Code of Practice on Mechanical Handling Safety in Container Yards

Labour Department

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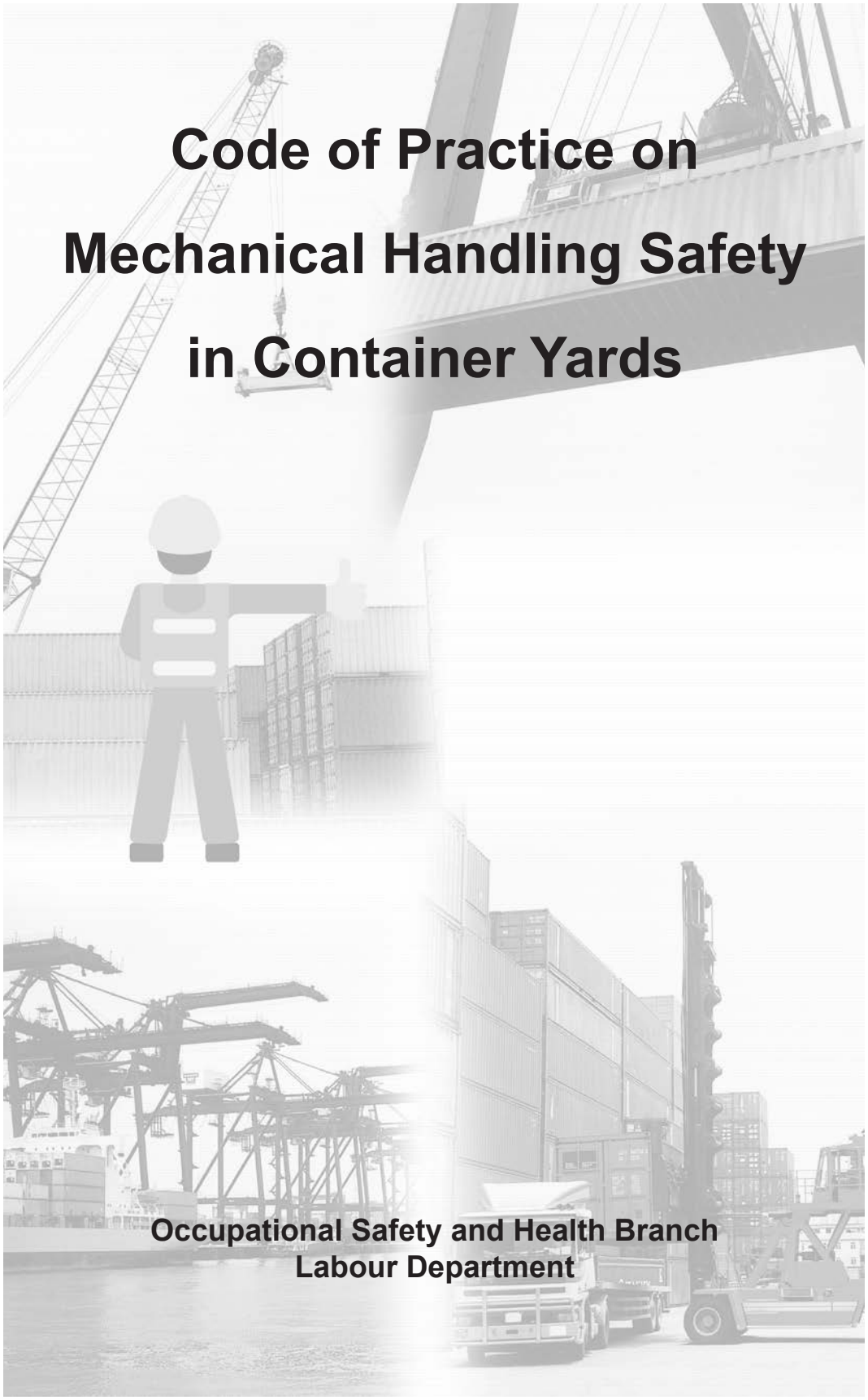

Occupational Safety and Health Branch
Labour Department

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Contents

1. Introduction

1.1 Purpose

1.1.1 Hong Kong is one of the busiest container handling ports in the world. Each year, over 10 million TEUs (Twenty-Foot Equivalent Units) of containers are handled here. Safety in the trade becomes paramountly important in the day to day safe running of the container handling business. Since heavy mechanical equipment is commonly used in this trade, serious industrial accidents are prone to happen if safety precautions in operating the equipment are not observed.

1.1.2 This Code of Practice (hereinafter referred as the Code) is approved and issued by the Commissioner for Labour under section 7A of the Factories and Industrial Undertakings Ordinance, Chapter 59 of the Laws of Hong Kong (hereinafter referred as the FIUO). It provides a practical guidance to proprietors of industrial undertakings of container handling for compliance with the requirements under the provisions of the FIUO and the Factories and Industrial Undertakings (Cargo and Container Handling) Regulations (hereinafter referred as the CCHR) for protection of workers in relation to the handling of containers with mechanical equipment in container yards.

1.1.3 The provisions in this Code should not be regarded as exhausting those matters which need to be covered by the relevant safety legislation, nor is it intended to relieve persons undertaking the work of their statutory responsibilities. It is important to note that compliance with this Code does not of itself confer immunity from legal obligations.

1.1.4 This Code has a special legal status. Although failure to observe any guidance contained in this Code is not in itself an offence, that failure may be taken by a court in criminal proceedings as a relevant factor in determining whether or not a person has breached any of the provisions of the regulations to which the guidance relates.

1.1.5 The relevant safety standards of the British Standards Institution are quoted throughout this Code. However, if there are some other equivalent national/ international standards or provisions, they would be acceptable as alternatives. In addition, the statutory provisions referred to or cited in this Code are those in force on 16 December 2022.

1.2 Scope of application

1.2.1 This Code recommends safe practices for the handling of containers with mechanical equipment in container storage areas and container yards of industrial undertakings including container terminals, mid-stream container ports, river-trade terminals, public cargo working areas, docks, quays, wharfs and etc., in which container handling takes place.

1.2.2 The mechanical equipment covered in this Code includes that commonly used in container yards in Hong Kong such as fork-lift truck, front loader, reach stacker, gantry crane, tower crane, mobile crane and similar container handling equipment.

1.2.3 Reference should be made to other relevant legislation, including:

(a) sections 6A and 6B of the FIUO concerning the general duties of proprietor and employee;
(b) section 6BA of the FIUO concerning the mandatory safety training;
(c) the Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations (hereinafter referred as the LALGR);
(d) the Factories and Industrial Undertakings (Safety Management) Regulation (hereinafter referred as the SMR); and
(e) the Factories and Industrial Undertakings (Loadshifting Machinery) Regulation (hereinafter referred as the LSMR).

1.2.4 This Code is not intended to cover the safety requirements of the handling of containers on board any floating vessels or with the use of lifting appliances or lifting gear of any vessel afloat. Guidelines on safety on board a floating vessel or the use of lifting appliances or lifting gear of a vessel afloat are available from the Marine Department.

2. Interpretation

For the purpose of this Code, unless the context otherwise requires, the following definitions apply:

"automatic safe load indicator"（安全負荷自動顯示器）means a device intended to be fitted to a crane that automatically gives an audible and visible warning to the operator thereof that the crane is approaching its safe working load and that automatically gives a further audible and visible warning when the crane has exceeded its safe working load (Regulation 3 of the LALGR).

"competent examiner"（合資格檢驗員）, in relation to the carrying out of any test and examination required by the LALGR, means a person who is —

(a) appointed by the owner required by the LALGR to ensure that the test and examination is carried out;
(b) a registered professional engineer registered under the Engineers Registration Ordinance (Cap. 409) within a relevant discipline specified by the Commissioner for Labour; and
(c) by reason of his qualifications, training and experience, competent to carry out the test and examination.

(Regulation 3 of the LALGR)

"competent person"（合資格的人）, in relation to any duty required to be performed by him under the LALGR, means a person who is —

(a) appointed by the owner required by the LALGR to ensure that the duty is carried out by a competent person; and
(b) by reason of training and practical experience, competent to perform the duty.

(Regulation 3 of the LALGR)

"container"（貨櫃） means an article of transport equipment —

(a) of a permanent character and accordingly strong enough to be suitable for repeated use;
(b) specially designed to facilitate the transport of goods, by one or more modes of transport, without intermediate reloading;
(c) designed to be secured or readily handled or both and having corner fittings for these purposes; and

(d) of a size such that the area enclosed by the 4 outer bottom corners is either
  (i) at least 14 square metres; or
  (ii) at least 7 square metres if it is fitted with top corner fittings.

(Section 2 of the FIUO)

"container handling"（貨櫃處理作業）means the loading, unloading, handling, stacking, unstacking, storing, keeping or maintaining (including repairing) of containers (Section 2 of the FIUO). Also, container handling is an industrial undertaking under section 2 of the FIUO.

"corner fittings"（夾角接頭） means an arrangement of apertures and faces either at the top or at the bottom or both at the top and the bottom of a container for the purposes of handling, stacking and securing or any of these purposes (Section 2 of the FIUO).

"crane"（起重機）means any appliance equipped with mechanical means of raising and lowering a load and for transporting the load while suspended; and also all chains, ropes, swivels, or other tackle (down to and including the hook), used in the operation of a crane; but does not include—

(a) a hoist block running on a fixed rail or wire;
(b) a stacker or conveyor whereby a load is moved by means of a belt or platform; or
(c) an earth or mineral moving or excavating appliance not fitted with a grab.

(Regulation 3 of the LALGR)

"lifting appliance"（起重機械）means a crab, winch, teagle, pulley block or gin wheel used for raising or lowering, and a crane, sheerlegs, excavator, pile driver, pile extractor, dragline, aerial ropeway, aerial cableway transporter or overhead runway, and also any part of any such appliance (Regulation 3 of the LALGR).

"owner"（擁有人）, in relation to any lifting appliance or lifting gear, includes the lessee or hirer thereof, and any overseer, foreman, agent or person in charge or having the control or management of the lifting appliance or lifting gear (Regulation 3 of the LALGR).

"proprietor"（東主）in relation to any industrial undertaking or notifiable workplace includes the person for the time being having the management or control of the business carried on in such industrial undertaking or notifiable workplace and includes a body corporate and a firm and also the occupier of any industrial undertaking or notifiable workplace and the agent of such occupier (Section 2 of the FIUO).

"relevant certificate"（有關證明書）means a certificate issued to the person in respect of his attendance at the relevant safety training course which relates to an industrial undertaking of container handling (Section 6BA of the FIUO).

"relevant safety training course"（有關安全訓練課程）means a safety training course recognized by the Commissioner for Labour under section 6BA(2) of the FIUO for a person employed in an industrial undertaking of container handling and carrying out container handling (Section 6BA of the FIUO).

"responsible person"（負責人）, in relation to a fork-lift truck, means a person who is having the management or in charge of the truck but does not include a person who operates the truck (Section 2 of the LSMR).

3. Responsibility

3.1 Responsibility of proprietor

3.1.1 It is the general duty of the proprietor of an industrial undertaking of container handling to ensure, so far as is reasonably practicable, the health and safety at work of all personnel in the undertaking (Section 6A(1) of the FIUO). Therefore, apart from the responsibilities stated in the following paragraph, the proprietor has a further duty to keep the work methods for container handling under constant review and, in light of experience, development and improvement in scientific and safety technology, change or establishment in safety specification and occupational safety and health standard, redesign the work methods and adopt such necessary safety precautions in addition to the provisions contained in this Code so as to control and eliminate the hazards in associate with container handling. Any deviations from the method statement should be noted down and the corresponding safety control measures taken should also be recorded.

3.1.2 It is the overall responsibility of the proprietor, before any container handling with mechanical equipment is carried out:

(a) to provide and maintain a safe system of work for container handling (Section 6A(2)(a) of the FIUO);
(b) to provide suitable and safe plant and equipment for container handling and ensure that these plant and equipment are of suitable working capacity to perform container handling;
(c) to ensure any plant and equipment used is properly maintained in accordance with the instruction and maintenance manual and, if required, is tested, thoroughly examined, and certified to be in safe working order by a competent examiner;

(d) to take adequate steps to ensure that every place of work in the undertaking is made and kept safe for any person to work (Section 6A(2)(d) of the FIUO);

(e) to prepare method statements for safe operation of all container handling work. The method statements should contain written instructions on how works can be carried out safely, and precautions to be adopted when performing the activities. The method statements should also contain contingency plans in case of emergency;

(f) to provide all information, instruction, training and supervision as is necessary to ensure the health and safety at work of all persons in the undertaking (Section 6A(2)(c) of the FIUO);

(g) to ensure that every person employed at the industrial undertaking for carrying out container handling has attended a relevant safety training course, has been issued a relevant certificate and the certificate has not expired (Section 6BA(5) of the FIUO);

(h) to make arrangements to ensure the safety and health in connection with the use, handling, storage and transport of articles and substances (Section 6A(2)(b) of the FIUO), in particular to a dangerous substance. All persons handling these articles and substances should be informed of the hazards and the relevant safety precautions;

(i) to ensure safety helmets with chin straps, safety belts, protective clothing and other proper personal protective equipment are provided to and used by the personnel where appropriate; and

(j) to ensure that suitable and safe means of access to and egress from any part of the industrial undertaking of container handling are provided to all persons in the undertaking.

3.2 Responsibility of management personnel

3.2.1 The management personnel, who may include managers, engineers, safety personnel, contractors, supervisors and foremen, have the management or control either of the industrial undertaking of container handling, or container handling operation itself. They should take care of the safety and health at work of the workers under their areas of responsibilities.

3.2.2 To secure safety and health at work in container handling with mechanical equipment, the management personnel has the responsibility to ensure :

(a) the safe system of work has been properly conveyed to the workers and the system is effectively implemented and followed by the workers;
(b) the plant and equipment provided for container handling are properly used;
(c) proper instructions and information are provided to the workers before any container handling is carried out;
(d) the workers have the necessary knowledge, skills and techniques for carrying out the work safely and effectively;
(e) all workers under his charge have attended the relevant safety training course and possess the relevant valid certificates;
(f) all operators of cranes or lifting appliances are trained and competent to operate the appliances and they hold valid certificates (Regulation 15A of the LALGR);
(g) the personal protective equipment provided to the workers are properly and correctly used by the workers; and
(h) the workers are conversant with the contingency or emergency plan and the arrangements and procedures to be carried out in case of emergency so as to reduce consequences of any mishap.

3.3 Responsibility of workers

3.3.1 A worker in an industrial undertaking of container handling has the general duty of care for the safety and health of himself and of other persons and to co-operate with the proprietor including his management personnel in discharging his responsibilities in ensuring the safety and health of workers (Section 6B(1) of the FIUO).

3.3.2 The worker should:

(a) attend training and briefing sessions arranged by the proprietor; and understand the hazards in container handling and the associated safety precautions;
(b) hold a valid certificate in respect of the relevant safety training course (Section 6BA(7)(a) of the FIUO);
(c) follow all safety procedures, instructions and arrangements for emergency as specified in the safe system of work;
(d) make proper use of all plant and equipment and never use these plant or equipment beyond their capacity or designated purpose;
(e) make proper use of all safety devices and personal protective equipment provided to him, and never interfere with or misuse any of these devices and equipment; and
(f) report to his supervisor for any damage, malfunctioning or suspected defect of plant, equipment, safety device or protective equipment.

4. Managing safety and health at work

4.1 General

4.1.1 An industrial undertaking involving container handling is a 'designated undertaking' as defined in the Factories and Industrial Undertakings (Safety Management) Regulation. Those falling into the purview of the Regulation are required to have safety management systems (Section 8 of the SMR). Reference should be made to the said Regulation for details.

4.1.2 The safety management system should include a safe system of work to ensure the safety and health of employees engaged in container handling with mechanical equipment. The system of work should be prepared and endorsed by the proprietor with the advice of safety and health personnel. It should be distributed to all personnel involved in container handling. The following is an introduction on how to develop a safety management system.

4.2 Planning

4.2.1 Planning is the process of determining in advance what should be accomplished. The proprietor of an industrial undertaking of container handling is required:

(a) to identify in advance what safety and health objectives should be accomplished by a safety management system;
(b) to prioritise the safety and health objectives and devise the ways and means to achieve them; and
(c) to estimate the financial and other resource implications arising from the accomplishment of these safety and health objectives.

4.2.2 To achieve the identified safety and health objectives, the proprietor should:

(a) conduct an initial status analysis to take stock of the existing arrangements for managing safety and health;
(b) carry out risk assessments to decide on priorities and objectives for hazard elimination and risk control;
(c) establish performance standards for monitoring performance; and
(d) conduct periodic status analyses for the safety management system in operation.

4.3 Developing

4.3.1 Developing is the process of determining how the safety and health objectives should be realised. The proprietor of an industrial undertaking of container handling is required to define, document and endorse a safety policy to spell out the safety and health objectives identified at the planning stage, and ensure that the policy includes a commitment to:

(a) achieve a high standard of occupational safety and health in compliance with legal requirements as the minimum, and in conformity with the best trade practices for continuous improvement;
(b) provide adequate resources to implement the policy;
(c) make occupational safety and health one of the primary responsibilities of line management, from the most senior executive to the first-line supervisor;
(d) ensure its understanding, implementation and maintenance at all levels in the organisation;
(e) ensure employee involvement and consultation to gain commitment to the policy and its implementation;
(f) ensure the carrying out of periodic review of the policy and the management system; and
(g) ensure that employees at all levels receive appropriate training and are competent to carry out their duties and responsibilities.

4.3.2 To carry out the safety policy, the proprietor should prepare an effective safety plan which sets out in specific terms:

(a) a clear direction and a series of actions for the industrial undertaking of container handling to follow to achieve the objectives of the safety policy; and
(b) clear guidance for managers and workers to work together to accomplish the objectives of the safety policy.

4.3.3 The safety plan should be established by the industrial undertaking's senior management, with the advice and assistance of safety and health personnel. Generally speaking, a safety plan should spell out the safety policy, along with the objectives and standards to be achieved, the statutory and, where appropriate, contractual obligations to be fulfilled, the risks to be tackled and the safety procedures and measures to be adopted. To be effective, the plan should set out:

(a) a system of allocation of responsibilities for safety and health;
(b) the arrangements for the responsibilities to be discharged;
(c) the arrangements for carrying out each and every element of the safety management system applicable to the industrial undertaking; and
(d) the arrangements for monitoring the success of the plan.

4.4 Organising

4.4.1 Organising is the process of prescribing formal relationships between people and resources in the organisation to accomplish objectives. The proprietor of an industrial undertaking of container handling is required:

(a) to ensure that occupational safety and health is fully integrated across the industrial undertaking of container handling and into all its activities, whatever the size or nature of its work;
(b) to set aside an adequate budget commensurate with the industrial undertaking's size and nature for implementing the policy and for properly establishing and maintaining the elements of the safety management system;
(c) to establish an organisational structure of the industrial undertaking properly so that the safety policy and plan can be put into practice effectively;
(d) to allocate safety and health responsibilities;
(e) to make arrangements for the formation and operation of a safety committee, a safety department/unit/group and the appointment of a safety officer/advisor/director, etc.;
(f) to ensure all employees have the necessary authorisation to carry out their safety and health responsibilities;
(g) to allocate to a person at the top management level a special responsibility for ensuring that the safety management system is properly implemented in all locations and spheres of operation within the industrial undertaking;
(h) to make arrangements for the effective dissemination of occupational safety and health information;
(i) to make effective arrangements for the provision of specialist advice and services on occupational safety and health;
(j) to make effective arrangements for employees at all levels to take part in safety and health activities; and
(k) to identify the competencies required for employees at all levels and arrange the necessary training.

4.5 Implementing

4.5.1 Implementing is the process of carrying out or putting into practice the plans to achieve the desired objectives, with appropriate and adequate control to ensure proper performance in accordance with the plans. The proprietor of an industrial undertaking of container handling is required:

(a) to determine and execute operation plans to control the risks identified and to meet the legal requirements as well as other requirements regarding safety management;

(b) to provide adequate and effective supervision to ensure that the policies and plans are effectively implemented;

(c) to prepare and maintain sufficient documentation to record and monitor the progress of the implementation of policies and plans; and

(d) to have emergency response plans in place for foreseeable emergencies and maintain a high level of emergency preparedness.

4.6 Measuring

4.6.1 Measuring is the process of checking performance against agreed standards to find out when and where improvement is needed, and a means of monitoring the extent to which policies and objectives are being met. The proprietor of an industrial undertaking of container handling is required:

(a) to carry out proactive monitoring through, for example, surveillance and inspections covering both hardware (i.e. premises, plant and substances) and software (i.e. people, procedures and systems of work), for the purpose of checking (i) compliance with legal requirements and (ii) whether the safety and health arrangements in place are effective in achieving the objectives of the safety policy;

(b) to closely monitor the safety and health performance of individuals, particularly managers and supervisors, to see whether they fulfil their safety and health responsibilities;

(c) to carry out reactive monitoring to gauge the effectiveness of risk control systems through, for example, the monitoring of accidents/incidents, near misses, ill-health, and other safety and health performance indicators;

(d) to determine the immediate causes of sub-standard performance and identify the underlying causes and the implications for the design and operation of the safety management system;

(e) to rectify any sub-standard situations identified in the monitoring processes; and

(f) to continuously feedback information collected from the monitoring processes to the developing and implementing stages to improve the safety management system in operation.

4.7 Auditing or reviewing

4.7.1 Auditing or reviewing is carried out to assess performance in addition to routine monitoring of occupational safety and health performance. The proprietor of an industrial undertaking of container handling is required:

(a) to appoint a safety auditor or safety review officer to periodically conduct safety audits or safety reviews respectively;

(b) to provide assistance, facilities, information, etc. to the safety auditor or safety review officer for purposes of safety audit or safety review respectively;

(c) to take necessary actions on the safety audit or safety review report submitted, including drawing up a plan for improvements to the safety management system and implementing the plan; and

(d) to continuously feedback information from the safety audit or review to the planning, developing, organising and implementing stages to improve the safety management system in operation.

5. Safe operation

5.1 Layout of container yard

5.1.1 Except at the waterside, the perimeter of an industrial undertaking of container handling using mechanical equipment should be fenced. The purpose of the fencing is to ensure that all people who want to enter the industrial undertaking are directed to the appropriate entry point, thereby facilitating control of people, particularly those who may have no appreciation of the hazards associated with container handling.

5.1.2 The different areas of container handling such as container storage areas, work areas, passageways and pedestrian walkways in a container yard should be clearly designated by floor lines or traffic signs.

5.2 Traffic and pedestrian control

5.2.1 Only authorised vehicles or persons should be allowed to enter into the container yards.

5.2.2 Flow pattern of mechanical equipment and vehicles handling containers should be carefully planned in order to minimise any conflict and potential hazards. Proper traffic control measures for mechanical equipment, vehicles and people should be established to minimise the possibility of accidents. Notices requiring pedestrians to use the designated walkways should be prominently displayed in suitable locations.

5.2.3 The travelling speed of mechanical equipment and vehicles should be specified and restricted to ensure traffic safety. Safe speed limit signs should be prominently displayed so as to ensure the operators are aware of them.

5.2.4 Yard-based vehicles including mechanical equipment should be equipped with suitable yellow flashing warning light which should be turned on whenever they are utilised in a container yard.

5.3 Mechanical equipment

5.3.1 Mechanical equipment frequently used in container yards includes fork-lift trucks, front loaders, reach stackers, gantry cranes, tower cranes, mobile cranes and similar container handling equipment.

5.3.2 To ensure the safety in using mechanical equipment, the equipment should be frequently inspected, regularly tested, examined and properly maintained so as to keep it in good working order. Any lifting appliances used should be tested and thoroughly examined by a competent examiner in accordance with the LALGR (Regulation 5 of the LALGR).

5.3.3 Mechanical equipment should only be operated by operators who are competent and authorised to do so, and who have received proper training in operation of the equipment. For operators of cranes, they should hold valid certificates as required under the LALGR (Regulation 15A (1)(b) of the LALGR). For operators of fork-lift trucks, they should hold valid certificates as required under the LSMR (Section 3(b) of the LSMR).

5.3.4 Mechanical equipment should not be used to handle a load greater than its safe working capacity.

5.3.5 Proper measures should be implemented to prevent unauthorised personnel from operating mechanical equipment.

5.3.6 Before operating mechanical equipment, operators should make inspection with reference to a checklist to ensure that the equipment is in safe working condition.

5.3.7 Operators should observe special operating conditions and restrictions in accordance with those stipulated in the operation manual of mechanical equipment.

5.3.8 When operating mobile mechanical equipment, special care should be taken:

(a) if the ground is slippery;
(b) to avoid any loose dunnage or waste;
(c) when passing by or through walkways used by personnel;
(d) when rounding a corner where vision is restricted; or
(e) in any place where the overhead clearance is limited.

5.3.9 If the visibility or range of sight of the operator is impaired by adverse weather conditions, strict supervision of the mechanical equipment operation should be exercised. Mechanical equipment operations render unsafe should be temporarily suspended.

5.3.10 Operators should immediately stop operating any mechanical equipment and report to supervisors if any major malfunction is found or any warning device is out of order.

5.4 Fork-lift truck

5.4.1 The responsible person of a fork-lift truck should ensure the provision to each of his employees who is instructed (whether directly or indirectly) by him to operate a fork-lift truck of a training course conducted for the type of fork-lift truck to which that truck belongs (Section 4(1) of the LSMR).

5.4.2 For safe operation of a fork-lift truck in handling containers, the following safety precautions should be observed:

(a) only containers provided with fork-lift pockets should be lifted by a fork-lift truck and the forks should be fully inserted into the pockets. Under no circumstances should containers, with or without fork-lift pockets, be lifted by forks under the base;
(b) the truck should be fitted with an overhead guard of sufficient strength to protect the operator from the detachment of loads;
(c) the forks should be so designed as to prevent accidental detachment or lateral displacement when in use;
(d) any trapping points between fork arm mechanisms and fixed parts of the truck should be suitably guarded;
(e) seat belt should be fastened all the time during operation;
(f) tyre pressure should be checked daily, if appropriate;
(g) no load should be carried or raised with the mast tilting forward;
(h) when travelling, the fork arms should be lowered to the lowest practicable position;
(i) when the load obscures the operator's forward vision, the truck should be driven in reverse;
(j) a safety device to give out visible and audible warning signals when the truck is driven in reverse direction should be provided;
(k) no person should be allowed to stand or pass under the elevated forks;

(l) only one container should be handled by the truck at a time unless otherwise recommended by the manufacturer, and no container should be handled by more than one fork-lift truck at any one time;

(m) fork arms should be fully lowered when the truck is parked; and

(n) when it is necessary for the operator to leave the truck unattended, the engine should be turned off with the brakes applied, the ignition and other keys removed, the forks tilted forwards flush with the floor and clear of the passageway; and, if the vehicle is on an incline, the wheels should be blocked.

5.5 Front loader and reach stacker

5.5.1 Lift trucks with special container handling attachments for handling containers are widely used in Hong Kong. Front loaders and reach stackers are the most common of these lift trucks.

5.5.2 For safe operation of a front loader or a reach stacker, the following safety precautions should be observed:

(a) seat belt should be fastened all the time during operation;
(b) tyre pressure should be checked daily;
(c) where the operator does not have a clear and unrestricted view to ensure safe operation of the equipment, a signaller should be arranged to give him signals;
(d) front loaders or reach stackers should be equipped with suitable yellow flashing warning light. Safety devices to give out visible and audible warning signals when it is driven in reverse direction should also be provided;
(e) front loaders or reach stackers should be installed with suitable and properly maintained reversing video devices, to assist the operator in viewing the situation at the rear of the plant when it is about to reverse and reversing. The reversing video devices should: (i) be installed at proper positions to cover all blind spots caused by the rear body of the lift trucks; (ii) automatically and instantly convey clear images to the operator; and (iii) effectively enable the operator to view the overall situation at the rear and its vicinity;

(f) only container handling attachments recommended by the manufacturer should be installed to the equipment;

(g) for transporting containers with a front loader, the load should be carried with the main mast tilted backwards, the load carried close to the main mast and as low as possible to obtain the greatest stability, or in a manner as recommended by the manufacturer;

(h) for transporting containers with a reach stacker, the load should be carried as close as possible to the stacker, i.e. with the boom retracted as far back as possible; and

(i) when it is necessary for an operator to leave the front loader or the reach stacker unattended, it should be parked on level ground with the parking brake applied, the transmission gear placed to neutral, the ignition key removed, and the driving cabinet locked. For front loader, the lifting attachment should be lowered to the ground. For reach stacker, the boom should be lowered and retreated as far back as possible.

5.6 Cranes and other mechanical equipment

5.6.1 Cranes, except those with a maximum safe working load less than 1 tonne or operate with a grab or any electro-magnetic means, should be fitted with automatic safe load indicators that function properly (Regulation 7B of the LALGR).

5.6.2 For safe operation of a rail-mounted gantry crane or a rubber-tyred gantry crane, the following safety precautions should be observed:

(a) suitable spreader should be installed to the gantry crane for handling of containers;
(b) tyre pressure of the rubber-tyred gantry crane should be checked daily;
(c) a container should be lifted off from the chassis of a lorry only when the locks on the chassis are ensured to be disengaged;
(d) the container should be raised to a height well above the top of the adjacent stacks of containers before the carriage of a gantry crane or the crane itself starts to travel;
(e) a safety device to give out visible and audible warning signals when the gantry crane is travelling should be provided;
(f) wheel guards should be in position and properly maintained;
(g) every control lever and device for controlling the operation of any part of the equipment should be clearly marked to indicate its purpose and the mode of operation (Regulation 16(2)(b) of the LALGR);
(h) the safe working load of the equipment should be clearly marked (Regulation 11(1) of the LALGR);
(i) care should be taken to avoid jerking actions and abrupt operation of the equipment. Brakes should not be applied suddenly;

(j) adequate supervision should be exercised to ensure that the operators follow safe operating procedures of the equipment; and

(k) when it is necessary for an operator to leave the gantry crane unattended, it should be parked at its parking bay, with its power turned off and the driver cabinet locked. The spreader should be retreated and raised to its topmost position.

5.6.3 For safe operation of tower cranes and mobile cranes, reference should be made to the Code of Practice for Safe Use of Mobile Cranes and Code of Practice for Safe Use of Tower Cranes issued by the Labour Department.

5.7 Handling of containers

5.7.1 Before a container is being handled, it is important that the container is safe to be handled, e.g. the locks for securing the container to the trailer has been completely unlocked. The actual weight of all loaded containers should be ascertained before handling. Containers exceeding the safe working load of the mechanical equipment should not be handled.

5.7.2 Suitable equipment and lifting method for the load should be chosen to ensure the safe handling of containers. For suitable methods of handling loaded or empty containers of different types and sizes of container, reference should be made to BS ISO 3874:2017 Series 1 freight containers - Handling and securing.

5.7.3 A container should normally be lifted with suitable mechanical equipment which applies a vertical force to the four top corner fittings. The method is such as utilising the top lift spreader of a gantry crane, or the top lift attachment of a front loader/reach stacker. Hoisting a container at four corners is especially important for handling loaded containers of nominal length of 6 metres (20 feet) or more.

5.7.4 In some container yards, lifting of containers with four-legged sling hooked to the top corner fittings is adopted. For this method of lifting, the hooks used should always be placed in an inward to outward direction.

5.7.5 Every lifting gear such as sling or hook used should be of good construction, sound material, and adequate strength, and is free from patent defect (Regulation 18(1)(a) of the LALGR). It should be tested and thoroughly examined by a competent examiner in the manner as required by the LALGR (Regulation 18(1)(d) of the LALGR), and should not be used to handle any load exceeding its safe working load (Regulation 18(1)(c) of the LALGR). It should be noted that when a multi-legged sling is used with the sling legs at an angle, the load in the legs increases as the angle between the legs increases. In any circumstance, the angle between any two legs should not exceed 120 degrees. Reference should be made to relevant international or national standards, such as British Standard BS EN 13414-1:2003+A2:2008, Steel wire rope slings - Safety - Part 1: Slings for general lifting service, which describes methods for rating of multi-leg slings.

5.7.6 Every lifting gear should be inspected by a competent person before use on each occasion (Regulation 18(1)(ea) of the LALGR). Defective gear should be discarded immediately. Cutting the tip of a hook to speed up hooking/dehooking process should not be allowed.

5.7.7 Lifting containers with fork-lift trucks or front loaders with side lift attachments is allowed only if the containers and the equipment are designed for such purpose.

5.8 Landing and supporting of containers

5.8.1 To avoid any possibility of damage to the containers, containers should be unloaded carefully. Containers should not be dragged or pushed over any surface.

5.8.2 A firm, flat, well-drained ground surface should be provided, clear of obstructions and projections, for supporting the containers. Containers placed on the ground should be directly supported by their four bottom corner fittings only.

5.8.3 Containers loaded onto vehicles should be supported by their corner fittings only.

5.9 Ground condition of container yard

5.9.1 Containers should only be stacked on a firm and level ground (Regulation 10A(c) of the CCHR). In particular no ground should be used for container stacking unless:

(a) it is suitable for the purpose as regards its location, geological, drainage and ground water conditions;
(b) it is free from any soft or weak spots;
(c) it is provided with sufficient drainage system to ensure that it remains firm and stable at all times;
(d) where it is formed by filling, it has been adequately compacted and consolidated to avoid any loose and soft spots;
(e) it has sufficient load bearing capacity for the purpose and that the imposed load is uniformly distributed; and
(f) it has been assessed and certified safe and sufficiently firm and stable by a qualified geotechnical engineer, if necessary.

5.9.2 The container yard should be properly maintained. Any unsafe or unusual ground conditions should be made good immediately.

5.10 Stacking of containers on ground

5.10.1 Safe procedure for container stacking, unstacking and handling should be exercised in the container yard. Containers should always be properly stacked and where necessary secured with stacking cones. When stacking containers, adequate contact between the top and bottom corner fittings should be ensured.

5.10.2 The stacking height of containers should be as low as possible in accordance with determinant factors of ground condition, plant and machinery, competency of workers and the need of business. Stacks of empty containers should be clustered at all times; whenever there is an isolated stack, it should be re-shaped to even stacks. If containers are to be stacked in cluster, the ends of rows of stacked containers should be stepped to improve visibility for container handling equipment moving onto avenue from lane.

5.11 Special precautions for high wind conditions

5.11.1 Special consideration should be given to the high wind conditions and the wind-induced funnel effect which may lead to sliding or toppling of containers. Larger and empty containers are more likely to be affected by wind, and the critical wind pressure is lower for multiple rows than for single row.

5.11.2 The following factors should be taken into consideration in order to reduce the wind effect on containers:

(a) limiting the stacking height;
(b) block stowage;
(c) stacking on the ground with sound condition;
(d) block stowage with loaded containers in the uppermost tier; and
(e) using stacking fittings or lashings, in particular the exposed rows.

Furthermore, containers should be stacked so that the longitudinal axis is in line with the predominant wind direction. In the case of a storm or typhoon warning, the containers at the corners of the block should be secured.

5.11.3 No person should be permitted to enter or remain in a container stacking area if container movement due to wind is reasonably anticipated.

5.11.4 Containers should be lashed in strong winds and container lifting operations should be suspended in adverse weather conditions.

5.11.5 The selective closing of certain stack areas in stages must be co-ordinated to prevent mechanical equipment working in the same areas where men are applying lashings. Similar precautions must be taken when the stacks are being unlashed afterwards.

5.12 Overhead electric lines and cables

5.12.1 Where mechanical equipment in a container yard has a chance of coming close to any live overhead electric lines or cables, the proprietor should liaise with owners of the overhead lines, e.g. the power companies, to work out the exact safety requirements and in devising the safe work plans. Reference should be made to the Electricity Supply Lines (Protection) Regulation (Cap. 406) and the Code of Practice on Working near Electricity Supply Lines issued by the Electrical and Mechanical Services Department.

5.12.2 All overhead lines or other electric apparatus should be treated as live unless declared dead and safe by the relevant authority.

5.13 Personal protective equipment

5.13.1 All workers inside the container yard should wear suitable safety helmets with chin straps, high visibility or reflective jackets and safety shoes when working in the container yard.

5.13.2 Other suitable personal protective equipment should be provided to workers in case necessary. Such equipment includes:

(a) eye protectors required under the Factories and Industrial Undertakings (Protection of Eyes) Regulations;
(b) ear protectors required under the Factories and Industrial Undertakings (Noise at Work) Regulation;
(c) protective clothing and equipment required under the Factories and Industrial Undertakings (Dangerous Substances) Regulations;
(d) respirators or breathing apparatus for the protection of workers against all fumes, dust and other impurities that may be injurious to health; and
(e) safety harness of suitable design for the protection of workers against the hazard of falling from height.

5.13.3 Training on the proper usage of personal protective equipment should be provided to workers who are required to use the equipment. Supervision should also be made on the proper usage of this equipment.

5.13.4 Personal protective equipment provided should be properly maintained to ensure that they function properly. They should be replaced, periodically in accordance with the manufacturers' recommendation, or whenever they are found defective.

List of references

1. 貨櫃裝卸及運輸安全指南 - 職業安全健康局

2. BS EN 13414-1:2003+A2:2008 'Steel wire rope slings - Safety - Part 1: Slings for general lifting service' - European Committee for Standardization

3. BS EN 16842-1:2018 'Powered industrial trucks – Visibility – Test methods and verification – Part 1: General requirements' - European Committee for Standardization

4. BS EN 16842-7:2018 'Powered industrial trucks – Visibility – Test methods and verification – Part 7: Variable-reach and masted container trucks handling freight containers of 6m (20 ft) length and longer' - European Committee for Standardization

5. BS ISO 3874:2017 'Series 1 freight containers - Handling and securing' - International Organization for Standardization

6. Code of Practice for Safe Use of Mobile Cranes – Occupational Safety and Health Branch, Labour Department

7. Code of Practice for Safe Use of Tower Cranes – Occupational Safety and Health Branch, Labour Department

8. Code of Practice on Safety Management - Occupational Safety and Health Branch, Labour Department

9. Code of Practice on Working near Electricity Supply Lines – Electrical and Mechanical Services Department

10. Container terminals safe work practices – Health and Safety Executive, UK

11. Guidance Notes on Safety at Work for Demounting, Mounting and Inflation of Tyres of Heavy Mechanical Vehicles – Occupational Safety and Health Branch, Labour Department

12. Guidance Notes on the Selection, Use and Maintenance of Safety Helmets – Occupational Safety and Health Branch, Labour Department

13. Safety and health in ports (Revised 2016) - International Labour Office

Enquiries and Complaints

Enquiries

If you wish to enquire about this Code of Practice or seek advice on Occupational Safety and Health (OSH) matters, please contact the Occupational Safety and Health Branch of the Labour Department by the following means:

Telephone : 2559 2297
(auto-recording service available outside office hours)

Fax : 2915 1410

E-mail : enquiry@labour.gov.hk

Information on the services offered by the Labour Department and on major labour legislation is also available on our website at www.labour.gov.hk.

For details on the services offered by the Occupational Safety and Health Council, please call 2739 9000.

Complaints

If you have any complaint about unsafe operations and environments at workplaces, please call the Labour Department's OSH complaint hotline at 2542 2172 or fill out and submit an online OSH complaint form on our website. All complaints will be treated in the strictest confidence.

Online OSH Complaint Form

Labour Department

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