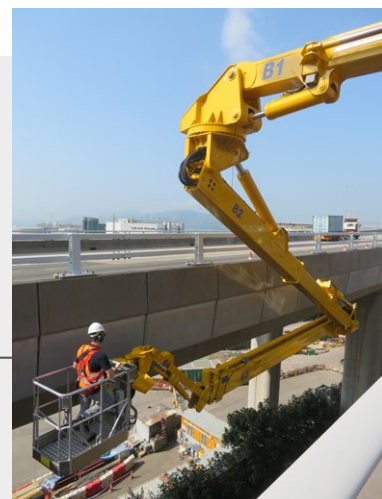
1. The working platforms must comply with the requirements of the laws of Hong Kong;
2. The users must have received safety training, such as erection and dismantling of the relevant working platforms;
3. Detailed inspection (including visual check) must be conducted before use to ensure that the working platforms are in good condition;
4. Issue a "Scaffolding Inspection Result Report" (Form 5) (or specified inspection form) in accordance with the requirements of the relevant legislation;
5. The working platforms must also be properly stored, maintained and regularly checked after use;
6. The working platforms must be used on a level and firm ground;
7. A working platform is not allowed to be erected and used in a place where it may be hit by moving objects;
8. All the castors of a mobile working platform should be firmly locked in position while ascending/descending and when in use.
9. Entry to and exit from a mobile working platform should only be allowed by means of its access and egress, and a three-point contact with the working platform should be maintained (i.e. both hands gripping with one foot stepping on the working platform or both feet stepping on with one hand gripping the working platform);
10. When using mobile working platforms, attention should be paid to the horizontal external force generated during the work (especially when they are used outdoors). You may, wherever reasonably practicable, consider fastening mobile working platforms to the firm part of a permanent structure to enhance their stability;
11. If mobile working platforms are to be used outdoors, never cover them with canvas to prevent overturning due to strong winds.

4.7.6 Points to Note When Using "Power-operated Elevating Work Platforms"

1. Elevating work platforms should only be operated by designated staff with suitable training. The relevant information should be filed and recorded;
2. Ensure that the weight of the load does not exceed the safe working load specified by the manufacturer;
3. Unless otherwise specified by the manufacturer, power-operated elevating work platforms should only be parked on a level and firm place for operation;
4. The outriggers (if any) of power-operated elevating work platforms should be extended as far as possible;
5. Ensure that there is no other people in the area where a power-operated elevating work platform is operating;
6. Ensure that a safe distance is kept between the power-operated elevating work platform and the overhead cable;
7. Do not use power-operated elevating work platforms for lifting;
8. Do not sit on, stand on or climb over the guard rails of elevating work platforms;
9. Do not increase the height at work by any means (e.g. using a box or a ladder, etc.);
10. Clearly mark the functions of all control buttons and the directions of movement of the work platform controlled by them;
11. The guard rails of power-operated elevating work platforms should be locked properly during the course of work;
12. Do not move a power-operated elevating work platform when there are people or miscellaneous articles on it;
13. Staff working on a power-operated elevating work platform should wear a suitable safety harness with its lanyard anchored to a specified anchorage point of the work platform designed by the manufacturer to prevent falling from the platform.
14. At locations where the visibility of the workers on the platform will affect the safety of the operation, the workers should wear reflective vests accordingly.
15. Inspect, test and maintain power-operated elevating work platforms regularly in accordance with the manufacturer's instructions and keep relevant records.

Source: Labour Department - Guidance Notes on Safe Use of Power-operated Elevating Work Platforms
<https://www.labour.gov.hk/eng/public/os/C/EWP.pdf>

Use a suitable and safe work platform



4.7.7 Pre-work Safety Checklist (Work at Height)

Job Number : _____

Date : _____

This checklist is applicable to work where there is a risk of falling and the falling distance is two metres or above, including work involving the use of mobile working platforms or work conducted in a workplace where there is a risk of falling. The checklist is not applicable to the following circumstances:

1. Road work (safety checks should be carried out in accordance with the guidelines issued by the Division).
2. Work involving the use of mechanical platforms.
3. Work not requiring the use of this checklist due to special circumstances as specified by the Division.

Checklist items		Read already
People	1. The workflow and points to note shall be clearly explained by the supervisor or an experienced staff member to those inexperienced in work at height.	<input type="checkbox"/>
	2. The staff do not show any obvious signs of being physically unfit for the work.	<input type="checkbox"/>
	3. Do not wear shoes with smooth soles or shoe covers to avoid slipping.	<input type="checkbox"/>
	4. Wear appropriate PPE, and use fall arrestors as necessary. Check the equipment before use.	<input type="checkbox"/>
Equipment	5. Check and ensure that the tools and equipment are in apparently good condition and suitable for use in the work process.	<input type="checkbox"/>
	6. Visually check the mobile working platforms to ensure that they are safe, secure and suitable for use in the work process.	<input type="checkbox"/>
	7. If the use of a working platform is needed but impracticable under the actual circumstances (e.g. due to space constraint), follow the guidelines or instructions of the relevant Divisions to decide whether a ladder equipped with extra safety protection or other equipment should be used for the sake of safety, taking into account individual circumstances and the nature of the work. Visually check the ladder with extra safety protection or other equipment to ensure that they are safe, secure and suitable for use in the work process. Remind the staff to take heed of the points to note as specified in the guidelines or instructions.	<input type="checkbox"/>

	8. If a rung ladder is used for ascending and descending purposes, and the workplace is more than two metres from the ground, remind the staff to maintain a three-point contact when climbing up and down. Maintain a minimum distance of one metre between the top of the ladder and the foot rest position. Fasten and secure the ladder and lean it against the support at an angle of approximately 75 degrees (or rise to base ratio of 4:1). Visually check the ladder to ensure that it is safe, secure and suitable for use in the work process.	<input type="checkbox"/>
Object	9. Use a tool bag to contain hand tools.	<input type="checkbox"/>
	10. Ensure that materials and tools at the edges of working platforms or structures will not fall from height. Enclose dangerous areas and display warning signs.	<input type="checkbox"/>
Method	11. If a modular working platform is used, ensure that it is checked by a competent person before use for the first time and every 14 days.	<input type="checkbox"/>
	12. When working on a structure, use a fall arrestor as necessary.	<input type="checkbox"/>
	13. Convey materials using appropriate methods or auxiliary equipment.	<input type="checkbox"/>
Environment	14. Take heed of the outdoor weather conditions to see if there are strong winds, rain or thunderstorm warning, etc. and consider whether it is suitable to carry out the work (refrain from work when a black rainstorm warning signal or tropical cyclone warning signal No. 8 or above is in force).	<input type="checkbox"/>
	15. Enclose dangerous areas and display warning signs to prevent unauthorised entry, so that the working platform or ladder will not be bumped by passers-by, doors, windows, etc.	<input type="checkbox"/>
	16. Check whether the lighting at the scene is sufficient and arrange temporary lighting as necessary.	<input type="checkbox"/>
	17. Clear the obstruction, oil, water, etc. on the ground to eliminate tripping hazards.	<input type="checkbox"/>
	When carrying out work at height, the following PPE must be worn: (Staff may also be required to wear other appropriate PPE based on operational needs.) Safety helmets, safety shoes, safety belts, fall arrestors (if necessary)	<input type="checkbox"/>

Remarks:

- The user of the checklist should be the on-site supervisor of the team responsible for the job (If there is only one staff member at the site, then he/she should complete the checklist).
- For other safety check items applicable to work of different natures (such as outdoor work safety), and safety measures on work other than work at height (such as work involving the use of chemicals), please refer to the safety guidelines and procedures of the relevant Divisions.
- For inquiries on safety measures on the work, please consult your immediate supervisor directly.
- The Quality and Safety Sub-division encourages frontline staff to make recommendations on safety measures in workplace to DivSO.

4.8 Electrical Work

1. Conduct electrical work with care, caution and high alertness. Note carefully all the safety signs displayed at the workplace.
2. Before carrying out works on an electrical installation, isolate and lock off the electricity supply and verify that the installation is dead with an approved voltage indicator. Carry out lock-out and tag-out procedures by locking the switch and attaching caution notices (e.g. caution - equipment under repair) to the installation. The contents of the notices should be clear and easy to understand. Include the date and time of attaching the notices and the information of the person locking the switch, and insert screens or barriers as appropriate. Seek advice from your supervisor if in doubt.
3. Before carrying out repairs, make sure that all the energy stored in the plants and machines has been released. When testing whether the device is energised, insulating gloves for electrical work must be worn and a working platform or ladder with good insulating feet must be used.
4. Avoid conducting live work. When live work (e.g. emergency repairs) is required to be conducted, insulating gloves for electrical work must be worn and a working platform or ladder with good insulating feet must be used. Besides, appropriate PPE, e.g. equipment such as suitable work clothes, insulating shoes and insulating mats, etc., must be used. PPE should be regularly inspected and maintained in good condition.
5. Use appropriate portable tools, e.g. use double insulation tools, wherever possible and use extra low voltage tools.
6. All electrical tools and equipment should be regularly inspected by competent persons.
7. For any defects in the electrical tools, equipment or installation, disconnect electricity supply and add tags to them. Stop using them and report to your supervisor as soon as possible for necessary repair or replacement.
8. Check that insulation of electrical installations, e.g. switches, distribution boards and cables, etc., is in good condition.
9. Ensure that the metal casing of electrical equipment is appropriately earthed.
10. All electrical equipment should be kept clean and dry. Do not stand on a wet area when using an electrical tool or equipment.
11. When using temporary power supply, installation of leakage protection device is required to prevent the danger of electric shock due to leakage.
12. Use qualified and compatible plugs and suitable fuses for power supply connection.
13. Do not overload any electrical installations, cables or socket outlets.
14. Do not place inflammable substances near any electrical equipment to prevent fire and explosion.
15. Do not let cables lie across work areas. Provide appropriate mechanical protection or hang them up.

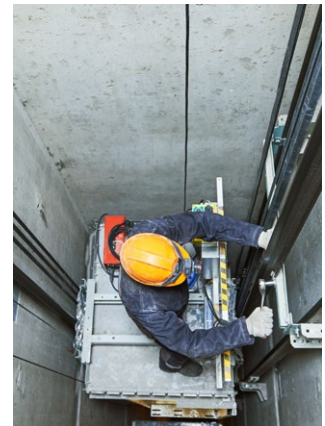
4.9 Monitoring of Modernisation and Addition Works for Lifts and Escalators

1. Working alone is not allowed under normal circumstances.
2. Unauthorised persons are not allowed to enter the works area of lifts and escalators.
3. Work sites must be kept clean, free of miscellaneous articles, and equipped with enough fire extinguishers.
4. Barriers with warning signs should be erected in front of the landing doors of lifts and landing floors of escalators at the floor of works to prevent people from entering the works area, falling into the lift pit or entering the lift car.
5. All electrical installations, equipment or electrical appliances should be repaired and maintained regularly by competent staff.
6. Ensure that appropriate guards are installed on machines, parts and equipment that are rotatable or movable.
7. Ensure that the workplace, including the machine room, lift shaft and the area underneath the landing floor plate of an escalator, has adequate lighting and appropriate ventilation and is equipped with safe access to the machine room, machine operation site, lift shaft and lift pit, and the area underneath the landing floor plate of an escalator.
8. Any temporary works including scaffoldings, formworks, planking and strutting, etc. erected inside a lift shaft or at an escalator should be constructed of non-combustible materials.
9. Where retrieving or hoisting of ropes is in progress, workers should not stay inside the lift pit or underneath the escalator.
10. Rigging tools should be of adequate strength and length, and should be anchored to appropriate anchor points.
11. The escalator shall be equipped with: (1) a safety device to enable the escalator to automatically stop running when the access cover and floor are opened; and (2) a protective cover to prevent people from touching the dangerous rotating parts in the maintenance space.
12. When more than one lift is installed within a common lift shaft, adequate measures shall be taken to prevent trapping hazards, e.g. a partition of appropriate height, where practicable, should be provided between two lifts.
13. When there is a risk of falling from the car top during the works, an appropriate and secure vertical screen and a suitable horizontal extension of the car top should be provided, or proper guard rails and toe-boards should be installed.
14. Risk assessments for manual handling operation should be carried out and suitable lifting equipment should be provided for raising, lowering or suspending heavy machine parts, materials and equipment. When transporting objects, workers should wear appropriate gloves and safety shoes to prevent injuries to the hands and feet.
15. For thermal process, e.g. welding process, special fire precautions should be adopted and a permit-to-work system for thermal process should be implemented.
16. When the inflammable substances are not in use, they should be stored in suitable containers which are properly sealed and labelled.

17. Provide adequate fall arrestors for use by staff working in lift shafts or underneath escalators.
18. Avoid having different working groups to work in the same well. If this is unavoidable, a well coordinator should be appointed. Work should only be commenced upon the approval of the well coordinator. During the work, workers must be vigilant and maintain clear, close and good communication among themselves by means including appropriate communication tools (e.g. walkie-talkies).

4.10 Inspection of Periodic Maintenance and Repair Works of Lifts and Escalators

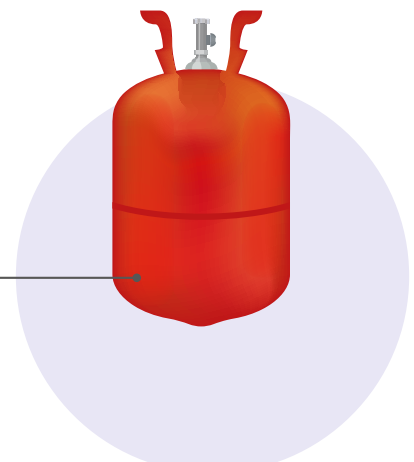
1. The Lifts and Escalators Ordinance ("LEO") requires that lifts and escalators shall undergo periodic maintenance at least once a month. Also, registered contractors are required to submit their maintenance schedules in a timely manner for EMSD to arrange inspections.
2. Increase the frequency of surprise inspections as necessary for stronger deterrent effect.
3. Registered engineers are required to keep copies of photographs of lift suspension system or escalator drive system upon completion of periodic examination. Conduct random checks on such photographs regularly to strengthen review on routine examinations by registered engineers.



4.11 Flammable Refrigerant Safety

1. Refrigerants generally refer to substances that can be refrigerated through their physical properties. They are commonly used in refrigeration and air-conditioning equipment, such as household air conditioners, refrigerators and dehumidifiers. According to ISO 817, refrigerants are classified based on their safety levels. The safety classification consists of three characters, with the first two characters being alphanumeric and the third character being an "L", which denotes low burning velocity. The first capital letter indicates the toxicity, whereas the Arabic numeral indicates the flammability.
2. For refrigerants with the composition meeting the definition of Liquefied Petroleum Gas (LPG) under the Gas Safety Ordinance (Cap. 51), the storage of the refrigerants concerned is regulated by the Ordinance. For non-LPG refrigerants classified as Category 2 dangerous goods under the Dangerous Goods Ordinance (Cap. 295), their manufacture, storage, carriage or use are regulated by the Fire Services Department (FSD); however, its import, supply or use in air-conditioning system are not be regulated by FSD.
3. Refrigerant gas cylinders should be kept away from sources of ignition or corrosive substances. When handling flammable refrigerants, service personnel should exercise caution to prevent fire or explosion.

Refrigerant gas cylinders should be kept away from sources of ignition or corrosive substances



4.11.1 Household Air Conditioners Using R32 Refrigerant

1. R32 is a mildly flammable refrigerant under a flammability class of 2L.
2. Household air conditioners using R32 refrigerant shall comply with the applicable safety requirements stipulated in IEC 60335-2-40 in conjunction with IEC 60335-1. If a household air conditioner using R32 refrigerant conforms to other safety standards, such standards shall be equivalent to IEC 60335-2-40.
3. Installation, inspection and repair of household air conditioners using R32 refrigerant shall be carried out by professionally trained service personnel. Service personnel shall complete training on the installation, repair, maintenance, servicing and disposal procedures of common refrigeration equipment, as well as special training on R32 refrigerant work provided by relevant suppliers/suppliers' agents or recognised training institutes.
4. Service personnel shall assess the room area and installation height for household air conditioners using R32 refrigerant to ensure compliance with the manufacturer's requirements.
5. Service personnel shall ensure that in the vicinity of the household air conditioner using R32 refrigerant, there are no potential sources of ignition that can ignite any refrigerant leaks from the air conditioner.
6. When additional charge of R32 refrigerant is required, service personnel shall take heed of the statutory exempt quantity and fill in the resulting total refrigerant charge in label provided by the manufacturer.
7. For systems that have been charged with refrigerant, if a leak is found and brazing is to be carried out, service personnel shall either remove all refrigerant from the system or isolate the refrigerant in the part of the system away from the leaking location by shutting off the gas valve.
8. If welding work has to be carried out to the refrigerant circuit of a household air conditioner using R32 refrigerant, the refrigerant shall first be completely removed, and all LPG content inside the refrigerant circuit shall be purged with inert gas before welding.
9. After installation, household air conditioners using R32 refrigerant shall be marked with a flame symbol and the operator's manual symbol. For household air conditioners using R32 refrigerant that are not single package units, the flame symbol shall be provided on all indoor and outdoor units. An additional flame symbol shall be placed on the nameplate of the household air conditioner using R32 refrigerant near the display of the refrigerant type and charge information.
10. Upon completion of the installation work, service personnel shall sign the job completion card to verify that the air conditioner is installed in compliance with the requirements on minimum room area and minimum installation height.

Household air conditioners using R32 refrigerant shall comply with the applicable safety requirements stipulated in IEC 60335-2-40 in conjunction with IEC 60335-1



4.11.2 Household Refrigerators Using R600a Refrigerant

1. R600a is a highly flammable refrigerant under a flammability class of 3.
2. Household refrigerators using R600a refrigerant shall comply with the applicable safety requirements stipulated in IEC 60335-2-24 in conjunction with IEC 60335-1. If a household refrigerator using R600a refrigerant conforms to other safety standards, such standards shall be equivalent to IEC 60335-2-24.
3. Service personnel shall complete special training on the repair, maintenance, servicing and disposal procedures of household refrigerators using R600a refrigerant provided by relevant suppliers/suppliers' agents or recognised training institutes.
4. Household refrigerators using R600a refrigerant shall be marked with a flame symbol.
5. Service personnel shall ensure that in the vicinity of the household refrigerator using R600a refrigerant, there are no potential sources of ignition that can ignite any refrigerant leaks from the household refrigerator.
6. If welding work has to be carried out to the refrigerant circuit of a household refrigerator using R600a refrigerant, the refrigerant shall first be completely removed, and all LPG content inside the refrigerant circuit shall be purged with inert gas before welding.

4.11.3 Household Dehumidifiers Using R290 Refrigerant

1. R290 is a highly flammable refrigerant under a flammability class of 3.
2. Household dehumidifiers using R290 refrigerant shall comply with the applicable safety requirements stipulated in IEC 60335-2-40 in conjunction with IEC 60335-1. If a household dehumidifier using R290 refrigerant conforms to other safety standards, such standards shall be equivalent to IEC 60335-2-40.
3. A label of "flammable substance" shall be affixed on the body of dehumidifier.
4. Use of such products shall fulfill the minimum room size requirements (if any) specified by the manufacturers.
5. Prevent debris from blocking the air outlet, return air outlet or heat dissipation area of a dehumidifier and causing the appliance to overheat.
6. If the refrigerant circuit is found to be damaged, stop using the dehumidifier immediately.
7. Do not repair the dehumidifiers oneself without being properly trained.
8. If repair work is required, contact the suppliers or agents for arrangement.
9. Dispose of household dehumidifiers using R290 refrigerant in accordance with the prevailing relevant legislation or return them to the suppliers/agents for disposal.

4.11.4 Medium and Large Air-conditioning systems

1. In view of the crowded and densely populated environment with congested high-rise buildings in Hong Kong, it is not suitable to install air-conditioning and refrigeration equipment using flammable refrigerants in buildings with heavy pedestrian flow, such as industrial buildings, commercial buildings, schools, institutions and community facilities, from the perspectives of safety and risk management.
2. For existing equipment, occupants shall adopt the prescribed refrigerants according to the instructions stipulated in the manufacturers' manuals and shall not switch to other types of refrigerants for the avoidance of accidents.

4.12 Steam Equipment

1. Operation and maintenance manuals and instructions provided by the steam equipment manufacturer should be understood and strictly followed by all staff involved.
2. Ensure that the steam equipment is attached with a valid Certificate of Fitness and that the approved maximum permissible working pressure is indicated on the pressure gauge with a red line.
3. Before conducting maintenance work, read the drawings to understand the operation of all the connected devices. Conduct on-site inspections to ensure that all sources of steam supply have been cut off, including the positions of isolation valves and the positions of the valves at the next higher level. Record the scope of work involved and put up maintenance notices.
4. All operation and maintenance work should be carried out under the supervision of experienced competent persons.
5. Clear the miscellaneous objects at the site to eliminate tripping hazards. Anti-slip safety shoes should be worn.
6. Increase the illumination level of the working area by using task lighting and maintain adequate ventilation.
7. If work at height is involved, equipment for work at height should be used.
8. During maintenance, the part requiring maintenance must be completely isolated from other equipment, including power supply, compressed air, fuel, transmission/heat transfer, steam, condensate water (backwater), input/output water sources, etc. Close the valve connecting to the pipe. Disconnect the connection, if necessary. Install a screen or lock the valve, and attach warning notices to the control console, switch box and steam pipe valve.
9. Pipes or equipment should be completely released of steam and cooled. If it is uncertain whether the steam has been completely released, appropriate long-sleeved insulating gloves and protective face shields shall be worn to avoid burns by steam jets.
10. When releasing steam pressure, the affected area should be fenced off to keep people away. During the maintenance period, keep the exhaust valve open so that the system is exposed to the atmosphere, and cover the exhaust opening with an effective cover affixed with a warning notice.
11. To avoid accumulation of residual pressure or heat inside the equipment, all internal valves should remain open during the work.
12. Upon completion of maintenance work, check again and confirm that all the pipes are connected properly. Open the condensate water (backwater) valve first, then open the steam supply valve slowly. Preheat the equipment or pipes to prevent hammering effect while checking whether the steam trap operates normally. Open the steam valve fully only after the equipment or pipes have been preheated.
13. Inspection, hydraulic tests and safety valve adjustments and tests should be conducted on all newly installed, repaired or modified steam equipment before they are put into operation.

4.13 List of Guidelines for Specific Work Activities

All divisions have compiled relevant occupational safety and health guidelines for their specific work, e.g. certain specific vehicle maintenance work. Staff members should, wherever reasonably practicable, comply with the latest version of the guidelines for specific work of their respective divisions.

4.13.1 Biohazard Area

Biohazard areas include but are not limited to community vaccination centers, community testing centers, community isolation facilities and community treatment facilities.

4.13.1.1 Personal Protective Equipment

To ensure that staff are protected from one or more health and safety hazard(s) during the work, they should wear PPE, which includes:

- N95 respirators/surgical masks
- industrial goggles
- disposable hooded protective coveralls
- shoe covers
- medical gloves

Remarks: For the procedures concerning wearing and removing PPE, please refer to Chapter 2.7.2 of this handbook.

4.13.1.2 Ventilation Requirements

- a minimum of six air changes per hour
- a minimum of two fresh-air changes per hour

Community Vaccination Center



4.13.1.3 Rapid Antigen Test

1. Any staff who are required to do the rapid antigen test should refer to and follow the following guidelines for the procedures of specimen collection and precautions when doing the rapid antigen test.:

POINTS TO NOTE



Clean the surface before you start



Gently blow your nose before starting



Wash hands before the test



Open the test kit right before the test



Do not touch the tip of swab

READ AND FOLLOW THE INSTRUCTIONS CAREFULLY AND STRICTLY



Take adequate sample



Mix swab properly with testing solution



Put testing kit on a flat surface



Drip the exact number of drops of sample solution in the sample well



Read the result within the time specified

4.13.1.4 Work Safety Guidelines

1. Check body temperature regularly.
2. Those who are sick or showing relevant symptoms should refrain from work, wear a surgical mask and seek medical advice promptly.
 - a. Avoid touching eyes, mouth and nose.
 - b. Maintain hand hygiene.
 - c. Wear a mask at all times and keep appropriate social distance with others in common facilities (e.g. rest rooms, changing rooms, conference rooms, pantries, etc.) of the workplace. In case wearing mask is not feasible, for example when having meal or shower or performing heavy manual work, keep a distance of at least 1.5 metres from others.
 - d. Keep adequate ventilation, open windows if feasible.



Chapter 5

Office Safety

5

Office Safety

Working Environment of Office

5.1 Office Safety

5.1.1 Working Environment of Office

1. All things should be kept in an orderly manner to provide barrier-free access. Wires should be anchored neatly and be kept away from the access.
2. Warning signs should be displayed on glass doors or glass partitions to prevent accidental collision.
3. Desk drawers and file cabinet doors should be properly closed when not in use.
4. When taking objects placed at the high level of a file cabinet or rack, a proper foot stool or step stool should be used. If necessary, assistance should be sought from colleagues.
5. The cables of photocopiers, computers, lamps, and other electric tools and equipment should be properly and neatly anchored so as to prevent tripping.
6. Keep things inside the file cabinet. Do not put them on top of the cabinet. Frequently used objects should be placed in an easily accessible place.
7. First-aid facilities and adequate drinking water facilities should be provided at the workplace.



5.1.2 Points to Note about Ventilation Systems

1. Measure the indoor carbon dioxide (CO²) concentration regularly to assess the adequacy of ventilation. Ensure that the CO² concentration is maintained in the range of 600-800 ppmv, and if it exceeds the range, inspection, maintenance, repair and improvement of the ventilation system will be required.
2. Increase the rate of air replacement and the supply of fresh air.
3. The performance of the ventilation system should be tested regularly to make sure it is up to the designed specifications, and appropriate adjustments should be made and repairs undertaken when necessary.
4. Dust filters, fans, cooling coils and ventilation ducts should be cleaned or changed regularly.
5. All components and ducts of the ventilation system should be inspected for cleanliness and sterilised regularly.
6. If a cooling tower is used, regular cleaning and sterilisation should be carried out to prevent the growth of microorganisms.

5.1.3 Indoor Air Quality Reference Index

1. Indoor air quality indicator

Parameter	Unit	Averaging Time	New Objectives (Effective on 1 July 2019)	
			Excellent Class	Good Class
Room Temperature	°C	8 hours	---	
Relative Humidity	%	8 hours	---	
Air Movement	m/s	8 hours	---	
Carbon Dioxide(CO ₂)*	ppmv	8 hours	800	1,000
Carbon Monoxide (CO)	ppmv	8 hours	1.7	6.1
Respirable Suspended Particulates(PM ₁₀)*	µg/m ³	8 hours	20	100
Nitrogen Dioxide(NO ₂)	µg/m ³	8 hours	40	150
	µg/m ³	1 hour	100	200
Ozone(O ₃)	µg/m ³	8 hours	50	120
	µg/m ³	8 hours	30	100
Formaldehyde(HCHO)	µg/m ³	30 mins	70	100
	µg/m ³	8 hours	200	600
Total Volatile Organic Compounds (TVOC)	µg/m ³	8 hours	200	600
Radon(Rn)	Bq/m ³	8 hours	150	167
Airborne Bacteria	cfu/m ³	8 hours	500	1,000
Mould*	-	-	Assessment in the form of walkthrough inspection	

*Measurement for CO₂ and PM₁₀ is required for 1st to 4th annual re-certification for certificate renews in a 3-year cycle. Assessment of mould is also required when the new IAQ objectives are adopted.

2. Factors affecting indoor air quality

The overall indoor air quality is mainly affected by thermal comfort and air pollutants. Factors that affect thermal comfort include:

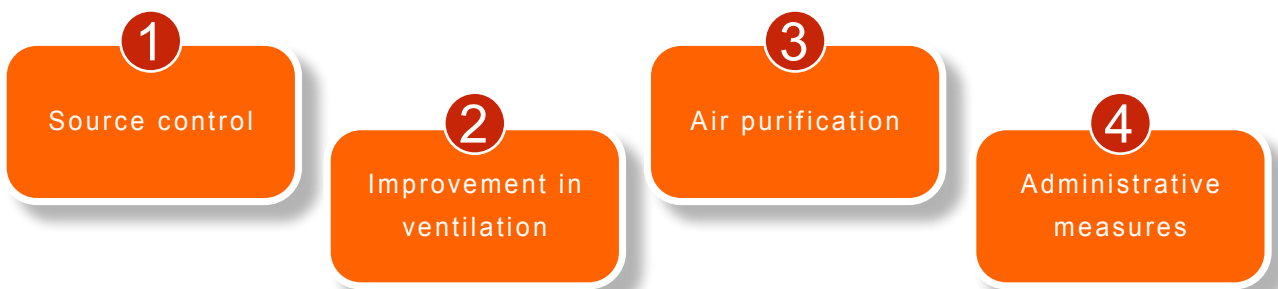


and more common air pollutants include:

Airborne particles	Volatile organic compounds
Asbestos	Formaldehyde
Radon	Ozone
Combustion gases	Respiratory products and body odour
Microorganisms	

3. Mitigation strategy

Mitigation measures generally fall into four categories:



Different mitigation measures should be formulated taking into account the characteristics of the office location.

5.1.4 Office Equipment and Tools

1. Properly use office equipment and tools, read and understand the operating procedures of the equipment, such as photocopiers (properly handle the toners, close the cover during operation, place the machine at a well-ventilated location), paper shredders, scissors, etc.
2. Equipment and machines that generate loud noise during operation should be placed at isolated locations. Sound-absorbing barriers should be erected if needed.
3. Cutting tools (e.g. scissors, cutters) should be properly used and placed to avoid injuries.
4. Long hair and clothing may be pulled into an operating shredder. Operation instructions should be posted at a prominent place as a reminder to the staff. Turn off the power immediately after operation.

5.1.5 Points to Note about the Safe Use of Electricity

1. Do not overload the socket.
2. Regularly check all electrical appliances, wires and plugs, etc.
3. Do not touch any electrical products or power supply with wet hands.
4. If abnormal situations such as noise, burning smell or smoke from electrical appliances/equipment are noticed, immediately cut off the power supply. Stop using the appliances/equipment and put up notices. Report the problem and arrange repair by competent persons.

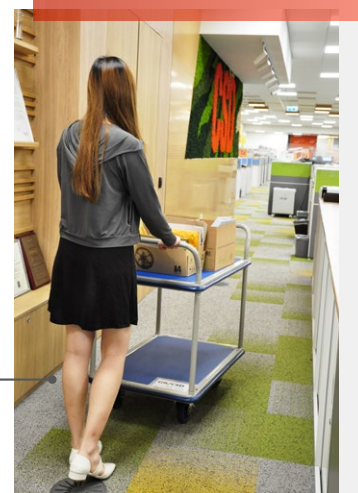


Desk drawers and file cabinet doors should be properly closed when not in use

5.1.6 Manual Handling in Office

1. Before carrying out or assigning the manual handling work, supervisors and staff members should understand and evaluate the work as well as physical fitness and health conditions of the staff members. If necessary, additional manpower should be deployed to render assistance or appropriate ancillary mechanical equipment (e.g. a handcart) should be used.
2. Place the objects to be handled close to your body. Reduce the weight or size of the objects, or provide suitable handles to facilitate handling.
3. Objects and tools should be placed at an appropriate level to avoid body twisting, bending or overstretching of the upper arm when reaching for them.
4. Keep the office area clean, tidy and well-lit. Before the handling work, clear all obstacles to provide barrier-free access.
5. When carrying heavy loads, use ramps or lifts as much as possible to avoid walking up and down the stairs and reduce the occurrence of accidents.
6. Avoid prolonged manual handling work. Supervisors should arrange appropriate rest breaks for staff members.

When carrying heavy loads, appropriate ancillary mechanical equipment (e.g. a handcart) should be used



5.2 Guidance Notes on Using Display Screen Equipment (DSE)

DSE workstation is best designed in accordance with the ergonomic requirement in order to protect the safety and health of the operator. The main features of a DSE workstation are listed as follows:

1. Display Screen
 - The screen should give a clear, sharp and steady image
 - The characters should be of adequate size, with adequate spacing between the characters and lines
 - The brightness and contrast of the image should be easily adjusted
 - The screen should be easily swivelled and tilted to suit the needs of the operator
 - The screen should be placed right in front of the operator and be kept at a comfortable viewing distance at 350-600 mm and the first line on screen should preferably be at or slightly below the eye level
2. Input devices (e.g. keyboard, mouse, numeric keypad, etc.)
 - The keyboard should be as thin as possible, tiltable and detachable from the display screen so that the operator may adopt a comfortable working posture. Excessive inclination can cause extreme wrist bending
 - The keyboard should be neutral in colour and its surfaces should be non-reflective
 - The letters and symbols on the key tops should be clear and easily recognisable
 - There should be sufficient space in front of the keyboard to provide support for the hands so that they are not suspended over the keyboard
 - If prolonged keyboard operation is required, the use of wrist support pad is recommended to alleviate muscle strain of hands
 - The keyboard should be positioned where the forearm is approximately at a right angle to the arm
 - The mouse should be positioned at an easily reachable distance to the operator so as to avoid overstretching of the forearm. Keep the wrist straight when using the mouse
3. Work Surface
 - The work surface should be large enough to accommodate the screen, keyboard, mouse, and other peripheral equipment
 - The height of work surface should be adjusted to suit the needs of the user
 - The table edge should preferably be rounded
 - There should be adequate legroom below the work surface so that the user may stretch his/her legs
4. Chair
 - The chair should be adjustable in height (400-500 mm from the floor)
 - The backrest should be easily adjustable in both height and tilt to provide adequate support to the lower back
 - Armrests, if provided, should not interfere with keyboard operation
 - The chair should have a stable base (a five-pronged base) and be provided with smooth castors for easy movement
 - The seat pan should be of appropriate hardness and the front edge should be scrolled
5. Footrest
 - A stable footrest should be made available to the user if the chair is too high for the feet to rest firmly on the floor
6. Document Holder
 - If documents are read in conjunction with data inputting work, a stable and adjustable document holder should be provided to the operator so as to avoid awkward neck posture and movement

7. Working Environment

- Suitable lighting (ranging from 300 to 500 lux) should be provided in the working environment of DSE.
- The screen should be adjusted so that it is placed at a right angle to the light sources and windows. Excessive sunlight can be screened by blinds.
- The noise level of the working environment should be kept below 60dB(A).
- The temperature level of the working environment should be kept between 23°C and 26°C (in summer).
- The humidity level of the working environment should be kept between 40% and 70%.

8. Sitting Posture

- A correct sitting posture should have the back straight without allowing twisting at all. The back rest should be capable of providing support to the back of the operator in sitting position.
- Prolonged sitting with the same posture should be avoided. Occasional postural change is encouraged to facilitate blood circulation.

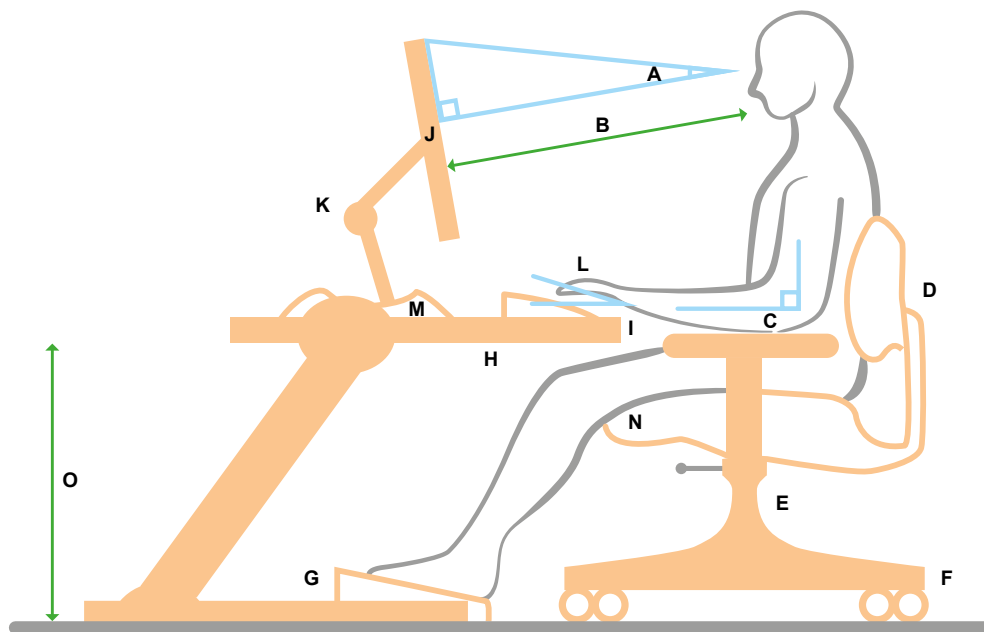
9. Rest Break and Stretching Exercise

- Short breaks should be arranged to relieve the fatigue arising from continuous keyboard operation.
- Apart from DSE work, job allocation should also be planned in such a manner to incorporate different varieties (e.g. mix of DSE work with photocopying and other paper work). This arrangement not only helps to minimise static or repetitive movement, but also allows different muscle groups to take turns to rest.
- If prolonged viewing of DSE is needed, the operator is advised to look at distant objects occasionally to alleviate eye strain. Exercises for visual comfort are also recommended.
- Prolonged DSE work can induce muscle fatigue in upper limbs and lower back. Simple stretching exercises for upper limbs, neck and back are recommended during rest breaks since the exercises are effective in reducing mental stress as well as muscle strain.



Rest Break and
Stretching Exercise

10. The Optimal Workstation and Working Posture



- A** First line on screen at about or just below eye level
- B** Comfortable viewing distance, e.g. 35 - 60 cm for text of normal font size
- C** Forearm approximately at a right angle to the arm
- D** Backrest adjustable in height and tilt
- E** Adjustable seat height: allowing the user to sit with thighs approximately horizontal, lower legs vertical and feet resting firmly on the floor
- F** Stable base, with castors if necessary
- G** Firm footrest if required
- H** Adequate legroom
- I** Support for hands
- J** Screen approximately at a right angle to line of sight
- K** Adjustable document holder if required
- L** Wrist kept straight or at most slightly inclined
- M** Screen support easily adjustable for rotation and tilting
- N** Rounded or scrolled edge seat pad
- O** Adjustable table height preferable

5.3 Risk Assessment of Workstation Display Screen Equipment

5.3.1 Risk Assessment

1. The person responsible for a venue / section head shall perform risk assessment of workstation display screen equipment (DSE) for the following persons (or self-assessment by individual staff members):
 - i. a new employee;
 - ii. an employee who, by reason of change of the nature of his/her work, is required to use DSE for a prolonged period of time; or
 - iii. an employee whose workstation has seen a significant change in the DSE.
2. The person responsible for the venue/section head shall request the persons mentioned above to fill in the "Registration Form for Display Screen Equipment User" (5.3.2) as soon as possible. The employee shall clearly understand that the completed registration form will be used to decide whether he/she is, by reason of the need of his/her work, defined as a DSE user so that risk assessment of workstation DSE can be arranged in due course. The employee shall put a " √ " or " X " in the appropriate boxes according to the actual number of hours of using DSE and sign the form for confirmation.
3. The completed "Registration Form for Display Screen Equipment User" shall be verified and signed by the person responsible for the venue/section head and risk assessor (safety supervisor of the section). The person responsible for the venue/section head is required to update the users' records from time to time, especially when there are staff movements, so that the risk assessor can update the risk assessment records accordingly.
4. The risk assessor shall arrange workstation risk assessment for DSE users as soon as possible in the light of their workload.
5. The risk assessor shall inspect the workstations of DSE users and perform risk assessment of the workstations. The risk assessor shall use the "Workstation Display Screen Assessment Form" (5.3.3) for assessment so as to prevent the workstations from creating health problems to the users. The risk assessor may also collect opinions of the users on the workstations to identify room for improvement.
6. The risk assessor shall record the assessment results and suggestions for improvement in the "Workstation Display Screen Assessment Form", and explain the assessment results to the user and provide basic safety and health training relevant to the use of workstations immediately. Upon completion of the assessment, the risk assessor shall pass the "Workstation Display Screen Assessment Form" to the user and the person responsible for the venue/section head to sign for confirmation. The form shall be filed for future follow-up.
7. The person responsible for the venue/section head shall conduct improvement work as recommended according to the assessment results as soon as possible. All improvement work shall be recorded properly. Completed "Registration Form for Display Screen Equipment User", "Workstation Display Screen Assessment Form" and records of subsequent improvement work shall be kept at the venue/section's workplace for at least two years (counting from the date when the workstation is no longer used by any person) for future inspection.

5.3.2 Registration Form for Display Screen Equipment User

According to section 4 of the Occupational Safety and Health (Display Screen Equipment) Regulation, the person responsible for a workplace shall perform a risk assessment of a workstation in the workplace before it is used by users. "User" is defined as an employee who, by reason of the nature of his/her work, is required to use DSE (Note A) almost every day, and (Note A) continuously for at least four hours during a day or (Note B) cumulatively for at least six hours during a day. Colleagues are requested to assess whether they fall within the definition of user mentioned above according to the nature of their work. The Department will arrange workstation risk assessment for users.

Workstation location (please mark clearly the workstation location with diagram)	Name of Employee	Post	If you meet the following criteria, please put [√] in the appropriate space, otherwise put [X]		Signature of Employee	Signing Date
			Use DSE continuously for at least four hours a day	Use DSE continuously for at least six hours a day		

Name and signature of the person responsible for the venue / section head: _____ Date: _____

Name and signature of risk assessor: _____ Date: _____

Note :

(A) The Occupational Safety and Health (Display Screen Equipment) Regulation does not apply to the following DSE: (1) DSE that is used mainly to show pictures, television or films; (2) drivers' cabs or control cabs for vehicles or machinery; (3) DSE on board a means of public transport; (4) portable systems not in prolonged use; (5) calculators, cash registers or any equipment having a small data or measurement display required for direct use of the equipment; or (6) window typewriters.

(B) Breaks not exceeding ten minutes in an hour while being away from the DSE shall not be regarded as breaking the continuity of use of the DSE.

5.3.3 Workstation Display Screen Assessment Form

Name of venue : _____

Workstation location : _____
(please mark clearly the workstation location with diagram)

Name of user : _____

Description of task : _____

A Assessment

	Yes	No	N.A.	Remarks
Display Screen				
1. Does the screen give a clear, sharp and steady image?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Are the characters readable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Are the brightness and contrast adjustable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Can the screen swivel and tilt?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Is the screen positioned at about or slightly below the eye level and in front of the user?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Is the screen free from reflections and glare?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Input Devices (keyboard, mouse, numeric pad, etc.)				
7. Is the keyboard tiltable and detached from the display screen? (not applicable to portable systems)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Are the characters on the keys of the keyboard/numeric pad readable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Is the keyboard/numeric pad glare free?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Are the input devices positioned at about the elbow level?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. Is there enough space to rest hands in front of the input devices?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Work Desk

12. Is the desk surface large enough for the screen, input devices and documents?
13. Is there adequate legroom below the desk?

Chair

14. Is the base of the chair stable?
15. Do the castors allow easy movement of the chair?
16. Is the seat height adjustable to suit the body size of the user?
17. Is the backrest adjustable in both height and tilt to provide adequate support to the lower back?
18. Is the seat pan padded and free from sharp edges?
19. Do the armrests, if any, allow the user to get close enough to key comfortably?

Document Holder

20. Is the document holder, if provided, properly positioned to avoid awkward neck posture and movement?

Footrest

21. Is the footrest, if required, stable and provided with a non-slip surface?

Illumination

22. Is the lighting level suitable for the work?

Noise

23. Is the noise produced by the workstation acceptable?

B Follow-up Actions

If a "No" answer is given to any of the above questions, follow-up actions are required.

C Declaration

I (assessor) have provided the assessment results and proposed improvement measures to the user of the workstation in accordance with sections 6 and 8 of the Occupational Safety and Health (Display Screen Equipment) Regulation, and have provided the necessary safety and health training relevant to the use of the workstation to the user.

Name and signature of assessor: _____ Date: _____

I (user) confirm that I have received the assessment report for my workstation from the assessor and the assessor has explained the content of the report and provided safety and health training relevant to the use of the workstation to me.

Name and signature of user: _____ Date: _____

I (user's supervisor) confirm that I have received the assessment report for the user of the above workstation from the assessor. I agree with the content of the report and undertake to follow up on the related improvement work.

Name and signature of user's supervisor: _____ Date: _____

5.4 Work Stress

Stress refers to a feeling that emerges when the demands of the circumstances are beyond one's capability to handle with the resources available to him/her. Excessive work stress also negatively affects workers, so it is crucial to prevent and handle work stress. Here are some ways to minimise the impact of work stress and improve one's resistance to stress.

5.4.1 What You Should Do

1. Identify the sources of stress and seek proper solutions to boost your resistance to work stress by, for example, enhancing communication skills, developing good time management, and improving interpersonal relationship.
2. Cultivate a good mindset and never look down on yourself. Refrain from dwelling on negative thoughts.
3. Maintain a healthy lifestyle. Develop hobbies, enjoy leisure time and have sufficient sleep and rest.
4. A moderate amount of exercise can stimulate the release of endorphins, improve the quality of sleep and reset the biological clock. It also helps decrease the cortisol level and hence reduce stress.
5. Having good eating habits can be an excellent way to cope with stress. Eating more food that contains tryptophan such as milk, eggs, soya bean milk, black sesame, pumpkin seeds and pistachio nuts can help increase serotonin which assists in regulating mood and relaxing the mind and body. Steering clear of caffeine, alcohol and nicotine also help you fight stress.
6. Share your feelings with relatives and friends, as well as the people you trust more often.
7. Build emotional connections with other people to help soothe your feelings and relieve stress.
8. Spare some time to do something that you enjoy, such as reading, listening to music and watching movies. Allow yourself to enjoy life and rediscover life's treasures.
9. Alleviate stress through some means of expression that are consistent with your religious belief or moral values, such as prayers, meditations and yoga.
10. Enhance your stress resistance by giving yourself enough rest and learning to unwind.
11. Friends and colleagues should help and support one another. If your colleagues appear emotionally unwell, you should let them know that you care about them in some appropriate ways. Giving them space is not an excuse for watching them with folded arms.
12. Seek help from doctors or other professionals when necessary.

5.4.2 Face up to Problems

1. Communicate opinions to the management, eliminate or minimise the sources of stress by, for example, buying supporting tools and improving work flow.
2. Plan ahead for work, prioritise tasks, and improve time management skills.
3. Discuss possible solutions with colleagues and supervisors.
4. Break down work into manageable tasks with forward planning.
5. Try to confer meaning upon work to increase commitment.
6. Avoid working long hours. Relax during leisure time and take short breaks when necessary.

5.4.3 What Supervisors Should Do

1

Review the work environment and the needs of workers

2

Arrange work properly and improve or streamline work procedures

3

Provide sufficient and suitable training for workers to effectively tackle contingencies and complicated problems

4

Enhance communication channels to properly respond to workers' views and allow them to engage in work planning, etc

Disclaimer

This Safety and Health Handbook ("Handbook") is devised to provide practical guidance on managing safety and health at work venues, and is intended primarily for the management and workers of the Electrical and Mechanical Services Department ("this Department") and the employers and employees of its consultants and contractors. In writing this Handbook, every due care has been exercised taking into account the circumstances of this Department's routine working environment and requirements of the laws of Hong Kong. However, any advice or comment given in this Handbook by no means covers all relevant requirements of the laws and should not be relied upon as a substitute for legal or other professional advice.

Following the advice given in this Handbook does not imply any exemption from legal obligations or confer any legal immunity on anyone. Under any circumstances, this Department accepts no responsibility or liability arising from the content of this Handbook.

The content available in this Handbook (including but not limited to all text, graphics, drawings, diagrams, photographs and compilation of data or other materials) is subject to copyright owned by the Government of the Hong Kong Special Administrative Region or other entities. Except as expressly permitted herein or where prior written authorisation is obtained from this Department, any reproduction, adaptation, distribution, dissemination or making available of such copyright works to the public is strictly prohibited.

機電工程署安全及健康手冊

Electrical and Mechanical Services Department

Safety & Health Handbook