# GENERAL NOTICE

**NOTICE 541 OF 2006**

South African Maritime **Safety** Authority

## Draft Maritime Occupational Safety Amendment Regulations: For comment

The South **African** Maritime Safety Authority (SAMSA) publishes for public comment the proposed measures set out in the accompanying Schedule. Written submissions should reach SAMSA on **or before 2 June 2006 (Note:** late submission may be disregarded). These should be addressed to the Chief Executive Officer (for the attention of Mr S Mbatha) and may be either:

- hand-delivered to SAMSA, 161 Lynnwood Road, Brooklyn 0181, Pretoria; **or**
- mailed to **SAMSA,** PO Box 13186 Hatfield 0028; or
- faxed to (012) 366 2601; or
- emailed to smbatha@samsa.org.za.

Telephonic enquiries should be directed to Mr **S** Mbatha at (012) 366 2629 **or** Captain **N** Campbell at (041) **585** 0051/3. Attention is invited to the explanatory note appearing at the end of **Part 1** of the Schedule.

## Schedule

*Contents*

# Part 1 Draft Maritime Occupational Safety Amendment Regulations, 2006

## 1 Title and commencement

(1) These regulations are called the *Maritime Occupational Safety Amendment Regulations, 2006.*

*(2)* These regulations commence on the day they are published in the Gazette.

## 2 Definitions

In these regulations, **"the Regulations"** means the *Maritime Occupational Safety Regulations, 1994,* published by Government Notice No. R. 1904 of 11 November 1994, as amended by Government Notices Nos. R 1712 of 19 December 1997 and R. 545 of 30 April 2004.

## 3 Amendment of regulation 28 of Regulations

Regulation **28 of** the Regulations is amended by the substitution for the definition of "Code" of the following definition:

"'**Code**' means the *Code of Safe Working Practice for Ships Working Cargo in South African Ports* published by the Authority;".

## 4 Amendment of regulation 30 of Regulations

Regulation **30** of the Regulations is amended by the substitution for subregulation **(4)** of the following subregulation:

**"(4)** Every employer of a stevedore shall ensure—

(a) compliance with the provisions of the Code; and

(b) without limiting paragraph (a), that each stevedore—

(i) holds a valid medical certificate;

(ii) holds documentary evidence of having successfully completed approved safety induction training; and

(iii) has the appropriate personal protective equipment.".

## 5 Amendment of regulation 31 of Regulations

Regulation 31 of the Regulations is amended—

(a) by the substitution for paragraphs (a) and (b) of subregulation (2) of the following paragraphs:

"(a) the employee ceases to be employed by the employer; or

(b) the employer terminates the appointment.";

(b) by the substitution for paragraph (a) of subregulation (3) of the following paragraph:

"(a) ensure that the employees comply with the provisions of these regulations and the related provisions of the Code;";

(c) by the substitution for paragraphs (e) and (f) of subregulation (3) of the following paragraphs:

"(e) make recommendations to the employer or the safety committee concerned about any investigation or inspection or the prevention of any accident or the removal of any hazard or potential hazard, and about any deficiency in occupational safety regarding—

(i) the requirements of the Act and these regulations that affect the employees; and

(ii) the related provisions of the Code;

(f) monitor the effectiveness of applicable safety measures (for example, by carrying out the inspection contemplated in regulation 30(1)(b)) and immediately stop, or cause to be stopped, the performance of any work which in his opinion may cause an accident or serious injury and inform the employer and the owner or master forthwith thereof;"; and

(d) by the substitution for paragraphs (h) and (i) of subregulation (3) of the following paragraphs:

"(h) cany out any other investigation relating to occupational safety which an employer or a safety committee may deem necessary, if so requested in writing by the employer or the safety committee, as the case may be, and thereafter submit a report in respect of such investigation; and

(i) for the purposes of regulation 32, submit to the employer a brief report of each investigation, complaint or inspection contemplated in this regulation.".

## 6 Insertion of regulations 31A and 31B in Regulations

The following regulations are inserted in the Regulations after regulation 31:

### "31A Appointment, termination of appointment, and functions of safety appointees

(1) *An* employer of stevedores shall in writing appoint in respect of each ship working cargo at least one employee as safety appointee for the ship.

**(2)** The appointment of the safety appointee shall terminate on the date—

(a) the person ceases to be employed by the employer; or

(b) the employer terminates the appointment.

**(3)** The safety appointee shall ensure that—

(a) before each shift—

(i) every part of the vessel where cargo is to be worked is inspected in respect of occupational safety affecting stevedores;

(ii) stevedores are made aware of any hazards associated with the cargo; and

(iii) stevedores use the appropriate personal protective equipment;

**(b)** any unsafe equipment or workplace is reported to the safety officer and that appropriate corrective action is taken;

(c) workplaces are well-lit and well-ventilated;

(d) anyone not involved in cargo handling is kept clear of areas where cargo is being worked; and

(e) safety equipment is used only for its intended purpose and is not misused or interfered with.

### 31B Appointment, termination of appointment, and functions of safety committee

(1) *An* employer of stevedores shall in writing establish a safety committee consisting of a chairman appointed by the employer, the safety officer and every safety appointee.

**(2)** The chairman may co-opt as a member of the committee any other person whose knowledge or experience can contribute to the business of the committee.

(3) The employer may in writing dissolve, or reconstitute, the committee at any time.

(4) The committee is to meet at least once every three months: Provided that the Authority may by notice in writing direct that a meeting be held at any place and time determined by it and specified in the notice.

(5) Subject to any directions by the employer, the committee shall determine its own procedure.

(6) The committee shall—

(a) consider every recommendation of the safety officer made in terms of regulation 31(3)(e) and any recommendation of a safety appointee;

(b) submit such recommendations to the employer together with its own recommendations;

(c) inquire into any occupational safety matter that affects the employer or its employees and take the steps it may deem necessary to remove any hazard or potential hazard; and

(d) monitor the employer's procedures and arrangements for ensuring that—

(i) an accident involving a stevedore is reported in terms of the Act and investigated by the safety officer and that appropriate corrective action is taken;

(ii) every workplace is safe so far as reasonably practicable; and

(iii) any equipment used by stevedores to work cargo meets the applicable statutory requirements.

(7) The employer shall keep proper minutes of every meeting of the committee for a period of at least three years and shall make the minutes available to the Authority upon demand.".

**7 Amendment of regulation 40 of Regulations**

Regulation 40 of the Regulations is amended by substitution for subregulation (1) of the following subregulation:

"(1) Every employer commits an offence who contravenes regulation 3(1) or (2), 4, 5, 9, 10(1), 11(1), 13, 14, 15, 16(1), 17, 18, 19, 20, 21, 22, 23, 24, 25(1), 26, 27, 30(1), (2) or (4), 31(1), 31A(1), 31B(1) or (7), 32, 35(2), 36(1), 39 or 39B.".

# Explanatory note

***(This note is not part of the regulations)***

1 The regulations amend the ***Maritime Occupational Safety Regulations, 2994,*** published by Government Notice No. R. 1904 of 11 November 1994.

2 The amendments are consequential upon the making of the Code of Safe Working Practice for Ships Working Cargo in South African Ports, 2006 ("the Code"), which overhauls the safety standards applicable to personnel involved in cargo handling operations on ships in South African ports.

3 The amendments introduce the following changes:

- Stevedores must be medically fit, and hold a valid medical certificate, for the type of work to be undertaken. The Code prescribes medical fitness standards for the different job categories. This recognises that the arduous nature of stevedoring work demands appropriate levels of fitness, eyesight and hearing for occupational safety.
- Stevedores must hold documentary evidence of having successfully completed approved safety training. Research has shown that most accidents happen because of a failure to appreciate hazards in the workplace.
- ***An*** employer of stevedores must appoint a safety appointee for each vessel working cargo. This recognises the fact that the safety officer is unlikely to be able to visit every vessel working cargo. The safety appointee will therefore function **as** the eyes and ears of the safety officer and will be required to inspect the workplace before shifts commence working cargo and to ensure that safe practices are maintained while cargo is being worked.
- ***An*** employer of stevedores must establish a safety committee. In practice, this committee is likely to be combined with the committee required by the ***Occupational Health and Safety Act, 2993. An*** important function of the committee is to ensure that accidents and unsafe working practices are reported and investigated and that appropriate corrective action is taken.

4 The amendments largely reflect requirements already in place for other sectors of the maritime industry, notably the fishing sector, where they have contributed to a reduction in death and injury rates.

5 The Code **is** a compilation of safety standards applicable to all persons involved in cargo handling operations on ships in South African ports. It is based on standards embodied in the Code of Practice on Safety and Health in Ports (ILO Geneva ***2003)*** and on lessons learnt from investigating casualties to stevedores in South African ports.

6 The Code must be read with the *Maritime Occupational Safety Regulations, 1994,* the *Merchant Shipping Act, 1951* , and the *Occupational Health and Safety Act, 1993.*

7 The Code replaces the South African Ports Cargo Handling Code of Practice (1994) only for operations on board ships.

# Part 2 Draft Code of Safe Working Practice for Ships Working Cargo in South African Ports

## *Contents*

# 1 Introduction

**1.1** The Code of Safe Working Practice for Ships Working Cargo in South African Ports (hereinafter referred to as the "Code") is a compilation of safety standards applicable to all persons involved in cargo handling operations aboard ships in South African ports. The Code has been compiled in association with stevedoring companies, trade unions, National Ports Authority, South African Port Operations, Departments **of** Labour and Transport, and the Education Training Authority, the medical profession and the South African Maritime Safety Authority.

The Code is based on standards embodied in the Code **of** Practice on Safety and Health in Ports (ILO Geneva 2003) and on lessons learnt after investigating casualties to stevedores in South African ports.

The Code aims at promoting a safe working environment on board ships and to introduce a safety culture in management and labour involved in cargo handling operations.

For the purposes of this Code, and the requirements to comply with the provisions contained in it, the Code must be read with the Maritime Occupational Safety Regulations, **1994,** the Merchant Shipping **Act, 1951** and the Occupational Health and Safety Act, **1993.**

The Code must be used by management to audit their work processes and ensure that they are providing a safe working environment and have the necessary mechanisms in place to confirm this. When preparing safety courses for stevedores, in-house and external trainers must use the Code **in** addition to any in-house requirements. Stevedore labour should be made aware of the Code to heighten their level of safety awareness.

**1.2** The Code supersedes the South African Ports Cargo Handling Code of Practice **(1994)** only for operations on board ships.

# 2 Definitions

**2.1** **"**Authorized person**"** means a person authorized by the employer, the master of the ship or a responsible person to undertake a specific task or tasks and possessing the necessary technical knowledge and experience.

**2.2** **"**Competent person**"** means a person possessing the knowledge and experience required for the performance of a specific duty or duties and acceptable as such to the competent authority.

**2.3** **"**Competent authority**"** means the South African Maritime Safety Authority.

**2.4** **"**Container**"** means a container, as defined by the IMO in the International Convention for Safe Containers (ICSC). Containers are rigid, rectangular, reusable cargo units intended for the intermodal road, rail or sea transport of packaged or bulk cargo by one or more means of

transport without intermediate reloading. Containers can be general cargo containers, such as general purpose containers, open top, platform or platform-based containers, specific purpose containers such as tank containers, thermal containers or dry bulk containers, or named cargo-type containers. Most containers now in use are ISO series 1 freight containers. Requirements for their specification and testing are contained in the ISO 1496 Series 1 freight containers, specification and testing family of standards.

**2.5** **"Employer of stevedores"** includes labour brokers and stevedore companies. Labour brokers are responsible to provide labour that—

2.5.1 is in possession of a valid medical certificate;
2.5.2 is in possession of documentation indicating completion *of* an approved safety induction course; and
2.5.3 has personnel protective safety equipment, as specified in regulation 4(1) of the Maritime Occupational Safety Regulations 1994.

2.6 **"Explosion-protected"** refers to electrical equipment that is constructed and installed in such a way that it is not liable to ignite a flammable or explosive atmosphere, should it occur. Such equipment should be certificated as complying with an appropriate standard acceptable to the competent authority.

2.7 **"Fatigue"** is the result of physical effort and also of working times that are contrary to the body's natural inclinations, e.g. at night or due to shift systems. Fatigue can be insidious; it can develop slowly and can not be apparent to the stevedore or supervisor. Fatigue leads to a loss of concentration, where stevedores fail to ensure their own safety and that of others, through errors of judgement.

2.8 **"Factor of safety"** is the numerical value obtained by dividing the minimum breaking load or tension of an item of equipment by its certificated safe working load.

2.9 **"Hatch cover" is** any part of a ship's equipment designed to close an opening in any part of a ship, through which cargo is worked.

2.10 **"Heavy lift derrick"** is a ship's derrick that is specially rigged for use from time to time in order to lift loads greater than those that can be lifted by the ship's light or general purpose lifting appliances.

2.11 **"In-service"** means a lifting appliance when handling loads up to its safe working loads in permissible wind speeds and other conditions specified by the manufacturer.

2.12 **"Inspection"** refers to a visual inspection by a responsible person carried out in order to determine whether, inasmuch as can be ascertained in such manner, the equipment is safe for continued use.

2.13 **"Lifting appliance"** means any fixed or mobile appliance on a vessel which is used for suspending, raising or lowering a load or moving it from one position to another while suspended, but does not include—

2.13.1 any screw, belt, bucket or other conveyor used for transport of cargo or people;
2.13.2 any survival craft or rescue boat launching and recovery appliance or arrangement; or
2.13.3 any pilot hoist.

2.14 **"Lifting gear"** means any gear by means of which a load can be attached to a lifting appliance and which does not form an integral part of the load or the appliance, and includes a lifting beam or spreader, lifting frame or forks, bulk bag, grab or any similar article.

2.15 **"Limiting device"** is a device that automatically stops a lifting appliance motion or function when it reaches a prescribed limit (including limit or micro switches).

2.16 **"Lift truck"** is a mobile, mechanically driven, cargo handling vehicle.

2.17 **"Loose gear"** means any equipment not being part of lifting gear used to attach cargo to a lifting appliance, and includes a hook or ring, shackle, link, sling, strop, snotter, swivel, or any similar equipment.

2.18 **"Out of service"** means that the lifting appliance is without load on the load and is either not required for use or is out of use under conditions specified by the manufacturer.

2.19 **"Radius indicator"** is a device that automatically shows the current operating radius of a lifting appliance and indicates the safe working load corresponding to that radius.

2.20 **"Responsible person"** A person appointed by the employer, the master of the ship or the owner of the gear, as the case can be, to be responsible for the performance of a specific duty or duties and who has sufficient knowledge and experience and the requisite authority for the proper performance of such duty or duties.

2.21 **"Safe working load indicator"** is a device that automatically provides acoustic and/or visual warnings when the load on a lifting appliance approaches or exceeds the safe working load by a specified amount.

2.22 **"Safe working load"** is the maximum gross load that can be safely lifted by a lifting appliance or gear or item of loose gear in any given condition.

2.23 **"Safe working load limiter"** is a device that automatically prevents a lifting appliance from exceeding the designed safe working load.

2.24 **"Ship"** covers any kind of ship, ship, barge, or lighter, and excludes any ship of war.

2.25 **"Ship's derrick"** refers to a derrick having a boom which can be raised, lowered and slewed transversely while supporting a load by means of winches which either form an integral part of the arrangement or are used primarily with it.

2.26 **"Stevedore"** means any person engaged in work handling cargo on board a ship.

**2.27** **"Stevedore companies"** are responsible for the occupational health and safety of stevedores from the time that a labour broker delivers labour to the place of business of the company, where such services are used.

**2.28** **"Thorough examination"** means a detailed visual examination by a competent person, if necessary supplemented by other suitable means or measures, in order to arrive at a reliable conclusion as to the safety of the item of equipment examined.

# 3 General provisions

### 3.1 Responsibilities

Safety onboard ships is the responsibility of everyone who is directly or indirectly concerned with work onboard and needs to cooperate to develop safe systems **of** work and ensure that they are put into practice. The introduction of new ideas and concepts in cargo-handling demands special attention to safety requirements. The guidance given in this Code of practice relates to both new and existing working practices.

### 3.2 Competent Authority

The South African Maritime Authority (hereinafter "Authority") is the competent authority. The Merchant Shipping Act requires accidents and incidents to be reported to the Authority.

### 3.3 Employers of stevedores

The company that provides the cargo handling services to the master *or* agent of a ship is deemed to be the employer. The employer is to ensure that the provisions of the regulations and the Code are adhered to.

### 3.4 Labour providers

Labour providers, commonly known as brokers, ***are*** responsible to provide labour that meets the training and medical standards specified in the regulations and Code. The broker is responsible to ensure that labour is provided with the following personal protective clothing:

- hard hat;
- overalls;
- steel toe capped working **boots** that are resistant to oil and water and are non-slip;
- high visibility vest;
- working gloves.

### 3.5 Management of stevedoring companies

Management of companies are required to ensure that—

- **all** workers are appropriately trained;
- all workers are aware of the hazards of the cargo being handled;
- all workers are aware of and comply with the provisions of the Code;
- **all** workers are properly supervised;

- all workers are provided with the necessary protective safety equipment;
- all workers adhere to safety policies and instructions;
- all workers have suitable reporting facilities for unsafe working conditions;
- all workers are medically fit;
- all workers are not likely to suffer from fatigue due to excessive working hours;
- all workers are provided with special protective clothing required for hazardous cargoes.
- all equipment brought on board a s h i p
  - is inspected before use;
  - has the SWL clearly marked;
  - is tested at regular intervals;
  - is suitable for the cargo being handled;
  - is operated by a trained person;
- safe working systems are in place;
- appropriate corrective action is taken when any faults in **plant** or equipment are reported, and that unsafe working conditions are noted:
- the workplace is inspected for occupational safety at the commencement of each shift;
- accidents requiring reporting to the competent authority are reported within the stipulated time; and
- plans to respond to accidents are in place.

### 3.6 Stevedore supervisors

Supervisors are the link on board between labour and management. Supervisors must—

- bring to the attention of stevedores the hazards of the cargo being handled;
- ensure that the correct protective clothing is being used;
- ensure that any defective equipment is not used;
- ensure that stevedores to whom work is allocated are trained;
- ensure that adequate lighting and fencing are in place; and
- bring to the attention of the ship's personnel any of the ships equipment deemed to be unsafe. **If** necessary, cargo work should be stopped.

### 3.7 Stevedores

Stevedore employees must—

- ensure that their own actions do not endanger themselves or other workers;
- comply strictly with all safety policies and instructions;
- make use of all safety guards, devices and protective clothing:
- notify their supervisor(s) of any defective equipment and hazardous conditions;
- not interfere with any safety devices;
- refrain from consuming alcohol or narcotics prior to a shift or during a shift; and

- when not working, leave the area where cargo is being worked.

3.8 Ship's personnel

Ship's personnel must ensure —

- means of safe access to the ship and cargo working areas;
- that personnel not directly involved in cargo handling are not allowed into that area;
- that the ship's equipment is well maintained;
- that working areas are well lighted and ventilated;
- that there is an officer immediately available with access to first-aid equipment:
- that the ship's rigging plans are available;
- that the ship's crew members are not allocated work where cargo is being handled unless absolutely unavoidable;
- that the ship's personnel are always available to open and close hatch covers, which function mustn't be undertaken by stevedores;
- that the ship's personnel are available to plug and unplug integral reefer containers, which function must not be undertaken by stevedores; and
- that the Chain Register is available for inspection.

**3.9 Risk** assessment and hazard management

3.9.1 The difference between hazard and risk should be clearly understood.

3.9.2 A hazard is a source of potential harm or damage and can be a physical item or situation. A risk is the combination of the likelihood and the consequence of a specific hazard.

3.9.3 Risk assessment is an essential part of safety management. It provides a sound basis for the improvement of safety. It must cover all work tasks and hazards in the workplace and allow hazards to be assessed to see how harmful they are.

3.9.4 A risk-based safety management system requires management to identify which activities need to be controlled within their organization and to interlink these with a safety based approach. A risk-based approach allows for a continual improvement of standards, whereas a quality-based system merely requires adherence to a fixed standard.

3.9.5 Risk-assessment systems can be qualitative or quantitative. In qualitative risk assessment, risk is estimated by methods such as task analysis, identification of human factors and performance modelling. In quantitative risk assessment, risk is estimated by taking into account the probability and severity of the outcome of a hazard. This is the method most commonly used to assess the risk of hazards.

3.9.6 In its simplest form the quantitative risk rating is the product of the probability of a hazard occurring and the potential consequences, including their severity:

| Hazard probability | | Hazard severity | |
|---|---|---|---|
| Very likely | 5 | Very high | 5 |
| Likely | 4 | High | 4 |
| Quite possible | 3 | Moderate | 3 |
| Possible | 2 | Slight | 2 |
| Not likely | 1 | Nil | 1 |

3.9.7 These two factors should be determined independently. Although a potential consequence can be extremely serious, the probability of it occurring can be very low. Multiplying these two factors gives a range of risk ratings between one (1) and 25. These can indicate high-risk situations (20-25), requiring rapid action; medium-risk situations (10-16), requiring action or further evaluation within an appropriate period; and low-risk situations (1-9), requiring a relatively little or no action. More detailed risk-assessment systems also consider the frequency of the presence of the hazard.

3.9.8 Where a hazard cannot be removed, and when considering the consequences of handling cargo, the PPE issued to a stevedore should reduce any threat.

3.9.9 Quantitative risk assessment is not a precise science but a tool to assist decision-making. It must not be used as a substitute for common sense when a hazard is patently obvious.

3.9.10 Risk assessment is best undertaken by a team including—

- a responsible manager;
- a supervisor;
- a worker representative;
- a safety adviser; and
- a health adviser, where appropriate.

3.9.11 Any action found to be necessary must be planned and implemented within an agreed time scale. it must be checked that the action has been taken.

3.10 Safety management systems

3.10.1 Safety and health management systems for stevedores must be based on risk assessment.

3.1 02 Safety management systems need the following constituents to be effective:

- Policy. A clear statement of the organization's policy for safety and health involving workers at all levels
- Organization. Specification of responsibilities and accountability, and necessary competencies and training requirements. These must be fully documented and effectively communicated to all concerned.
- Planning. Planning of development and implementation of the management system based on the latest review. This must identify measures necessary to eliminate or control hazards and set realistic objectives for the current period.
- Evaluation. Monitoring and measurement **of** current performance, investigation of accidents, periodic audits and review of the management system.
- Action. The implementation of necessary action to achieve continuous improvement of occupational safety and health.

**3.11** Safe systems of **work**

**3.11.1** Accidents are unplanned events. Working in a structured manner that recognizes and controls potential hazards can minimize such events. This is the basis of a safe system of work. Such systems result in safer and more efficient operations. Although they can not have been developed with safety in mind, quality control systems similarly result in safer operations by ensuring that operations follow specified patterns, thereby minimizing unplanned events.

**3.11.2** Development of safe systems of work must include consideration of—

- operations to be performed;
- workers who will cany it out;
- location of the work;
- working environment;
- nature of the cargo to be handled;
- plant, equipment and materials to be used; and
- precautions to be taken, including any necessary emergency arrangements.

**3.11.3** A safe system of work must specify—

- the task;
- necessary competencies of workers;
- equipment to be used, including protective equipment, where necessary;
- potential hazards;
- control of the relevant hazards:
- procedures to be followed; and
- control and supervision.

**3.11.4** To be effective, a safe system of work must be developed in consultation with all parties involved in putting it into practice. Once finalized, it must be promulgated by appropriate means and any necessary training carried out before it is put into effect. Supervision personnel must in practice monitor the

implementation and effectiveness of the system and be alert to any problems that can occur.

3.11.5 Safe systems of work must be reviewed periodically in the light of changes and operational experience and must be revised, as necessary.

3.12 Safety officers

Safety officers must be appointed in writing as required by the Maritime Occupational Safety Regulations, Chapter III Regulation 31(1) and must comply with the requirements contained in that regulation.

3.13 Safety appointee

3.13.1 Safety appointees must be appointed in writing as required by the Maritime Occupational Safety Regulations, Chapter III Regulation 31A and must comply with the requirements contained in that regulation.

3.13.2 It is recommended that the safety appointee instructs a stevedore in each hatch working cargo to ensure that stevedores adhere to observe the items noted in the bullet point above.

3.14 Safety committees

The committee must consider but is not be limited to the following:

- Incidents entered in the required record book of accidents and dangerous occurrences;
- recommendations of safety officers and/or appointees;
- actions taken as a result of the above items:
- confirmation that a safety officer and appointee have been appointed and are functioning effectively:
- all accidents have been reported investigated and that rectifying steps have been taken to avoid a re-occurrence;
- equipment provided by the company for working cargo has been inspected, tested and maintained in a satisfactory condition;
- accident trends are analysed to identify:
- types and frequency of accidents:
- personnel repeatedly involved in accidents: and
- suitable measures are in place to comply with the Code and regulations.

3.15 Investigation of minor accidents

3.15.1 Minor accidents are those not required to be reported in terms of section 259 of the Merchant Shipping Act, read with the definition of an accident. Minor accidents can also be termed as a near miss and must result in an internal investigation, the result can identify corrective action to be taken to avoid a re-occurrence.

3.15.2 The analysis of all minor incidents and the compilation of trends will identify what areas of safety require attention.

3.16 **Investigation and reporting *of* accidents and** serious **injuries**

3.16.1 An accident or serious injury, which requires reporting to the competent authority, is defined in section **259** of the Merchant Shipping Act. These accidents must be reported to the authority in the shortest possible time, by telephone, immediately and at the first available opportunity the Casualty/Accident Report must be completed and submitted to the Authority.

3.16.2 It should be noted that no person is allowed to disturb or remove any item involved in such an accident until given permission is given by the Authority **to** do **so.** A ship can be detained until the accident investigation is completed. When accidents are being investigated it is not only the direct cause of the accident, but also the underlying cause or causes which are often the real cause of the accident, that need to be considered.

3.16.3 The definition of a reportable accident is—

- the collapse or overturning of any lift, crane, davit, derrick, mobile powered access platform, access equipment, staging or bosun's chair or the failure of any load-bearing part thereof;
- any electrical short circuit or overload resulting in fire or explosion;
- the sudden, uncontrolled release of flammable liquid or gas from any system, plant or pipeline;
- the uncontrolled release or escape of any harmful substance;
- any contact of the human body with loose asbestos fibre;
- the failure of any lashing-wire, chain or appliance;
- any collapse or significant movement of cargo;
- the malfunctioning of any hatch cover, hatch cover control wire or other mechanism; or
- any person falling overboard;

3.16.3 The definition of a serious injury requiring reporting includes—

- a fracture of the skull, spine or pelvis;
- a fracture of any bone other than a bone in the wrist, hand, ankle or foot, or a single rib:
- the amputation of a hand or foot;
- the **loss** of sight of an eye;
- frost-bite of any bodily extremity which can lead to permanent disfigurement; or
- any impairment of a person's physical condition owing to:
- the use of machinery;
- an electrical shock;
- the exposure to hazardous working conditions or hazardous substances or articles:
- the exposure to natural or artificial environmental extremes: and
- on board a ship, which results in that person being admitted to hospital as a patient for more than **24** consecutive hours.

3.17 **Training**

3.17.1 Regulation 30(4)(b) requires that prior to any stevedore being employed on a ship, he or she is to have undergone an accredited basic safety induction course. The course content and means in which a training provider acquires accreditation are contained in Annex 1

3.17.2 In addition to the mandatory training required, stevedores undertaking the following work must have received specialized training covering—

- Gangway (Signaller);
- Lifting appliances;
- Lashers;
- Dangerous goods;
- Hazardous cargoes.

3.17.3 The provision of training must be undertaken when new or revised methods of working cargo are introduced.

3.17.4 Refresher training is to be undertaken annually and is to ensure that the course content of the basic safety induction course is reminded to stevedores, and any changes in the Code or relevant legislation, are brought to their attention.

3.18 Medical standards

3.18.1 Regulation 30(4)(b) requires that a person employed as a stevedore has undergone a medical examination. Medical examinations are required to be undertaken on an annual basis.

3.18.1 The standard of medical fitness required is contained in Annex 2.

3.18.2 The cost of the medical examination is for the account of the employer.

3.18.3 Prior to the accreditation of a doctor or occupational health nurse, an industry-specific orientation course has to be undertaken.

3.18.4 Certain hazardous cargoes can require more frequent examination in order to monitor any effects of exposure to a particular cargo.

3.18.5 Specific cargoes requiring additional health and safety precautions are governed by the introduction into the Code of the regulations contained in the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). The regulations are the Hazardous Chemical Substances Regulations, Asbestos Regulations, and the Lead Regulations.

3.19 Personal protective equipment

3.19.1 In addition to the personal protective equipment required to be supplied in terms of regulation 4 of the Maritime Occupational Safety Regulations, certain cargoes require additional personal protective equipment to be used.

**3.19.2** The requirements for personal protective equipment of the Occupational Health and Safety Act and its regulations are to be used for the following cargoes:

- asbestos, with reference to the Asbestos Regulations;
- chemicals, all substances listed in the Hazard Chemical Substance Regulations;
- lead, with reference to the Lead Regulations;
- cooled, chilled or frozen cargo, with reference to the Environmental Regulations for Workptaces.

**30.20 Moveable mechanical equipment**

All moveable mechanical equipment must be fitted with a manual audible warning device, and an automatic audible warning device operating during reversing movements.

# 4 Lifting gear

**4.1 General requirements**

Every lifting appliance and item of lifting gear and of loose gear must be—

* of good design and construction, of adequate strength for its intended use and free from any patent defect;
- made to a recognized international or national standard;
- tested, thoroughly examined, marked and inspected in accordance with section 3.12 of the code;
- maintained in good working order; and
- must be conveyed from a store to a ship by means of a pallet. Loose gear must never be dragged in order to prevent damage and to avoid obscuring the markings indicating SWL.

**4.1.1** Occupational safety is affected not only by the design of lifting appliances but also by that of their accessories and other loose gear used with them. The proper design and maintenance of all are essential, since breakage of any of them can cause serious accidents. Deterioration can be visible, as when it starts from the surface or is concealed internally. In either case, the mechanical strength of the material is reduced.

**4.1.2** Documentation (as appropriate) relating to lifting appliances must include —

- driver's instruction manual;
- erection manual;
- maintenance manual;
- spare parts manual;
- manufacturer's certification of fitness for use;
- certificate of test and thorough examination after initial erection;
- manufacturer's certificates for wire ropes installed on cranes: and

- examination and maintenance records.

4.2 **Brakes**

4.2.1 Every power-operated lifting appliance must be provided with an efficient brake or brakes capable of stopping a load while it is being lowered. The brakes must normally be applied automatically when—

* the motion control lever is returned to its neutral position;
- any emergency stop is operated;
- there is any power supply failure; and
- in the case of electrically operated brakes, there is a failure of one phase or a significant drop in voltage or frequency of the power supply.

4.2.2 Band brakes generally act in a preferential direction and are sometimes jerky. They should only be used for emergency braking. Brakes with symmetrical jaws and two pairs of pivots have a gradual action.

4.2.3 A slewing brake must be capable of holding the crane stationary with the maximum safe working load suspended at its maximum radius when the maximum in-service wind acts in the most adverse direction. Sudden application of the brake must not damage the crane slewing gear.

4.2.4 The brake-lining or pads must remain adequately secured during their working life. Unless the brake is self-adjusting, appropriate means must be provided to permit brake adjustment to be readily carried out in safety.

4.2.5 The design of electrically operated brakes must ensure that the operating solenoid cannot be accidentally energized by the back electromotive force of any motor driven by the crane, by a stray or rogue current, or by breakdown of any insulation.

4.3 **Electrical** supply

Self-reeling flexible cables must not allow long lengths of cable to drag on the ground where they can be exposed to damage.

4.4 **Safe** working **load (SWL)**

4.4.1 Every lifting appliance and item of loose gear must be marked with its safe working load. The markings must be in kilograms (kg) if the safe working load is 1 tonne or less, or in tonnes if it *is* more than **1** tonne.

4.4.2 Lifting appliances where the safe working load varies with the radius *of* operation, must display a chart, showing the radius and the corresponding safe working load, in the cab in a position where the operator at the controls can clearly see it. The chart must also state the maximum and minimum operating radius for the appliance and from where the radius is measured. Such

appliances must also be fitted with a radius indicator that can be clearly seen by the operator at the controls and, where practicable, a safe working load indicator.

4.4.3 The maximum load that can be lifted when items of loose gear with a significant weight (see section 4.2.6, paragraph 11 of the code, are attached to lifting appliances must be unambiguous. There must be no confusion between the safe working load—

* below the header block/hook of the lifting appliance:
- of the loose gear; and
- below the loose gear.

## 4.5 Controls

4.5.1 Controls must be—

* so positioned that the operator has an unrestricted view of the operation or any person authorized to give the operator signals; and
- marked with their purpose and method of operation.

4.5.2 The operating pedals for travel motions of mobile lifting appliances must follow road traffic practice with the clutch (when fitted) on the left of the operator's feet accelerator or other power control on their right and a brake between the other two pedals.

4.5.3 Whenever driving considerations permit, controls must return to the neutral position when released.

4.5.4 Consideration must be given to fitting dead man's controls to prevent inadvertent movement.

4.5.5 The control system must be such that no motion can start when the power supply is connected or the engine started. Movements must only be possible after a positive action.

## 4.6 Limiting devices

4.6.1 Wherever possible, every limiter must be positively actuated and designed for safe failing. Where one motion of an appliance can cause a second motion to approach a limiter (e.g. a derricking-out motion that can cause a hoist motion to reach its limit), the limiter must stop both motions.

4.6.2 Every power-operated lifting appliance other than a ship's derrick must, where practicable, be fitted with a safe working load limiter. This must operate when the load being raised or lowered exceeds the safe working load by a predetermined quantity, generally within the range of 3 to 10 per cent above the safe working load. The limiter must only prevent motions that would increase the overload.

4.6.3 Cranes must also be fitted with the following limiters:

- hoisting limiter, preventing the load-lifting attachment being raised to the position where it strikes the structure of the crane;

- lowering limiter, ensuring the minimum number of turns is always left on the winch drum:
- derricking-in limiter, ensuring that the crane jib cannot be derricked back beyond the minimum radius position;
- derricking-out limiter, ensuring that the jib cannot be derricked out beyond the maximum radius position;
- trolley or crab limiter, ensuring that the trolley or crab is stopped before it reaches the track end stops:
- slewing limiter on cranes with a limited arc of slew; and
- long travel limiter on rail-mounted cranes, preventing them from approaching the track end stops.

**4.7** Lubrication

Before commencement of cargo work, lubrication points of lifting appliances must be inspected to indicate recent lubrication.

**4.8** Operator's cab

**4.8.1** The operator's cab must provide the operator with a safe and comfortable working environment.

**4.8.2** In particular it must have—

- an unrestricted view of the area of operation;
- adequate protection from the elements;
- windows that can be readily and safely cleaned inside and out;
- a windscreen wiper on any window that normally affords the operator a view of the load;
- a comfortable seat that enables the operator to look in the required direction;
- a sliding or inward-opening door readily openable from inside and outside if the cabin is elevated;
- means of emergency escape; and
- suitable fire extinguishers.

**4.9** Winch rope drums, leads and anchorages

**4.9.1** Ropes must be fastened to winch drums in the manner prescribed by their makers.

**4.9.2** The derricking and hoisting drums of a ship's derrick or derrick crane must be capable of accommodating the maximum working length of rope and the number of complete turns to remain on the winch that is specified by the manufacturer.

**4.9.3** The angle of a wire rope leading to a winch drum must be sufficiently small to ensure that the rope is not damaged in service. The angle between the rope and the plane perpendicular to the axis of the drum must generally not exceed one (1) In **16** for hoisting ropes and one **(1)** in **12** for derricking ropes.

**4.9.4** Where it would otherwise not be possible to avoid an excessive lead angle, a suitable coiling or spooling device must be fitted.

**4.9.5** Lowering operations must normally be possible only with the winch connected to the power source. Free-fall lowering must be possible only in exceptional circumstances and if the winch is equipped with an automatic speed-limiting device.

**4.10 Access**

Safe means of access must be provided to all working positions on lifting appliances.

**4.11 Inspection of shore supplied lifting gear**

Lifting appliances and loose gear must be safe when first provided and remain safe throughout their operational life. The procedures for achieving this are well established, based on testing, thorough examination, marking and inspection. It is widely accepted that the testing of certain types of loose gear must be treated differently.

**4.12 Testing of lifting appliances and gear**

**4.12.1** Lifting appliances must be retested annually.

**4.12.2** The tests must cover all parts, and must be supplemented with a detailed examination of the appliance as a whole. The tests are matters for specialists and must be carried out by organizations whose competence has been recognized.

**4.12.3** All assembled parts of a lifting appliance must be tested under a proof load. The test conditions for the various parts must be those imposing the severest stresses on each part when in service.

**4.12.4** A record of all tests of lifting appliances and related certificates must be kept and be available.

**4.13 Examination of lifting appliances and gear**

Lifting devices must be inspected at the commencement of each shift. The inspection is of a visual nature and must be sufficient to identify damage or excessive wear.

**4.14 Tests examination reports, registers and certificates**

**4.14.1** The results of tests and examinations must be recorded.

**4.14.2** After completion of the thorough examination, the competent person must prepare a report that—

- clearly identifies the item examined, the date of the thorough examination, its safe working load(s) and any defects found;
- specifies any parts to be repaired or replaced:
- includes a statement that the item is, or is not, safe for continued use;

- gives the date by which the next test and thorough examination of a ship's appliance must be carried out;
- gives the date by which the next thorough examination of all other lifting appliances and loose gear must be carried out; and
- gives the name and qualifications of the competent person.

**4.14.3** Such records only provide evidence of the safe condition of lifting appliances and loose gear at the time of the examination.

**4.14.4** Registers and certificates for gear must be kept for at least five' years after the date of the last entry.

### 4.15 Marking

**4.15.1** All lifting appliances and gear must be legibly and durably marked with their safe working load.

**4.15.2** Every item of loose gear must, in a conspicuous place, be legibly and durably marked with its safe working load, with an alphanumeric identification mark to relate it to records of test examinations and, where appropriate, with a mark to Indicate the quality grade of the steel from which it is made. Where appropriate, the inscriptions must be incised, stamped or outline-welded.

**4.15.3** The marking must be made in a place where it will not give rise to stress.

**4.15.4** On long chains, the markings must be in a number of places.

**4.15.5** The stamp must give a concave indentation without sharp comers, and must not be struck with a blow greater than is necessary for a clear indentation.

**4.15.6** If the material is too hard or if direct marking would affect or be liable to affect the subsequent safe use of the gear, the marking must be made on some other suitable item of durable material permanently attached to the gear, such as a tablet, disc or ferrule.

**4.15.7** Larger items, such as lifting beams, container spreaders or similar gear, that have a significant weight must also be conspicuously marked with their own weight. The markings must be so positioned and of such size as to be immediately legible to those using the gear from the quay or ship's deck.

**4.15.8** Wire ropes used in long lengths without terminations are not usually marked. To enable identification, the manufacturer's certificate for the wire is endorsed with its place of use. A wire or wire sling with a thimble or loop splice ferrule must have the safe working load stamped on the ferrule.

**4.15.9** Markings on wire slings must be made in a permanent manner on—

- the terminal ring or link;
- a tablet, disc or ferrule attached to the sling, provided that the attachment will not cause damage to the rope;
- a ferrule of a wire rope having ferrule-secured eyes;
- the sling itself; and
- a label.

**4.15.10** Markings on slings must include the number of legs and the safe working load in straight lift and when the angle between the legs and the vertical is 45°.

**4.16 Ship's lifting gear**

**4.16.1** Prior to operating a ship's cargo gear, stevedores must inspect the gear to ensure that it is in a safe condition.

**4.16.2** Every ship must carry adequate rigging plans at least showing—

- correct position of guys;
- resultant force on blocks and guys;
- position of blocks;
- identification markings of blocks; and
- arrangements for union purchase (where relevant).

**4.16.3** Safe operation of derricks depends largely on the proper maintenance of the running rigging. Wear and tear must be reduced as far as practicable. It is essential to ensure that running ropes do not rub against a fixed or mobile part.

**4.16.4** Heel blocks must be restrained by a tensioning device to prevent them from swinging down during lowering when there is no load on the rope.

**4.16.5** A derrick must neither be rigged nor used at an angle less than the minimum angle marked on it.

**4.16.6** Derricks must be rigged in such a way that their components cannot whip against the winch man.

**4.16.7** It must be ensured that light derrick booms do not lift out of their seating.

**4.16.8** Each derrick must be legibly marked with its safe working load, as follows:

- used only in single purchase .SWL xt.
- used additionally with a lower cargo block .SWL x/xt.
- used in union purchase .SWL (U)xt.

(where x = safe working load).

**4.16.9** The lowest angle to the horizontal at which the derrick can be used must also be marked on the derrick.

4.16.10 The derrick luffing winch must have an effective blocking arrangement. This normally consists of the traditional pawl engaging in the wheel. Whatever device is used, it must eliminate **all** risk of loss of control during the raising or lowering of a load.

4.16.1 **1A** ship's cargo lift must have controls—

- of the dead man's type that fail safe;
- arranged so that only one set of controls can be operated at a time;
- placed so that the operator is;
- not in danger from the lift or moving vehicles; and
- from which the whole of the lift platform can be seen at all times.

4.16.12 An independent emergency stop control must be fitted in a prominent position among or near the other controls.

4.16.13 Each opening in a deck for a cargo lift must be protected by barriers that are –

- substantial and at least 1 m high on each side that is not in use for vehicle access;
- hinged or retractable **on** the sides used for access;
- interlocked so that the platform cannot be moved unless all the barriers are closed;
- arranged so that they cannot be opened unless the platform is at that level;
- as close to and above the edge of the opening **as** is practical, so that they cannot be closed if any part of **a** vehicle or its cargo overlaps the deck opening; and
- painted in alternate yellow and black warning stripes.

4.16.14 A flashing warning light, preferably yellow, must be fitted on the deck side of each cargo lift opening, at a place where it can be readily seen from any vehicle on the deck.

4.16.15 The light must operate continuously when the platform is away from the opening in that deck.

4.16.16 Some ships carry mobile lifting appliances such as lift trucks and mobile cranes that can be used for cargo handling. These must comply fully with the requirements for similar equipment ashore.

## 4.17 Forklift trucks

4.17.1 When lift trucks are selected, it must be clearly understood that trucks powered by internal combustion engines carry flammable fuel, produce exhaust gases with toxic components and can create noise nuisance, Trucks to be used in ship's holds or other confined spaces must preferably be electrically driven.

4.17.2 Every truck driven by an internal combustion engine must—

- have an efficient exhaust system fitted with a silencer and a gas cleaner, where appropriate; and

- carry an appropriate fire extinguisher.

4.17.3 The forks of lift trucks must be designed to prevent their accidental unhooking or lateral displacement when in use.

4.17.4 The forks of a truck are items of loose gear and must be tested and certified before being taken into use.

4.17.5 Trucks must be fitted with devices to automatically limit the upward movement of the forks, and, unless it is non-powered, the downward movement.

4.17.6 Any trapping, crushing or shearing points within reach of the operator in the normal operating position on the truck must be suitably guarded.

4.17.7 All trucks and battery containers on electric trucks intended to be hoisted aboard ship must have suitable stinging points.

4.17.8 All trucks must be fitted with a manual audible warning device, and an automatic audible warning device operating during reversing movements.

4.17.9 It is recommended that forklifts have spotlights fitted to illuminate the area where cargo is being worked.

4.17.10 Forklift trucks must be fitted with a substantial overhead guard sufficiently strong to protect the operator as far as possible against the impact of objects falling from above. In some cases, an additional guard to protect against small falling objects can be necessary. This can be a solid or perforated metal sheet.

4.17.1 1 All trucks must be marked with their safe working load or loads (where there is more than one load owing to the use of devices such as stabilizers or extension forks) and related load centre.

4.17.12 The load plate must show the safe working load of the truck at various load centres and lift heights.

4.17.13 No further weight must be added to a counterweight for the purpose of increasing the lifting capacity.

4.17.14 The operating platforms of end-controlled powered trucks and tractors must be provided with substantial guards to prevent the operators from being crushed in the event of collision with obstacles or other vehicles.

4.17.15 All lift trucks must be painted in a bright colour highly visible against the backgrounds where they operate. The back ends of rear-wheeled steered trucks must be painted in yellow and black stripes to warn of the dangers 'of the swinging back when manoeuvring.

4.17.16 Under no circumstances must passengers be carried on forklifts.

4.17.17 All forklift operators must be trained and have their competence checked at regular intervals.

4.18 Chain slings

Chains and chain slings must generally be constructed from steel bars of at least 10 mm diameter for Grade M chain and 7 mm for Grade T chain. Chains to be used at temperatures below about **-5°C** must be made of special steels. Grade T chains can be used, with **no** reduction of their safe working load, at temperatures between -30 ° and +200°C.

4.19 **Wire ropes**

4.19.1 Wire ropes must be of adequate strength for the frequency and type of intended use.

4.19.2 The guaranteed minimum breaking load must not be less than the product of the safe working load and a factor of safety.

4.19.3 Capping and splicing are skilled operations that must only be carried out by workers having the necessary expertise.

4.19.4 All thimble or loop splices must have at least three tucks with a whole strand of rope, followed by two tucks with half the wires cut out of each strand. All tucks other than the first must be against the lay of the rope. If another form of splice is used, it must be equally efficient.

4.19.5 No splice, however well made, can equal the strength of the original rope. The strength of the splice gradually decreases with diameter. At the largest sizes, it can be only 70 to 75 per cent as strong as the original rope. This loss of strength must be taken into account when the factor of safety is decided.

4.19.6 A splice in which all the tucks are with the lay of the rope (Liverpool Splice), must not be used in the construction of a sling or in any part of a lifting appliance where the rope is liable to twist about its axis, even if the splice is protected by a swivel.

4.19.7 Any protection on a splice in a wire rope to a lifting appliance must only be provided at its tail. This allows any deterioration of the splice (i.e. broken wires) to be seen. The generally accepted standard to indicate that deterioration is unacceptable is 10% of the strands damaged in 8 diameter lengths.

4.19.8 Compressed metal ferrules must be made to a manufacturer's standard, and—

- the material used must be suitable, in particular, to withstand deformation without any sign of cracking;
- the correct diameter and length of ferrule must be used for the diameter of the rope;
- the end of the rope looped back must pass completely through the ferrule;

- correct dies must be used for the size of the ferrule;
- correct closing or compression pressure must be applied to the dies; and
- tapered ferrules, where the end of the rope is not visible for inspection after closing, must not be used.

4.19.9 A Langs lay rope must only be used if it is not free to twist about its axis (i.e. both ends of the rope are secured).

4.19.10 Bolted clamps (such as Crosby, plate or bulldog grips) must not be used to form a terminal join in any hoist rope, derricking rope, guy of a ship's derrick or derrick crane, or in the construction of a sling.

4.20 Fibre ropes

4.20.1 Natural fibre rope for use on a lifting appliance or for slings must be of good grade manila (abaca), sisal (aloe) or other fibre of equal quality.

4.20.2 Natural fibre slings are usually manufactured from three-strand rope. The splice must be dogged off or a tail allowed. Natural fibre slings are usually made with soft eyes or endless.

4.20.3 As natural fibre ropes are affected by damp, it can be advantageous to use ropes that have been treated with a suitable rot-proofing and/or a water-repellent agent.

4.20.4 A thimble or loop spliced in a natural fibre rope must have not less than three full tucks, with all the yarns in the strand tucked against the lay. The splice must then be dogged.

4.20.5 A man-made fibre rope intended to be used for lifting must not be spliced to a natural fibre rope.

4.20.6 When a man-made fibre rope is joined to a wire rope, the two ropes must have the same direction of lay.

4.20.7 A thimble must be fitted to the eye of the fibre rope and the ropes shackled together.

4.20.8 Man-made fibre rope slings are usually manufactured from three-strand rope and spliced in the same way as natural fibre slings. The fibre can be indicated by the colour of the identification label as follows:

- green polyamide (nylon);
- blue polyester (terylene);
- brown polypropylene.

4.20.9 A thimble or loop splice—

- in a polyamide and polyester fibre rope must have at least three tucks with all the yarns in the strands, followed by one tuck with approximately half the yarns of each strand, and a final tuck with at least one-quarter of the yarns;

- in a polypropylene fibre rope must have at least three full tucks, with all the yarns in the strands.

4.20.10 All tucks must be against the lay of the rope.

4.20.11 Tails protruding from the rope must be at least three rope diameters long or be dogged.

4.20.12 Polypropylene webbing or rope slings likely to be exposed to prolonged bright sunshine must be manufactured of material stabilized against degradation by ultraviolet light, otherwise severe loss of strength can occur in a relatively short period.

4.21 Loose **gear and lifting gear**

4.21.1 Hooks must be constructed so as to cause as little distortion and damage to the eye of a sling as possible. The larger the hook that can be used, the less distortion to the sling is caused.

4.21.2 Every hook must be provided with an efficient device to prevent the displacement of the load from the hook, or be of such construction or shape as to prevent displacement. These can be safety catches, C hooks, ring assemblies for union purchase or rams horn hooks for use with heavy lifts.

4.21.3 Other loose gear includes lifting beams, spreaders, lifting frames and other attachments for lifttrucks, tongs, claws and cradles for handling round bars or logs. All must have adequate strength for their intended purpose with an appropriate factor of safety. The effectiveness of tongs and claws depend on the roughness of their surface or the condition of their teeth.

4.21.4 When pairs of shackles are selected for a job, both must have the same safe working load,

4.21.5 Dee shackles must be used for straight pull applications and "Bow" shackles where a number of slings pull at different angles. Where shackles are permanently rigged, the pins should be locked by mousing a screw collar pin or by a split cotter pin on a nut and bolt pin.

4.21.6 The safe working load of a shackle in a sling must always be equal to the sling, the increased stress due to an angle in the arrangement being duly taken into account.

4.21.7 When used in normal slinging applications, the screw pins of shackles must only be done up hand tight. However, the pins must be secured with seizing wire to keep them from coming undone.

4.21.8 Hooks must be selected to cause as little distortion and damage to the eye of a sling as possible. The larger the hook used, the less distortion to the sling.

**4.21.9** Hooks must always have a means of preventing a sling from becoming accidentally detached.

**4.21.10** Hooks are designed to take loads vertically through the saddle. Bow shackles must be used where there are too many slings in a hook or the spread is too wide. Shackles must always be used with their pin in the hook.

**4.21.11** Specialized cargo-handling hooks must be used, where appropriate. These include hooks designed to lift by specially designed bands around cargo or to stick into goods such as logs and bales.

**4.21.12** Where hooks are hooked into the eyes of lugs or container corner fittings, they must always be hooked from the inside out to prevent them from becoming unhooked accidentally.

**4.21.13** The correct type of loose gear must be used to lift ISO containers without spreaders. Those for lifting from bottom corner fittings fit in from the side and can be used vertically or at an angle. As they are right- and left-handed, it is important to check carefully that they are at the correct corner.

**4.21.14** When grabs are used to handle bulk cargo—

- there must be ample room at loading and unloading points for workers to avoid the swinging grab;
- grabs must be secured against accidental opening and be so constructed that they can be locked in the open position to prevent persons from being trapped by accidental closing;
- if heavy goods such as ore are being handled, special supervision must be provided for trimmers; and
- the attachment and changing of grabs on the lifting appliance must be left to a competent and responsible person.

**4.21.15** Automatic container spreaders must be used, whenever practicable. If manually operated spreaders are used, stevedores usually have to go on top of containers to hook on and off.

**4.21.16** Manual spreaders must always be fitted or removed on the ship's deck or quayside where the hook of the appliance can be lowered. Tags or restraining lines must be used to control the container when necessary.

**4.21.17** Vehicles carried on non-purpose car carriers are slung either by means of special gear equipped with metal frames on which the chassis rests, or by fixing a net, usually a metal one, under the wheels, and attaching the net to ropes slung from a lifting beam. It is essential to calculate the loads carried by each sling. The slings used must each be able to withstand the heaviest stresses that can be set up by a load.

**4.21.18** The safest way of lifting pallets is with pallet forks having a sliding centre of gravity. The tines of the forks must extend at least 75

per cent of the way under the pallet. These forks can be fitted with nets to prevent items falling from the pallet while in the air.

4.21.19 Pallets can be lifted by slings passed under the boards and rove around the outside of the centre bearer block. Where no centre blocks are part of the pallet, a spreader must be used.

4.21.20 Inspections of wooden pallets must include checks to ensure that—

* all deck boards are of equal thickness;
- all members are secured by at least two nails that are adequately spaced;
- deck boards, bearers or blocks are not split or otherwise damaged or distorted;
- nails are not pulled through and do not project from deck boards;
- deck boards are not loose, permitting the pallet to distort or rack;
- members do not have extensive bark or knot inclusions; and
- members are not contaminated by corrosive or flammable substances.

4.21.21 Pallets that are found to be defective must be destroyed or repaired before being returned to service.

# 5 Safe use *of* lifting appliances

5.1 Planning and controlling operations

5.1.1 It is essential that all who work on board ships are aware of the basic potential hazards of lifting operations. To control these hazards it is necessary to ensure that—

- all lifting equipment is suitable for the proposed operation and environment;
- initial and continuing integrity of the equipment can be verified;
- all personnel are appropriately trained and supervised;
- lifting operations are properly planned and managed;
- safe systems of work are followed; and
- the equipment is regularly maintained.

5.1.2 All lifting operations must be planned and carried out under the control of a responsible person. Operators of lifting appliances must be competent in controlling routine operations under the general control of management, but more complex and specialist operations must be carried out under the direct control of a person with the necessary knowledge and experience.

**5.1.3** Matters to be considered when planning lifting operations must include the following:

- type and size of ship and cargo;
- type of loads to be lifted;

- particular lifting hazards associated with those loads (e.g. position of centre of gravity, placing of lifting lugs stability, rigidity, etc.);
- attachment of the load *to* the lifting appliance (availability of appropriate loose gear);
- frequency of the lifting operation;
- from and to where the loads are to be lifted;
- selection of appropriate lifting appliances;
- provision of competent personnel (lifting appliance operators, slingers, signallers, supervisors, etc.);
- safe systems of work for taking the lifting appliance out of service during maintenance, thorough examination, testing and repairs;
- emergency procedures, including rescue of an operator from an elevated position;
- systems for reporting breakdowns, accidents and dangerous occurrences.

**5.1.4** The planning must be constantly reviewed to ensure that any changes are adequately considered.

## 5.2 Training

All lifting appliance operators must be carefully selected, trained and tested to ensure that they are competent.

## 5.3 Inspection

**5.3.1** All lifting appliances and loose gear must regularly be visually inspected before and during use with a view to checking for obvious deterioration and determining whether they are safe for continued use.

**5.3.2** Inspection is a completely separate process from maintenance. Inspections must be carried out by conscientious, responsible personnel. Lifting machine operators and slingers are often competent to carry out daily and weekly inspections, but checks are needed to ensure that they have the necessary competence.

**5.3.3** Prior to the initial commencement of cargo work, all certificates relevant to the vessels cargo working gear must be checked to confirm the period of validity.

**5.3.4** All lifting appliances must visually be inspected at the beginning of each shift or working day during which they are *to* be used. The use of a checklist is recommended.

5.3.5 The checks must include, as appropriate for the type of appliance, all daily checks specified in the manufacturer's handbook, and checks to ensure that—

- all ropes are correctly positioned on their sheaves, and drums are not displaced;
- electrical equipment is not exposed to contamination by oil, grease, water, or dirt;

- relevant levels and/or components show no loss of fluids (e.g. lubricating oil, coolant);
- all limit switches, cut-outs and dead man's handles or levers operate correctly, with caution to be taken during checking in case of malfunction;
- the safe working load limiter is correctly set and the manufacturer's daily test carried out;
- ensure that items such as lights, windscreen wipers, washers and other attachments are properly secured and operate efficiently;
- wheels are secure and the condition and pressure of tyres is appropriate on wheel-mounted lifting appliances;
- all controls function correctly without load;
- the appliance is in tidy condition and free from tins of oil, rags, tools, or materials other than those for which stowage provision is made; and that audible warning devices operate correctly;
- safe access is provided;
- appropriate fire-fighting equipment is available;
- visual inspection is done of all ropes for broken wires, flattening, basket distortion, excessive wear or surface corrosion or other signs of damage;
- checks are made of all rope terminations, swivels, pins, retaining devices and sheaves for damage, worn bushes or seizure;
- checks are made of the structure for damage (including missing and bent bracings on bridges and strut jibs, as well as bulges, indentations and unusual rubbing marks, cracked welds and loose bolts or other fasteners);
- inspection is done of hooks and other load-lifting attachments, safety catches and swivels for damage, free movement or wear, and checks are made ensuring that hook shank threads and securing nuts do not show signs of excessive wear or corrosion;
- checks are made ensuring correct operation and adjustment of controllers;
- inspections are done to identify any creep of hydraulic rams and hoses, any fitting deterioration on hydraulic machines, and any oil leaks;
- checks are made ensuring the effectiveness of brakes and clutches; and
- inspections are done of steering, brakes (foot and parking), lights, indicators, warning devices, windscreen wipers, and washers.

**5.3.6** Inspections of blocks must check that—

- sheaves are not cracked at the rim, and that no part of the rim is missing;
- grooves are not excessively worn;
- sheaves turn freely and smoothly;
- head-fitting swivels are secured and free from visible defects;
- shanks are not distorted, turn freely by hand and are not slack in their holes;

- clearance between sheaves and partitions of side plates is not excessive;
- side straps are sound and free from any cracks;
- greasing arrangements are satisfactory and grease nipples have not been painted over: and
- data plates are intact and legible.

**5.3.7** Appropriate records must be kept. As a minimum, these must record any defects found that could not be immediately rectified and that the inspection has been carried out. Such defects must be reported for rectification.

**5.4 Weather**

**5.4.1** Adverse weather conditions in which cargo operations can need to stop include—

- high winds;
- lightning;
- dangerous impairment of visibility by rain, snow, fog, etc.; and
- adverse sea-conditions.

**5.4.2** Weather forecasts must be obtained so that appropriate steps can be taken before the arrival of the high winds or other adverse weather conditions.

**5.4.3** Even at lower wind speeds, it can be dangerous to continue lifting operations, particularly when the load on a crane has a large surface area (e.g. a container). Lifting operations must stop if it is likely to become difficult to control the movement of the load.

**5.4.4** Lifting operations must be stopped and all persons withdrawn from the vicinity of cranes, or derricks if there is a possibility of the crane being struck by lightning.

**5.4.5** Ropes attached to the load (tag lines) can be used to help to control loads in light winds, but it is essential to ensure that workers holding tag lines are fully aware of the motions to be performed by the crane. Workers holding such lines must never attach them to, or wrap them around, their bodies. The lines must be held so that they can be instantly released if necessary.

**5.5 Safe use**

**5.5.1** Lifting appliances and gear must only be used in accordance with the manufacturer's instructions.

**5.5.2** Operating rules incorporating safe systems of work must be drawn up for all lifting operations.

**5.5.3** All movements of deck cranes controlled by limit switches must be tested before use.

**5.5.4** Cranes must lift loads vertically only.

5.5.5 A lifting appliance operator must not be permitted to use—
* a limiter as the normal means of stopping a motion; or
* a working load limiter as the normal means of determining that a load can be lifted or lowered.

5.5.6 Loads must never be dragged or moved in any manner that exerts a side load on a crane or lift truck. If it is necessary to drag a load a short distance, for example on the 'tween decks area of a ship, a snatch block must be used.

5.5.7 There must be a safe clearance between any part of a crane and any fixed object. Persons must be prevented from entering any area where the clearance could lead them to being crushed.

5.5.8 All personnel not directly involved in the lifting operation must be kept clear of the area.

5.5.9 No person must stand under a suspended load.

5.5.10 No person must be lifted by a lifting appliance other than in a specifically designed personnel carrier.

5.5.11 No persons must be permitted to board or leave a lifting appliance without first obtaining the operator's permission. If the access point is out of sight of the operator, means must be provided to ensure that the operator is aware of the whereabouts of the other person. A notice specifying the boarding procedure must be posted at the boarding point, where appropriate.

5.5.12 Lifting appliance operators must—
* only perform lifting operations when specifically instructed to do so by the designated signaller; however, every emergency stop signal must be obeyed;
* perform the operations smoothly, avoiding sudden jerks; and
* ensure that the power supply is turned off before leaving the appliance.

5.5.13 Lifting appliance operators must never—
* lift loads over persons;
* leave loads suspended longer than is necessary to move them;
* leave appliances unattended with a load suspended: or
* allow workers to travel with loads other than in personnel carriers,

5.6 **Ship's** derricks

5.6.1 When a derrick is rigged—
* a person must be stationed at each span winch and/or cargo winch in use;
* only persons engaged in the rigging work must be allowed in the vicinity, whereas other persons must only pass along the working side of the deck with the permission of the person in charge of the operation;

- wire ropes must be checked to ensure that they are free from corrosion, kinks, needling or other patent defects;
- all shackles and securing blocks must be fitted correctly, with their pins properly tightened and secured by seizing with wire or other effective means;
- block sheaves must be checked to ensure that they are free to turn and properly lubricated;
- guys, including preventer guys where appropriate, must be properly attached to the derrick head and the correct deck eye-plates in order to prevent possible jack-knifing;
- it is essential to ensure that the gooseneck is free to swivelcan when the derrick is at a low angle, from 30 to 50, with one or more persons gently swinging on the guy(s);
- a heavy lift derrick must be checked to ensure that any temporary mast or Samson post stays are properly fitted and that any special slewing guys directly attached to the lower cargo block are properly rigged; and
- rigging items must not be able to whip against the winch man.

**5.6.2** When deck cargo stowed on a ship makes the deck eye-plates inaccessible, the guys must be secured to wire rope or chain pendants designed specially for the purpose. The pendants must be sufficiently long to enable the guys to be coupled to the pendants at the top level of the deck cargo. Extreme care must be taken to ensure that the relative positions of the guys remain as shown on the rigging plans.

5.6.3 The winch operators must—

- be protected against the weather, preferably by a sheet metal cab with large windows; and
- have a clear unobstructed view of the hatch.

**5.7 Union purchase**

**5.7.1** The angle between the two cargo falls must not exceed 90" at any time. As the angle increases above 90°, the stresses on the ropes and booms increase rapidly.

**5.7.2** The load in union purchase must generally be limited to half the safe working load of the weaker of the *two* booms used.

**5.7.3** Where the length of a guy is adjusted by a claw device in conjunction with a series of metal ferrules compressed to a wire rope secured to a deck eye-plate, the claw must be of suitable design and of adequate strength and arranged so that it will not accidentally be released in the event of temporary partial slackness in the guy. If a fibre rope block and tackle is used, the rope must be of man-made fibre, as this has better elasticity and does not need adjustment when it becomes wet or dry.

**5.7.4** When derricks are in use in union purchase—

- the load must be raised just enough to clear the coaming, bulwark or railings, whichever is the highest; and

- slings on loads must be of minimum length to enable the height of lift to be kept as low as possible.

## 5.8 Signallers (Gangways)

**5.8.1** Signallers can be slingers or other persons responsible for giving directions to lifting appliance operators. They must be trained and certified in the art of signalling and directing crane movements.

**5.8.2** Only one person must act as the signaller for each lifting appliance. The signaller must be clearly identifiable to the operator and, unless responding to an emergency stop signal, the operator must only act on the signaller's instruction. Identification can be ensured by a distinctively coloured hat or clothing or by radio call sign. Wearing light-coloured sleeves and gloves will enable signals to be more easily seen.

5.8.3 More than one signaller can be required for a lifting operation if—

- one signaller will not have a clear view of the load throughout its path of travel; and
- hand signals are used and the first signaller has to move out of view of the appliance operator.

**5.8.4** If signalling requires verbal communication, the signaller must be able to give clear and precise instructions in the language understood by the appliance operator.

**5.8.5** Hand signals must be clear and precise and given by wide movements that are unambiguous.

**5.8.6** The system of hand signals must be agreed upon and clearly understood by all parties. This is particularly important if the signaller and the operator of a lifting appliance are of different language groups.

5.8.7 The signalling system must fail safe, If radios are used, each crane must have its own separate call sign and frequency, which must be kept free from communications for other purposes in order to prevent operators reacting to signals intended for another crane. The signaller must constantly repeat the required motion throughout the intended movement, such as "hoist, hoist... hoist", and the motion must be stopped if the operator ceases to hear the instruction.

**5.8.8** The signalling system must include a means for a signaller *to* inform the crane driver that he or she will no longer be giving the directions. A further signal must indicate to the crane operator that a second signaller is taking over responsibility for directing the crane movements.

5.8.9 Signallers must not give an order before satisfying themselves that all measures have been taken to ensure that the operation can be carried out safely. The essential characteristics of signallers must be ceaseless vigilance and awareness that

appliance operators are totally dependent on them during operations outside the operator's line of sight.

**5.8.10** Before work is started for the day, a signaller must ensure that the workplace on the ship's deck or on the deck cargo is clear.

**5.8.11** Signallers on ships must place themselves where they can be seen both by the workers in the hold and by the operator of the appliance.

**5.8.12** Signallers must **do** their utmost to protect persons against accidents. When necessary, they must warn persons in cargo holds, on lighters and ashore.

**5.8.13** When cargo is being loaded or unloaded—

* by a runner at a hatchway, it must be possible for the signaller to pass safely between the hatchway and the ship's side; and
* when more than one runner is being worked, a separate signaller must be used for each runner, except in the case of union purchase.

**5.8.14** Before giving a signal to hoist, a signaller must ensure that the load is properly slung and that hoisting can commence without risk to persons working in the hold or elsewhere.

**5.8.15** No signal to lower a load must be given by a signaller unless all persons are clear in the hold and elsewhere.

**5.8.16** Before giving the signal to land, signallers must satisfy themselves that the load can be safely landed.

**5.8.17** Signallers must never—

* give an order to move a load if any person is under its path, which person must be instructed to move;
* agree to order operations that would violate safety rules, such as operations with defective slinging, dragging loads horizontally other than by bull-roping, or with persons travelling on the load; and
* give an instruction for operations if the light is insufficient or if there is thick fog, unless special precautions have been taken.

**5.8.18** Signallers must ensure that no persons are carried by tifting appliances except in properly constructed personnel carriers.

**5.8.19** If it **is** necessary to stop a load while it is being raised or lowered, the signal must be precise but not abrupt, **so** that the operator of the lifting appliance does not jolt the load.

**5.8.20** Equipment used for giving sound, colour or light signals for hoisting, lowering or transporting loads must be efficient, properly maintained and protected from accidental interference.

**5.8.21** An audible emergency stop alarm be available, it must be—

* known to everybody working cargo on board and ashore; and

- be able to be heard by stevedores in the hold, and crane drivers on board and ashore.

5.9 **Forklifts**

5.9.1 Operators must be trained and certified to operate each make and model of lifting appliance which they operate.

5.9.2 Pre-use checks must be made at the commencement of each shift and must ensure that—

- electrical equipment is not exposed to contamination by oil, grease, water, or dirt;
- relevant levels and/or components show no loss of fluids (e.g. lubricating oil, coolant);
- all limit switches, cut-outs and dead man's handles or levers operate correctly, caution must be taken during checking in case of malfunction;
- items such as lights, windscreen wipers, washers and other attachments are properly secured and operate efficiently;
- wheels are secure and that the condition and pressure of tyres are appropriate on wheel-mounted lifting appliances;
- all controls function Correctly without load:
- audible warning devices operate correctly; and
- all checks recommended by the manufacturer are undertaken.

# 6 Operations on board

**6.1** All stevedores, including supervisors, on board ships must be fully trained and competent. This is essential, given that more accidents involve stevedores working on board ships than at any other location in ports.

6.2 All port operations on board ships must be carried out in accordance with safe systems of work. These must be drawn up following identification of the hazards, assessment of the risks and development of measures to control them.

**6.3** Experience has also shown that regular inspections and reports on the condition of ships help to reduce the number of shipboard accidents involving stevedores.

**6.4** It is the responsibility of the ship's personnel to provide conditions on board in which cargo work can safely be carried out. However, before starting to load or unload a ship, the company responsible for the stevedoring work must itself take steps to ensure that—

- there are safe means of access onto and about the ship;
- a ship's lifting appliances and lifting gear (if they are to be used for cargo operations) are correctly certificated and are in good order and safe to use;
- suitable deck and under-deck lighting is provided, taking into account any specific need that can require additional lighting;
- slings around pre-slung cargo on a ship have been certificated and are in all respects safe to discharge the cargo; and

- any lashing gear to be used is suitable, in a safe condition and compatible with the cargo to be lashed.

**6.5** If it is found that the provisions made, are not safe or do not comply with the regulations and Code, the deficiencies must be reported to the ship's master or his or her representative, the ship owners and the shore-side management. The stevedore must not allow work to start until the deficiency has been corrected. Alternatively, a shore-side provision can be made to remedy the situation.

**6.6** A stevedore who proposes to handle cargo with ship's gear must verify that the gear is safe by checking certificates and carrying out visual inspections before it is used.

**6.7** Any damage to the ship or its equipment occurring during cargo handling or other activities must be immediately reported to a responsible ship's officer.

**6.8 Access to ship**

**6.8.1** Sufficient, safe and suitable means of access to the ship must be available for the use of stevedores passing to and from the ship.

**6.8.2** The means of access must be of sound material and construction and adequate strength, be securely installed and be maintained in a good state of repair.

**6.8.3** The means of access from the quay to the ship's deck must be the ship's accommodation ladder.

**6.8.4** If the use of an accommodation ladder is not reasonably practicable—

- a gangway can be used:
- when normal access equipment cannot be used owing to the ship's high freeboard, purpose-built shore side access equipment must be provided and used:
- where the freeboard is too low for the normal means of access to be used, the ship *or* barge must be moored alongside a quayside ladder;
- portable ladders must only be used where no safer access is reasonably practicable: and
- where the access is to or from a ship and a barge or other ship of low freeboard moored alongside it, a rope ladder, with man ropes, can be used when it is impracticable to comply with any of the above requirements.

**6.8.5** The means of access must—

- be so placed as to ensure that no loads pass over it and, if this is not practicable, it must be supervised at all times during cargo handling;
- be placed where access to it will not be obstructed;
- not be placed on or near a crane track, railway track or other route in the port where it could be struck by moving traffic on that track or route: and

- have a lifebuoy with a line very near by.

6.8.6 A safety net must be rigged wherever a person can fall between the ship and the quay from a means of access to a ship. As far as is reasonably practicable the net must protect the entire length of the means of access.

6.8.7 The relationship between the quay and the ship is not always static. When necessary, the means of access must be regularly checked to ensure that it is correctly adjusted.

6.8.8 A portable ladder must only be used as means of access to ships in exceptional circumstances, such as in the event of damage to an accommodation ladder or a gangway.

6.8.9 A rope ladder must only be used to provide access from a ship to a barge or similar ship of lower freeboard.

6.8.10 Whenever possible, safe pedestrian access, separate from vehicle access ramps, must be provided to ro-ro ships. Pedestrian access via the main loading ramp can present hazards from moving vehicles.

6.8.11 When pedestrian access via a vehicle ramp is necessary, a separate walkway or walkways must be provided, and used, on the outer edge or edges of the ramp. Walkways must be fenced on both sides, to prevent falls into water and provide protection from moving vehicles.

6.8.12 If the provision of a fenced walkway is not practicable, a clearly marked and signed walkway must be provided on one side of the ramp.

6.8.13 If none of these options is practical, access via the ramp must be controlled at all times while vehicles are using it. The degree of control necessary can vary with the size of the ramp and the number of vehicle movements. The control arrangements adopted must ensure that all pedestrians, including seafarers and other persons visiting the ship, are subject to the same control system.

6.8.14 The ramp controller must ensure that when vehicles are using the ramp, pedestrians are prevented from doing so. The traffic movements must be stopped to enable them to transit the ramp.

6.8.15 Safe means of access about the ship must be provided for stevedores between the gangway or other main access and the holds, deck cargoes, winches and cranes that are to be worked.

6.8.16 Access routes must not pass under cargo being worked.

6.8.17 All such access routes must be kept tidy and clear of obstructions.

**6.8.18** Access routes must as far as possible avoid lashings, ropes and other obstructions that might otherwise impede access. If deck cargo is stowed up to the bulwarks, access must be provided on the other side of the ship or, if that is not possible, a safe route must be constructed through or over the cargo.

**6.8.19** If access is required during the hours of darkness, the routes must be lit.

**6.8.20** Stevedores must always be alert to moving vehicles when moving around cargo holds and decks of ro-ro ships. Safety helmets and high-visibility garments must always be worn.

**Access to working areas**

**6.8.21** Safe means of access about the ship must be provided for stevedores between the gangway or other main access and the holds, deck cargoes, winches and cranes that are to be worked.

**6.8.22** Access routes must not pass under cargo being worked.

**6.8.23** All such access routes must be kept tidy and clear of obstructions. If specially constructed, they can consist of wooden grating or steel plates at least 60 cm wide. They must be raised some 10 cm above the deck.

**6.8.24** Access routes must, as far as possible, avoid lashings, ropes and other obstructions that might otherwise impede access. If deck cargo is stowed up to the bulwarks, access must be provided on the other side of the ship or, if that is not possible, a safe route must be constructed through or over the cargo.

**6.8.25** If access is required during the hours of darkness, the routes must be lit.

**6.9 Access to holds**

**6.9.1** Access to cargo holds must be by way of the ship's permanent access. Access must be by way of portable ladders only if all permanent access ways are obstructed or otherwise cannot be used. Prior to the commencement of cargo work, ladders must be checked by a responsible person.

**6.9.2** Man-hatches and other openings giving access to holds must be protected by coamings. There must be a clear space of at least 40 cm around the coamings to allow easy access.

**6.9.3** The approaches to a hold and man-hatch must be kept without obstruction to reduce the risk of falls and to enable holds to be evacuated quickly in an emergency.

**6.9.4** Stevedores must be alert to the possibility of openings into holds having been left open or unfenced, or being hidden or obstructed by cargo.

6.9.5 Where such openings have lids, these must be secured to prevent them from accidentally closing during access.

6.9.6 Access areas must be adequately lit.

6.10 Access to deck

6.10.1 When it is necessary for stevedores to gain access to the tops of general break bulk deck cargoes and safe means of access are not provided, suitable safe access must be constructed. This must include suitable hand holds.

6.10.2 Access routes onto and about stows of timber on deck must be constructed, where necessary, in accordance with Chapter 5 of the IMO 1991 Code of Practice for Ships Carrying Timber Deck Cargoes.

6.10.3 When access involves walking across the cargo itself, care must be taken not to step into gaps in the timber stows and to avoid tripping hazards such as banding or pre-slung cargo slings lying on the surface of the timber. When uneven length timber units have been wrapped, the wrapping on top must be removed.

6.10.4 Particular care must be taken when timber deck cargo is discharged, as rough weather can have dislodged stacks or made them unstable.

6.10.5 When possible, container top working and the need for access must be avoided. However, when container top work is necessary on board ships, safe means of access must be provided.

6.10.6 When there are no safer means available, portable ladders can be used to access containers up to two high. Stevedores must never be permitted to climb up the ends of containers. A co-worker must always be holding the ladder unless it is otherwise adequately secured.

6.11 Hatches

6.11.1 Stevedores must not be expected to open or close main deck hatch or 'tween deck hatch covers. This is the responsibility of the ship's personnel.

6.11.2 After the ship's personnel have opened hatch covers, stevedores must enquire whether the locking mechanisms are in place and verify visually that this is correct.

6.11.3 Stevedores must discuss work plans with the ship's personnel to ensure that hatch covers are not operated without stevedores working in that area having been informed.

6.12 Handling hatch covers

**6.12.1** Hatch covers, beams and pontoons must not be removed or replaced while work is going on in the hold under the hatchway.

**6.12.2** All hatch covers must be operated by designated members of the ship's crew only.

**6.12.3** It is essential to ensure that there are no loose objects on folding or lift-away hatch covers before they are operated.

**6.12.4** No person must be permitted to be on any hatch cover, whether closed or retracted, when it is about to be opened or closed.

**6.12.5** Persons must be warned when hatch covers are about to be opened or closed.

**6.12.6** Stevedores must keep well clear of hatch covers and their machinery while they are being operated. They must never stand on covers during such operations.

**6.12.7** No person must be allowed onto the top of a retracted back-folding hatch cover unless the preventer chains or other securing devices are in position.

**6.12.8** Loading or unloading must not take place at a hatch unless—

- all parts of a hatch covering that can be displaced by a load have been removed or secured;
- powered hatch covers are secured in the open position, or are of such a design as to make inadvertent abrupt closing impossible.

**6.13 Stacking of hatch covers**

**6.13.1** Hatch covers, beams, tarpaulins and pontoons that have been removed must be placed, stacked or secured in such a way that they cannot fall into the hold, present a tripping hazard or otherwise cause danger.

**6.13.2** Hatch covers and pontoons must either be arranged in neat stacks not higher than the coaming and away from it, or be spread one high between coaming and rail with no space between them. It is recommended that, on the working side of the hatch, the top level of the stacks must be at least 15 cm below the top of the coaming.

**6.13.3** The height of stacks must be limited so that workers below or over side will not be endangered if the stack is accidentally struck by a load.

**6.13.4** Safe walkways must be left between the hatch coaming and the rail and from fore to aft.

**6.14 Protection of hatch covers and openings**

6.14.1 Hatches at deck level must be protected by coamings of sufficient height to prevent accidental falls into the hold.

6.14.2 Stevedores must not work on cargoes on deck or between decks that are over an opened hatch.

6.14.3 Work in the 'tween decks area must not normally take place if the hatch is open to the lower hold. If this cannot be avoided, the hatch must be fenced to prevent stevedores from falling.

6.14.4 The fencing must be one (1) m high and can be of suitable wire rope or chain, provided that—

- there are means to keep the ropes or chains as taught as possible;
- wire ropes have sufficient wires per strand to be flexible, are free from broken wires, and any loose ends are fitted with ferrules or other means of protection to prevent injury; and
- sufficient stanchions are provided.

6.14.5 Deck sockets into which stanchions fit must be equipped with locking devices and must be sufficiently deep and designed in such a way so as to prevent the stanchions from moving unduly out of the vertical or being accidentally displaced.

6.14.6 The fencing must form a permanent part of the ship's equipment and be kept in place at all times, except—

- when the hatch is being opened or closed;
- when goods are being loaded onto that particular deck and the work in the hold prevents the hatch from being closed; and
- during meal breaks or similar short interruptions of work.

6.14.7 Where necessary, barriers must be installed to prevent—

- lift trucks working in the 'tween decks area from falling into the hatch; and
- lift trucks operating to and from side doors from falling onto the quay.

6.14.8 The ship's officers must ensure that any opening, open hatchway or dangerous edge into, through, or over which a person can fall is fitted with secure guardrails or fencing of adequate design and construction preventing such occurrence, except where the installation of such guardrails of fencing will interfere with the proper performance of work.

6.15 Work in holds

6.15.1 The possibility that the atmosphere in a hold or access way to a hold can be hazardous must always be considered before entry is made.

6.15.2 The main hazards that stevedores handling cargo in holds must be aware of, include—

- falling through openings in holds or from cargo:
- falls of unstable cargo;

- congested working areas;
- uneven working surfaces on cargo;
- tripping hazards;
- manual handling hazards;
- unclear or inadequate communication with lifting appliance operators;
- swinging loads;
- falling objects;
- collapse of stow;
- mechanized plant and vehicles and their fumes;
- inadequate lighting; and
- loose electrical wiring.

**6.15.3** All persons working in holds must wear safety helmets and high-visibility clothing.

**6.15.4** Cargo must be stowed, handled, stacked or unstacked under competent supervision.

**6.15.5** There must be a separate signaller for each fall worked, except in the case of union purchase.

**6.15.6** When a clear view of the area where loads are being slung in the hold is impossible for lifting appliance operators, a signaller must be employed to direct the operator of the lifting appliance. The signaller must be able to see and be seen both by the stevedores in the hold and by the lifting appliance operator. The signaller must use an agreed set of hand signals (see Annex 3). Alternatively, the signaller must be in direct radio communication with the lifting appliance operator.

**6.15.7** Safe access to a safe position on the deck or the deck cargo must be provided for the signaller.

**6.15.8** As far as is practicable, loads in holds must be made up in such a way that they can be lifted vertically. Lifting appliance operators must ensure that there is a smooth taking up of the load and also when the load is lifted out of a hold. Where practicable, tag lines can be used to control any swing or twist motion.

**6.15.9** Stevedores must stand away from the load once it has been made up and while it is lifted out of a hold. They must be alert to possible swinging of the load once the appliance has taken the strain.

6.15.10 When cargo is built up in sections in the hold, each section must allow for a safe landing place for the cargo.

**6.15.11** Suitable protection must be provided where stevedores have to work close to edges from which they can fall more than 2 m. This can take the form of netting or other suitable means.

**6.15.12** No loose gear or other objects must be thrown into or out of the holds.

6.15.13 Dunnage must be used when necessary to make cargo stowage safe and stable. When dunnage is used for this or any other reason, consideration must be given as to how it can be removed at the port of discharge and at any intermediate ports where access can be required.

6.15.14 Where cargo for discharge is situated under the 'tween decks area, it needs to be brought out to the square of the hatch, where it can be plumbed by the lifting appliance, in order to be discharged safely. Light goods can be moved into the square on rollers. With heavier goods, a suitable lift truck or other mechanical device must be used whenever possible. Where there is no alternative and the weight of the cargo is within the safe working load of the lifting appliance, a bull wire can be attached to the goods and reeved through a snatch block at the opposite end of the hatch.

6.15.15 The bull wire must preferably be attached to a ship's winch. If a crane has to be used, the cargo hook must be attached to a bull wire to prevent wear on the hoist rope. The crane jib head must be positioned vertically above the sheave. One signaller must be on deck and another signaller in the hold to ensure that the goods do not snag. With careful movements the crane must be able to bring the goods to the square.

6.15.16 Mechanical plant that needs to be lifted in and out of holds must have—

- four lifting lugs built onto the body of the plant as near to the four corners as possible;
- each of the pair of lugs at the front and rear of the plant at the same height but not necessarily at the same height front and rear; and
- the lugs positioned so that, when a sling is attached, its legs will not come into contact with the overhead guard or any other part of the plant.

6.15.17 A dedicated four-legged lifting sling assembly must be made up and used to lift each item of plant or similar items having the same layout, weight and configuration of lifting points. The assembly must—

- * have legs constructed from an appropriate size of steel wire rope:
- have legs of sufficient length to ensure that the plant remains level when lifted;
- preferably include a small chandelier spreader;
- be attached to the plant by shackles that form part of the assembly;
- be clearly marked with the identity of the item of plant or model of plant for which it is intended to be used; and
- only be used for its intended purpose.

6.15.18 When mechanical plant is used in a hold, adequate ventilation must be maintained at all times.

6.15.19 The operator must at all times pay careful attention to the stability of the plant.

6.15.20 Working space in holds is often congested. Rear-wheeled steered plant has a tight turning circle. Great care must be taken by plant operators and other workers in the hold to avoid collisions with people, cargo stacks, which could be dislodged, or damage to the ship's structure.

6. 5.21 Smoking is not permitted in any area where cargo is being worked. Smoking is permitted in designated areas of the ship only.

6. 5.22 Stevedores must at all times ensure that the weight of the cargo being handled does not exceed the Safe Working Load of the appliance being used. If no weight is displayed, the weight should be established by consulting the manifest before cargo work commences.

**6.16 Work on deck**

**6.16.1** All upper decks to which stevedores have access to carry out cargo work must be provided on the outer edge with a bulwark or guard rails that are so designed, constructed and placed, and of such a height above the deck, as to prevent any worker from accidentally falling overboard.

**6.16.2** The bulwark or guard rails must be secured in position. Removable sections must be secured when in position.

**6.16.3** Work surfaces must be safe, with ropes, beams and covers, hatch lids and other gear and equipment stowed safely and tidily. Any spillages of oil, cargo or other substances likely to affect the safety of stevedores must be cleaned up. Stevedores must be alert to possible obstructions built into the deck, such as eye bolts, and those on the deck, such as lashings.

**6.16.4** Deck cargoes must be stowed in such a way that—

- safe access is provided to the deck cargo, winches or deck cranes, hold ladders and signaller's stand; where necessary, properly secured ladders or other means must be used; and
- winches and deck cranes to be used during loading or unloading can be safely operated.

**6.16.5** When a signaller has to move from the square of the hatch to the ship's side, a space of at least one (1) m wide must be kept clear.

**6.16.6** If the surface of the deck cargo is uneven, safe walkways running both fore and aft and athwart ships must be provided, where this is practicable.

**6.16.7** When deck cargo that is not being worked, is stowed against the ship's rails or hatch coamings, and at such a height that the rails

or coamings would not prevent stevedores from falling overboard or into the open hold, temporary fencing must be provided.

**6.17** Lashing and securing cargo of cargo

**6.17.1** All ships of 500 gross tonnes or more that are designed to carry cargo that requires lashing and securing for sea voyages are required to carry a cargo securing manual. This must detail how the cargo must be secured, what lashings or other equipment can be used and how tight the lashings must be.

**6.17.2** The stevedore must ensure that the requirements of the manual are followed, unless otherwise instructed by the master of the ship. General guidance on securing cargo is contained in the IMO Code of Safe Practice for Cargo Stowage and Securing

**6.17.3** Safe places of work must be provided to enable stevedores to carry out such securing work.

**6.18** Shifted cargo

Great care needs to be taken to ensure the safety of stevedores during such operations, which must normally be carried out under the direct control of experienced supervisors, A high level of alertness is required, particular attention being paid to the stability of the cargo, safe access, footholds and hand holds, the application of lifting gear and the need to stand well clear.

# *7* Specific ship types

**7.1** Container ships

**7.1.1** General

**7.1.1.1** All lashing gear is provided by the ship and is ship's equipment. Fully manually operated twist locks tend to be replaced by semi-automatic twist locks (SATLs). On loading, SATLs can be placed in position under the container on the quay. When the crane lowers the container into position, the SATLs automatically lock into position. On discharge, the SATLs have to be unlocked with the aid of a long pole. Because of their length and weight, such poles can only be used from deck level to unlock containers up to four high.

**7.1.1.2** The need for working on top of containers must be eliminated or reduced by the use of—

* SATLs that reduce but do not completely eliminate the need;
- a combination of lashing platforms and SATLs restricting it further; and
- fully automatic twist locks.

**7.1.1.3** When a jib crane or derrick is used for discharging or loading, there can be a need to steady the load when a container is being lifted or lowered or a spreader is lowered onto a container.

**7.1.1.4** When it is necessary to use over-height frames to lift open-topped containers—

- all lifting brackets, shackles and other loose gear on both the main frame and the subframe used in the lift must be of a suitable design and **SWL;**
- a physical check that twist locks have turned and are engaged must be made before lifting; and
- where necessary, care must be taken to ensure that the twist lock operating ropes do not catch on fixed objects while the frame is in use.

**7.1.2** Workinn on deck

**7.1.2.1** Shore-side management must ensure that safe access is provided by the ship to any place on the ship where stevedores have to work and that the place of work is safe.

**7.1.2.2** The placing and removal of lashing equipment on the ends of containers must be carried out in a gap between container stows athwartship.

**7.1.2.3** The space provided between the container stows for stevedores to carry out such work must provide—

- a firm and level working surface;
- a working area, excluding lashings in place, preferably of one **(1)** m and not less than 75 cm wide to allow clear sight of twist lock handles and the manipulation of lashing gear; and
- sufficient space to permit the lashing gear and other equipment to be stowed without causing a tripping hazard.

**7.1.3** Workina on tor, of containers

**7.1.3.1** When work on top of container cannot be avoided, safe means of access must be provided.

**7.1.3.2** Access to the tops of containers must be from part of the ship's permanent superstructure, whenever possible. This can be from lashing platforms.

**7.1.3.3** When such access is not possible, safe access must be provided by the use of a quayside crane and a purpose-built access cage or gondola.

**7.1.3.4** When a cage or platform is used for access—

- at least two persons must travel in the cage, one of whom must have a radio in direct contact with the crane operator;
- the crane operator must only take directions from that person;
- the secondary means of attachment to the spreader must be connected; and
- all parts of the body, particularly the hands and head, must be kept inside the cage at all times.

7.1.3.5 Stevedores must never climb up the ends of containers.

7.1.3.6 Non-purpose-built container-carrying ships can also carry containers on deck or in the hold in circumstances where dockworkers can be required to access container tops. When this involves loading or discharging by jib crane, an additional reason for being on the top layer of the containers can be to steady the load as it is positioned or removed. In these circumstances, a safe system of work must be developed to ensure stevedores have safe access.

7.1.3.7 When work has to be undertaken on top of containers, precautions must be taken to ensure the safety of stevedores. Suitable fall prevention or fall arrest systems of work must be devised and used in order to eliminate or control the risk of falling from the container stow. Fall prevention systems include working from inside a cage used for access, or secured to a short lanyard that prevents falls from open sides of containers.

7.1.3.8 The choice of system actually used will be influenced by the equipment used to secure the containers. If this equipment consists of manually placed twist locks and bridging pieces, it can be possible to carry out the work from inside an access cage, or it can be undertaken actually on the tops of containers. If the securing equipment consists of **SATLs,** there must be no need to go onto container tops during loading operations. On discharge, **SATLs** of more than four containers high have to be unlocked by pole either from the topmost tier or from a gondola at the side of the stow.

7.1.3.9 When a purpose-built access cage is used, it can be moved slowly across the top of each tier of containers while workers in it place or remove twist locks. Great care must be taken to ensure that stevedores hands are not trapped. A second person in the cage must be in direct radio contact with the crane operator and control the operation at all times.

7.1.3.10 When it is necessary for stevedores to leave an access cage or platform to go to the corners of the containers,

carrying the twist locks, bridging pieces or locking poles, etc., with them, they must wear a full body harness and be connected to a secure anchorage point by lanyards, safety lines or inertia reel fall arrest equipment. The harness must have **D.** rings at the front and back for attachment to the reel and to aid recovery.

7.1.3.11 Other systems or methods can be used in connection with container top working, provided that they ensure the safety **of** stevedores at all times.

7.1.3.12 Work on top of containers must cease in high-wind conditions, where working conditions are unsafe.

7.1.3.13 Similar precautions must be taken to ensure the safety **of** stevedores who have to go onto the tops of containers on the deck or in the hold of combi ships, where freight containers are stowed and lashed.

7.1.3.14 Further guidance on safe working on tops of containers is in the ICHCA International Ltd. International Safety Panel Research Paper No. **4:** Container top safety and other related matters.

7.1.4 **Freeing** of **jammed containers**

Any safe method **of** work to free a jammed container, twist lock or other container securing device must include the following:

- The operation must be controlled by a single identifiable person in direct radio contact with the crane driver;
- safe means of access must be provided to the location of the jam;
- the persons actually carrying out the operation must work from a safe location where they are unlikely to be struck by the movement of the container, e.g. if it is released suddenly or swings after release; and
- anyone not involved in the operation **must be** kept at a safe distance away from it.

## 7.2 Ro-ro ships

7.2.1 General

7.2.1.1 Ro-ro ships are equipped with a variety of cargo access equipment, e.g. ship or shore ramps, bow, stern or side doors, internal ramps and cargo lifts. This equipment must be operated **by** the ship's crew.

**7.2.1.2** The main operations in a ro-ro hold are **the** marshalling of vehicles and lashing them to the deck for the voyage. In a ro-ro ship, cargo such as paper reels is brought into the hold on roll trailers. They are then taken off the trailer by lift truck and placed into a stow in the hold.

**7.2.1.3** In each of these operations, mechanical appliances are widely used and, apart from driver-accompanied freight vehicles and passenger cars, are usually driven and operated by stevedores, who can also marshal vehicles and lash or unlash vehicles to the deck.

**7.2.1.4** The principal hazards for stevedores working in ro-ro holds are associated with vehicle movements. Vehicles moving in a confined space represent a risk of man to machine contact, and vehicle exhaust fumes can affect health. Lashing operations can also present a risk. Stevedores must also be aware of any cargo-access equipment in the area where they are working and know how it operates.

**7.2.1.5** Audible and visual warnings must be given before any cargo-access equipment is operated. Stevedores must be alert to such indications.

**7.2.1.6** The slope of an internal ramp must not exceed one **(1)** in **10.**

**7.2.1.7** Every stanchion or other fixed structure on an enclosed deck liable to be a danger to vehicles or to give rise to a risk of trapping between itself and a vehicle must be clearly marked with alternating black and yellow stripes.

**7.2.1.8** **All** stevedores on ro-ro ships must wear high-visibility clothing.

**7.2.2** Vehicle movements

**7.2.2.1** All movement of vehicles on board ro-ro ships must be effectively and continuously controlled.

**7.2.2.2** Only authorized persons must be allowed on any vehicle deck while vehicle movements are taking place.

**7.2.2.3** Drivers must comply with the relevant speed limits on ramps and vehicle decks at all times. These can be lower than those on the quay. Signs indicating the speed limit must be clearly displaysd in prominent positions both on the quay and on the ship.

**7.2.2.4** All large vehicles and trailers being reversed or manoeuvred into stowage positions on deck must do so under the direction of a signaller. Signallers must satisfy themselves that no person is in a position of danger, particularly in any trapping area behind a reversing vehicle. Drivers must not move their load or vehicle unless a signaller so directs. Drivers must immediately stop their vehicles at any time the signaller is not within their field of vision.

**7.2.2.5** While loading and unloading is taking place, the area must be kept clear, as far as is practicable, of dunnage, loose wires, unused vehicles, securing gear and other extraneous equipment or material.

**7.2.3** Vehicle lashing

**7.2.3.1** The wearing of safety bump caps by stevedores lashing vehicles can be more appropriate than safety helmets owing to the restricted working positions.

**7.2.3.2** Stevedores carrying out lashing operations must work in pairs, each worker always remaining in sight of the other.

**7.2.3.3** Great care must be taken when vehicles are moving, especially when the system requires vehicles to reverse into place. In particular, it is essential to ensure that—

- large vehicles are always controlled by a signaller when reversing; and
- stevedores do not position themselves at the back of a vehicle when vehicle loading operations are taking place in that row.

**7.2.3.4** Stevedores must release lashings warily, as ship and vehicle movement during the voyage could have made them excessively taut.

**7.2.4** Lifts

Stevedores working on or near cargo lifts must—

- not ride on a cargo lift when it is in operation, except the driver of a vehicle who is in the cab; and
- exercise caution when working with or close to a cargo lift.

**7.3 Bulk carriers and bulk cargoes**

**7.3.1** General

**7.3.1.1** Loading and unloading must be undertaken in accordance with the plan required by the **IMO** BLU Code and agreed upon between the terminal representative and the ship's master.

**7.3.1.2** When stevedores are required to use mechanical plant in a hold to trim loaded dry bulk cargo and to move or break down cargo residues for discharge, care must be taken not to cause damage to the structure of the ship.

**7.3.1.3** When work has to be carried out in the holds of bulk carriers—

* a signaller may be necessary to control grabs or other equipment;

- in holds loaded by grabs, one worker must act as lookout if there is a danger of workers being buried under a load from a grab:
- all trimmers must be checked in and out of the hold;
- workers must be secured by a full safety harness and lifeline when necessary during trimming or discharge; and
- appropriate precautions must be taken to prevent dust inhalation.

**7.3.1.4** During loading and discharge using shore side gantries, without the use of a signalman, payloader operators and trimming labour must at all times be aware of the position of the grab or skip.

### 7.4 Heavy lifts

Abnormal and unusual loads must only be worked by stevedores after careful planning with the ship's officers, shipper or manufacturer, and the cargo agent. It is the responsibility of the shipper or manufacturer to provide an accurate description of the cargo. These loads should preferably be worked during daylight hours.

# 8 Health

### 8.1 General

**8.1.1** Stevedores must be fit to carry out the work for which they are employed, as indicated on the medical certificate. They must be protected from health hazards that can arise from the activity itself, the means to carry out that activity, the work environment or the organization of the work. This part of the Code gives examples to assist in identifying the risks and detailing the action that must be taken to avoid them.

**8.1.2** The health and fitness for work of stevedores who regularly work in areas or on operations known to include health hazards must be regularly monitored by competent person. Those carrying out the monitoring process must regularly liaise with those responsible for areas or operations to ensure that the precautions and arrangements for eradicating, reducing or controlling the hazards are effective.

**8.1.3** Health hazards must be identified, the risks known and evaluated, the dangers to health understood and effective preventative measures put in place to ensure the health of the stevedores concerned, There must be a management system for identifying such risks and a strategy for responding to them. Arrangements for the participation of workers must include health matters, e.g. safety committees.

**8.1.4** The principal health hazards arising from port operations are noise, fatigue, fumes, vibration and exposure to hazardous substances, and cargoes. These hazards must be controlled.

**8.1.5** Exposure of stevedores to particular hazardous substances must be kept below the relevant time-weighted occupational exposure levels of a maximum of **15** of minutes and eight hours for the substances concerned.

**8.1.6** Stevedores exposed to hazardous materials must be trained and provided with material safety data sheets. The materials must be adequately labelled with the contents. Workers must be advised as to the precautions to be taken when exposed to these materials.

**8.1.7** Where containers are noted to be damaged or leaking the Material Data Sheet must be consulted prior to handling.

**8.2 Dangerous goods and fumigation**

**8.2.1** Health hazards can arise from specialized activities associated with dangerous goods.

**8.2.2** Great care must be taken when it **is** necessary to inspect or sample such goods. Particular attention must be paid to the hazards of the cargo as indicated by the labels or placards and documentation.

**8.2.3** Cargo transport units that have been transported under fumigation must be declared and bear the fumigation sign. They must be ventilated before entry is permitted. In order to ensure that the atmosphere is safe for entry, it must be tested it first.

**8.2.4** If the cargo, packaging or dunnage in a cargo transport unit is of a category that might need to be fumigated, fumigant residues can still be present in the unit. Precautions must be taken before entry, even though the cargo is not dangerous goods and have not been declared as being transported under fumigation.

**8.2.5** Bulk cargoes such as grain fumigated before entry into the port area from shore or from sea must be declared and the agent must advise stevedores accordingly. In addition—

- adequate and suitable measures must be taken to safeguard the health of stevedores engaged in handling such cargoes: and
- such measures must take account of the possibility that fumigant **is** still present in the cargo.

**8.2.6** The current IMDG Code and the Code of Safe Working Practice: Safe **Use** of Pesticides, published by the **IMO,** must be adhered to at all times.

**8.3 Dusty cargoes**

**8.3.1** Exposure of stevedores to dust must be prevented as far as is practicable. This must include nuisance dusts for which no specific occupational exposure level has been assigned.

**8.3.2** Loading or unloading of dusty cargoes must be adequately ventilated. Where this is not practicable, dust emissions must be prevented as far as possible and controlled.

**8.3.3** Measures to control dust emissions include—

* appropriate design of grabs, hoppers, conveyors and other material-handling equipment;
- enclosure of transfer and discharge points;
- enclosure of operators cabs;
- local exhaust ventilation; and
- suppression by covering or damping.

**8.3.4** Other measures to limit exposure to dusts must include—

* avoiding the need for stevedores to enter or work in dusty areas;
- restricting the time spent in such areas;
- provision of appropriate respiratory protective equipment, such as helmets providing a continuous supply of clean filtered air and masks; and
- ensuring that respiratory protective equipment is worn when necessary.

**8.3.5** Some dusts, such as grain, can have a sensitising effect inducing changes in the respiratory system, such as asthma or other medical conditions. Stevedores who can be sensitised must not work in areas where they can be exposed to such dusts.

**8.3.6** Other cargoes can also give off dust that can be harmful in enclosed spaces. These can include some forest products and scrap metal.

**8.3.7** Exposure to asbestos fibres can give rise to cancer and mesothelioma and must be prevented. All asbestos cargoes must be properly packaged.

**8.4 Other** cargoes

**8.4.1** Some cargoes, including mouldy cargoes, can present risks of infection of stevedores. Stevedores handling such cargoes must be under appropriate medical supervision and be provided with, and use, relevant personal protective equipment.

**8.4.2** Exposure to hides, skins, fleeces, wool, hair, bones or other parts of animals can give rise to anthrax or other animal-related diseases which can be transmitted to and be harmful to humans. Such cargoes must be disinfected and certificated by a competent authority before shipping in accordance with national legal requirements. When the risk of anthrax is suspected, special precautions, including the use of personal protective equipment and medical supervision, must be taken.

**8.4.3** Some cargoes can bring with them insects, snakes and other creatures, and stevedores must be alert to the dangers of being bitten. In the event of such a bite, they must receive medical treatment immediately.

**8.5 Noise**

**8.5.1** Noise can be emitted from engines and transmission equipment fitted to lifting appliances and vehicles and can be heightened when the equipment is being used in a ship's hold. Noise levels can affect the equipment operator and/or stevedores that work with or in the vicinity of such equipment when it is being used.

**8.5.2** In coordination with the workplace safety committees, noise levels must periodically be monitored and sources of excessive noise identified.

**8.5.3** Noise levels must be controlled at source whenever practicable.

**8.5.4** The need to work in noisy areas must be avoided or minimized as far as possible. Appropriate hearing protection must be supplied and worn, when necessary.

**8.5.5** When appropriate, consideration must be given to the periodic monitoring for loss of hearing of stevedores.

**8.6 Fatigue**

**8.6.1** Fatigue can affect health, safety and work performance. Regular breaks must be incorporated into work periods. Excessively long shifts or work periods must be avoided.

**8.6.2** If it is necessary to work an abnormally long shift, it is essential that an adequate period of rest be provided before the start of the next period of work, particularly overnight.

**8.6.3** Everyone is different and will be affected differently by fatigue.

**8.6.4** In addition to physical fatigue, there is also mental fatigue. This is the most dangerous type of fatigue as it can result in errors of judgement. The causes of mental fatigue include the need for concentration for long periods, excessive working hours and sleep deprivation.

**8.6.5** Some jobs need higher levels of concentration than others. An obvious example is the operation of a crane. In many cases the operator will be a member of a team. It can therefore be possible to rotate the jobs within the team to maintain the necessary level of concentration for the most demanding job throughout the working day.

**8.6.6** Everyone from time to time needs breaks in their working day. The frequency will depend on many factors, including the physical demands of the work. In some cases job rotation will

help to reduce excessive fatigue. In determining the duration of working periods, employers must consider not only the normal or usual working day, but also whether shorter periods between intervals would be appropriate on occasions when it is necessary to work beyond normal hours.

**8.6.7** A number of factors over which stevedores have no control affecting the shipping industry can lead to the need to work beyond normal hours. Such matters can include the late arrival of ships due to bad weather and the resulting need to work a ship to finish. Matters to consider in such circumstances include not only the additional hours to be worked, i.e. the overall length of the working day and the working week, but also the frequency of the need to work additional hours and the intervals between the end of a working day and the start of the next.

**8.6.8** It is essential that there is an adequate interval between the end of one working day and the start of the following working day. This interval must be long enough to allow adequate time for sleep, meals, travel to and from home and, where appropriate, exercise. In considering the time necessary for travel, it must be appreciated that owing to changes in industry in recent years it is less likely that employees will live close to their work. In many cases they may have to travel for lengthy periods each day.

**8.6.9** The matters referred to above are equally relevant to a shift system of work. In addition, particular consideration must be given to the need to cover for absences such as those due to illness or holidays. If the shift systems involve altering normal patterns of sleep the matters discussed below must also be considered. Particular attention must be given to arrangements for changing or rotating shifts, especially if a rest day is not incorporated at the time of change. In such circumstances it is preferable for the new shift to be retarded.

**8.6.10** People are not naturally nocturnal animals. A person's normal body rhythm involves sleeping at night. If this rhythm is ignored, health, safety and efficiency can fall at some times of the day and particularly between about midnight and 6 am. The ability of people to cope with changed sleep patterns varies considerably and must be considered when selecting people to work at night. Difficulty with sleeping during normal day time can be experienced resulting in less than normal periods of sleep and consequential reduction in alertness and in increased probability of falling asleep during working hours. These problems can be highlighted by the social needs and activities of workers. The problems can however be reduced by training and information on the effects of shift work and life style on fatigue. Such matters need to be understood not only by the workers themselves but also by their families. It is important therefore that such information is suitable for and available to their families as well as to the workers. One effect of shift work in general and night work in particular, can be taking sedatives to aid sleep at unusual times. The effect of such sedatives can interact and lengthen reaction times thereby increasing the risk of accidents either at

work or on the way to or from work. Similar effects can be produced by medication being taken for other purposes.

**8.6. 1** Prolonged periods of work will increasingly lead to a build-up of fatigue. When considering arrangements to cover for illness, leave or other absences, it is essential that the need for rest days at appropriate intervals is considered.

**8.6.** 2 It is recommended that a shift is of eight **(8)** hours duration and, where heavy manual labour is undertaken, does not exceed 12 hours. The extension *to* longer shifts of 9 to12 hours must only be contemplated in the following situations:

- **the** nature of work or workload is suitable for extended hours;
- the shift system is designed to minimise fatigue;
- sufficient cover for absenteeism;
- overtime is not added:
- there is strict control of the employee;
- toxic exposures are limited;
- complete rest recovery is possible.

**8.7 Fumes**

**8.7.1** Exhaust fumes emitted by terminal machinery, trade cars, passenger vehicles, ro-ro vehicles and trade wheeled cargo vehicle exhausts can present health risks to stevedores from—

- carbon monoxide (the main component of fumes from petrol engines);
- carbon dioxide (the main component of fumes from diesel engines):
- polycyclic aromatic hydrocarbons (PAH);
- oxides of nitrogen;
- sulphur oxides;
- aldehydes; and
- particulate matter, e.g. soot.

**8.7.2** The composition of exhaust fumes and the risks from them vary with the type of engine, the fuel being used and the age and level of maintenance of the engine.

**8.7.3** Hazardous levels of fumes can affect those in the immediate vicinity, especially if the area is enclosed or if the fumes are concentrated at one particular point.

**8.7.4** Prevention measures include —

- regular scheduled maintenance of all terminal vehicles, including engine tuning and exhaust systems:
- ventilating places where vehicles operate by natural or mechanical ventilation to ensure safe levels;
- switching engines off when vehicles are standing for long periods:
- making initial fume assessments of individual vehicles.
- preparing fume profiles of each hold of a ship in which vehicles are operated on a regular basis;

- preparing a plan to ensure that fumes from such vehicles on premises and in holds do not exceed safe levels, and specifying the maximum number of engines allowed to run at any one time; and
- using electric, LPG- or LNG-driven vehicles where appropriate.

**8.7.5** Profiling of holds can typically consist of taking readings of fume levels in each hold at hourly intervals throughout the loading or unloading process. Normally it is not necessary to take readings for each component of the vehicle exhaust fumes; only for carbon monoxide and carbon dioxide readings. If it can be shown that the levels of those components are safe, it can normally be assumed that the other components are equally safe. If there is any doubt, an industrial hygienist or other expert must be consulted.

**8.7.6** Profiling of holds must be carried out with all available ship's ventilation in operation and with the maximum number of vehicle engines consistent with operational procedures running at any one time.

**8.7.7** During operations in holds, it is essential to ensure that—

- all available ship ventilation is in operation:
- the ventilation functions correctly, with exhaust fans not reversed, and air ducts not covered or obstructed at either end;
- doors, ramps and other openings in the hull are open to permit natural ventilation; and
- only the stipulated number of engines are being run at any one time.

**8.8** Other health aspects

**8.8.1** Where stevedores are engaged in abnormal environments, such as extremes of temperature, or where the wearing of respiratory equipment is essential, they must be relieved at suitable intervals for rest in fresh air.

**8.8.2** Where stevedores are accidentally exposed to health hazards, their health must be checked by persons competent to do so.

**8.8.3** Where stevedores handle harmful substances, they must change their outer clothes and thoroughly wash their hands and face with soap or some other suitable cleaning agent before taking any food or drink.

**8.8.4** Health protection surveillance must be considered for special groups, e.g. older stevedores, female stevedores, disabled persons and insulin-dependent workers.

**8.8.5** Special attention must be paid to risks from manual handling, especially heavy loads. Stevedores must not be engaged on

such activities without suitable medical assessment and training in the skills necessary to cany out manual handling safely.

**8.9 Ergonomics**

8.9.1 Workplaces, work systems and work equipment must be designed, constructed and maintained in accordance good ergonomic principles. When necessary, specialist advice must be obtained.

8.9.2 Poor design of the equipment and poor posture can affect the health of stevedores, especially if they are spending most of their working time in the same position.

8.9.3 When appropriate, the time spent on a task continuously must be limited, possibly by job rotation or other suitable relief.

8.10 **First-aid**

All stevedore gangs must have at least one person who has been trained in First-aid. It is most important that the considerations whether to move a casualty or wait for professional assistance are understood, taking the requirement of regulation 5(1) of the Maritime Occupational Safety Regulations into consideration.

8.1 ▌ **Hunger**

Hunger leads to the lowering of the blood glucose, fatigue, weakness, dizziness, mental confusion, overwhelming tiredness. The work in which stevedores are involved, is generally equitable with that of a long distance athlete and that of a weight lifter in the same instance. The energy requirements are therefore the same. There is a high need for energy over prolonged time periods. Unfortunately, the industry is such that highly developed dietary programmes are not available and the food intake is of poor quality and frequency, which leads to poor nutrition and sometimes even malnutrition. The average intake is one of high carbohydrates once daily for instant gratification and the belief of high energy. This food is unfortunately high on the glycaemia index, causing rebound increases in insulin levels and a drop in blood glucose levels. It also results in obesity and its associated diseases such as hypertension and diabetes. Accident rates increase with "hunger" and hypoglycaemia, it is proven that hunger causes loss of concentration and this in itself will lead to increased frequency of accidents.

8.12 **Substance abuse**

8.12.1 Substance abuse in the workplace is a serious problem not only affecting the user but also the safety of fellow-workers. All drugs, including, alcohol have side effects that increase the risks of accidents in the workplace. Substance abuse can result in family problems, disciplinary action, job loss and therefore poverty and social deprivation.

8.12.2 For the employers, substance abuse leads to safety problems affecting the business, and gives rise to increased costs and

lower productivity. In order to reduce this problem, the employers need to have alcohol and drug policies and programmes that will promote prevention, reduction and management of substance abuse related problems in the workplace.

8.12.3 The contents of an alcohol and drug policy must include the following information:

- Measures to prohibit the availability of alcohol and drugs in the workplace;
- prevention of alcohol and drug related problems through information, education, training of workers and other relevant programmes;
- identification and referral of those who have alcohol and drug related problems.

8.12.4 The benefits of a drug policy:

- It reduces the risk and cost of accidents caused by impaired judgment.
- It reduces the cost of absenteeism or poor work performance of the substance user.
- It saves the cost and inconvenience of recruiting and training replacement crew when users become unreliable.
- It improves personnel morale.

### 8.13 Temperature fatigue

8.13.1 In this industry extremes of temperature are often found. Extreme low temperatures are well documented in the Occupational Health and Safety Act and regulations relating thereto must be strictly adhered to, cf. the Environmental Regulations for the Workplace.

8.13.2 In port cities, however, high temperatures and heavy manual labour are a greater issue. The standard measure of environmental temperature is the WBGT (wet bulb globe temperature), which takes into account the ambient temperature and humidity. The critical figure is 30.

8.13.3 Each company must develop protocols to—

- measure the temperatures in the cargo working area; and
- develop a protocol regarding working time, maximum period between breaks and fluid intakes.

## 9 Emergency arrangements

### 9.1 General

**9.1.1** Many types of emergencies are possible on board ships, and in many countries the development, publication, exercise and regular review of emergency plans are recommended.

9.1.2 Appropriate training or instruction of stevedores on the action they must take in an emergency is essential.

**9.1.3** Each type of potential emergency that could occur in port areas must be considered when preparing appropriate emergency arrangements.

**9.1.4** Emergency arrangements and emergency plans must cover all foreseeable emergencies, from minor mishaps to major incidents. They must be capable of increasing appropriate responses as an incident develops.

## 9.2 Injuries

**9.2.1** Arrangements for emergencies must include a suitable number of first-aid boxes and first-aid personnel and readily available means to take more serious cases to hospital. The stevedore foreman on board must establish which ship's officer is to be contacted in the event of an accident and establish the response availability on board. The emergency telephone number of medical response facilities must be easily remembered.

**9.2.2** First-aid helpers and ambulance personnel must be capable of safely reaching people who are injured, wherever they are.

## 9.3 Rescue

**9.3.1** If workers become ill or are injured in places to which access *is* difficult and who cannot get themselves back to where they can receive help, it will be necessary to rescue them. Such places include—

- holds of bulk carriers with access only available by hold ladder;
- jibs of general cargo cranes: and
- outboard gangways of large container ships beyond the reach *of* the crane.

**9.3.2** In each case, the situation must be assessed and the need for a possible rescue considered. Where necessary, the means of carrying out the rescue must be planned, taking into account the need to, during rescue, prevent further injuries resulting from lack of oxygen, hazardous substances, electricity, or other hazards.

**9.3.3** The possible need for special equipment must be considered. Once rescuers reach a casualty, special lifting or lowering devices and harnesses are often needed for evacuation. Plans must assume that the casualty is unable to assist in any way. Any special equipment must be light and easily transported. It might have to be carried or lifted up and down vertical ladders, possibly following a complete loss of electrical power. The equipment must be capable of being erected or deployed with a minimum of delay. Exercises in the use of the equipment must be held at regular intervals.

**9.4** Fire

**9.4.1** Emergency arrangements in the event of fire must be in addition to normal fire precautions and the various steps to be taken to prevent the outbreak of fire, control of flammables and sources of ignition, including smoking, and regular of the operations.

**9.4.2** If a fire is discovered, the alarm must be raised immediately since trivial fires frequently develop into serious fires.

**9.4.3** The emergency plan must set out the action to be taken when the alarm is raised. This must include alerting relevant emergency services.

**9.4.4** When the evacuation of an area **is** necessary, all workers must leave the area immediately along the nearest, safe route and go to the appropriate fire assembly point. At the fire assembly point a check must be carried out to ensure that nobody is missing.

**9.4.5** Fire extinguishers must only be used by persons who have had appropriate training and experience in the use thereof and when it is safe to use it. Persons using fire extinguishers must be aware of circumstances where the use of inappropriate extinguishers or equipment is dangerous. This includes the use of water on electrical equipment and **on** materials that react with water.

**9.4.6** Appropriate emergency access for trained fire-fighters and their equipment, and means of escape in case of fire must be kept clear at all times.

**9.5** Cargo spillage

**9.5.1** Spillage of cargo containing dangerous goods poses a threat to stevedores in the immediate area. Emergency arrangements must include safe means of identifying the cargo. The IMDG Code must be consulted.

**9.5.2** Hazardous spillages must only be dealt with by trained personnel. Such personnel can be from local emergency services, or other specialists or stevedores appropriately trained to deal with low-level emergencies. In each case the immediate action must be—

- the evacuation of the area:
- the safe removal of any casualties;
- the identification of the material spilled; and
- the notification of the ship's crew and emergency services.

**9.5.3** Arrangements to deal with cargo spillages must take into account the fact that it can be necessary to deal with cargo spillages or leakage that occur on board a ship during a voyage when the ship enters port.

**9.5.4** Any arrangement for the disposal of spillages must take into account potential environmental hazards. Sweeping or washing residues over the side of the ship must be prohibited.

### 9.6 Falls into water

**9.6.1** By the nature of ports, falls into water are a commonplace hazard, and not all stevedores who fall into water can swim. Means by which such persons can rapidly escape from the water or be rescued must be provided.

**9.6.2** Speed is essential when rescuing persons in the water, as it can prevent tragic results. Means of rescuing must, therefore, be capable of being deployed very quickly. Delay can result in workers, clinging to a fixed floating object after a simple fall, being affected by fright, cold water, currents and tide and can soon make them lose consciousness and let go.

**9.6.3** When victims have been taken out of the water, they must be warmed, their wet clothes must be taken off, if possible, and they must be wrapped in blankets or other suitable wrapping.

**9.6.4** If a victim no longer seems to be breathing, artificial respiration must be applied by the mouth-to-mouth method or, if not possible, by the Holger-Nielsen method.

### 9.7 Emergency planning

**9.7.1** Emergencies must be anticipated and arrangements for them prepared.

**9.7.2** The overall objectives of an emergency plan are to—

- contain and control emergency incidents;
- safeguard people on board the ship and in the neighbouring area; and
- reduce the effects of an incident and minimize damage to property and the environment.

**9.7.3** The plan must be concerned with four factors, namely—

- the hazard and nature of an event and its possible extent:
- the risk and probability of its occurrence;
- the consequences and possible effect on people and the environment; and
- the means and actions to be taken to minimize the consequences of the event.

## 10 General

### 10.1 Flexible intermediate bulk containers (FIBCs)

**10.1.1** Some FIBCs (for carrying powdered homogeneous cargo) are reusable but single trip FIBCs must never be reused. The lifting straps at the corners of FIBCs must always be lifted vertically.

10.1.2 Before an FIBC is lifted, the certificate of conformity and a thorough examination certification (issued in the preceding 12 months) must be checked, and the bags must be inspected.

**10.2 Pallets**

Pallets must be free from visible defects liable to affect their safe use. The decks of wooden shipping pallets must be at least **35** mm thick. The space between the decks must be sufficient to allow easy access by the forks of lift trucks or the arms of other pallet-lifting devices.

**10.3 Solid bulk cargoes**

**10.3.1** Some solid bulk cargoes can be hazardous when shipped in bulk. The most common bulk cargoes are coal, metal ores, agricultural cargoes including grain, fertilizers and fertilizer raw material, and scrap metal.

10.3.2 Hazards associated with the transportation of solid bulk cargoes include—

* their inherent dangerous properties, covered by the nine United Nations classes;
- other relevant properties; and
- operational hazards.

**10.3.3** Properties that are relevant include—

* oxidation, resulting in lack of oxygen in a hold, access way or other confined space;
- decomposition, resulting in evolution of toxic or flammable gases and possibly also lack of oxygen; and
- physical properties, allowing cargo to collapse or persons to sink into it.

**10.3.4** Operational hazards include—

* incorrect procedures;
- misdeciaration of cargo (bulk shipping names must be used in accordance with the IMO SBC Code);
- lack of communication; and
- unexpected presence of fumigants.

**10.3.5** The IMO Code of Practice for Solid Bulk Cargoes (the SBC Code) lists the solid bulk cargoes carried at sea. Appendices A and B list those cargoes that can liquefy and those that have hazardous properties. Other cargoes that are typically carried at sea are listed in Appendix C.

10.3.6 Solid bulk cargo-handling operations must be carried out in accordance with the IMO Code of Practice for the Safe Loading and Unloading of Bulk Carriers.

## 10.4 Scrap metal

**10.4.1** Stevedores must be alert to the possible hazards of scrap metal received. These hazards include the following:

- Flammable residues inside closed ships;
- lack of oxygen in closed receptacles or containers due to rusting or other atmospheric oxidation;
- the presence of radioactive sources or radioactive contamination in scrap from demolition or dismantling of plant at factories and mines;
- heating of consignments of aluminium smelting by-products or turnings that have become damp.

**10.4.2** Magnetic lifting gear must—

- only be used in holds if stevedores are able to take shelter from any falling objects; and
- never be used to transport persons.

**10.4.3** When magnetic lifting gear is used—

- the power to the magnet must not be switched on until the magnet has been lowered onto the load to be lifted;
- after the power has been switched on, the lifting motion must be delayed for a few seconds (up to ten seconds in the case of scrap metal);
- it must be carefully lowered on the load, not dropped; and
- it must not be allowed to strike a solid obstacle.

## 10.5 Personal protective equipment

10.5.1 Personal protective equipment must never be used as a substitute for eliminating or controlling a hazard at source. However, if this is not possible, appropriate personal protective equipment must be provided and used.

10.5.2 Personal protective equipment must be provided by the employer at no cost to the stevedore.

**10.5.3** Personal protective equipment must generally be available in a range of sizes, as one size or type seldom fits all. Comfort and acceptability to the wearer are important, as the equipment might have to be worn for long periods.

**10.5.4** The particular personal protective equipment necessary must be determined by an assessment of the hazards involved.

10.5.5 Stevedores must be instructed in the correct use and care of the personal protective equipment provided to them. They must use the equipment when required and take good care of it.

10.5.6 Managers and supervisors must ensure that appropriate personal protective equipment is used by all stevedores in accordance with instructions. Managers must give a clear lead by using the equipment when required.

10.5.7 All stevedores must be provided with safety footwear, safety helmets, gloves and overalls, and must wear them, when appropriate. Other types of personal protective equipment must be provided and worn, as necessary.

10.5.8 All persons in cargo-handling areas must wear high-visibility overalls or other high-visibility outer clothing.

10.5.9 Loose clothing must never be worn by workers when working near open conveyors or other moving machinery. One-piece overalls are suitable.

10.5.10 Stevedores handling substances that are corrosive or can be absorbed through the skin must wear appropriate impervious personal protective clothing.

10.5.11 Personal protective equipment that is not in use must be kept in suitable facilities. If the equipment or clothing can be contaminated by toxic or otherwise dangerous substances, it must be kept separate from the mess rooms for workers.

10.5.12 All personal protective equipment must be regularly cleaned and maintained in an efficient and hygienic condition and replaced when necessary.

10.5.13 Filters in respiratory protective equipment and other components with a limited capacity or shelf life must be regularly replaced in accordance with the manufacturer's recommendations.

10.5.14 Reusable personal protective equipment must be washed and disinfected, as appropriate, before being reissued.

10.6 Conveyors

Stevedores working with conveyors must be aware of the dangers of loose equipment, e.g. spades, or brooms getting caught in the conveyor and causing injury.

# Annex 1 Training and accreditation of training providers

**Accreditation of training institutions**

(1) The Authority can, on application by a training institution or stevedore company, accredit the institution or company to—
(a) conduct the courses specified in the instrument of accreditation;
(b) act as an approved assessment centre for assessment of the subjects so specified; and
(c) issue certificates to candidates who successfully complete the courses so specified.

(2) An application contemplated in subregulation (1) must be made in writing and must be accompanied by the following particulars:
(a) Name and physical address of the training institution or company;
(b) description of the course, and of its content, referenced in this Annex, together with lecturers' study plans;
(c) name of each course lecturer with a brief description of his or her qualifications and experience:
(d) name of each course assessor with a brief description of his or her qualifications and experience;
(e) assessment procedure in respect of each course;
(f) training and assessment facilities in respect of each course;
(g) details of any quality assurance system applicable to the training activities of the institution; and
(h) specimens of all certificates to be issued in respect of each course;

(3) For the purposes of accreditation, a training institution or company must, on receipt of reasonable notice, make available—
(a) for inspection by an examiner, classrooms, simulators, simulator approvals, libraries, laboratories, workshops, lecturers' study programmes, test scripts, assessment procedures; and
(b) for interview by an examiner, lecturers and assessors.

(4) Every accredited institution or company must inform the Authority, without delay, of any change in the person of any lecturer or examiner, or of any change in a lecturer's study plan.

(5) Every accredited institution or company that is accredited to conduct assessments on behalf of the authority must—
(a) make available, in reasonable time, assessment question papers and memoranda for moderation by an examiner;
(b) for audit purposes, keep the documents referred to in paragraphs (a) and (b) for a period of at least five years.

(6) An examiner can visit an accredited institution at any reasonable time for the purpose of auditing the conduct of any accredited activity.

(7) The Authority can vary or revoke accreditation granted under subregulation (1) if—

(a) the institution concerned fails to comply with these regulations or any of the conditions of accreditation; or

(b) the Authority otherwise has reasonable grounds to vary or revoke such accreditation.

**(8)** Where the Authority intends to vary or revoke accreditation under subregulation (7), it must inform the institution concerned accordingly, giving it at least 30 days to correct any deficiencies or to furnish reasons why accreditation must not be varied or revoked.

**(9)** A list of all accreditations in force under subregulation (1), including the particulars thereof, must be published in a marine notice.

## Stevedore safety induction training

| ***Knowledge, understanding & proficiency*** | ***Methods for demonstrating competence*** | ***Criteria for evaluating competence*** |
|---|---|---|
| General understanding of the Maritime Occupational Safety Regulations and the Code | Identifies and explains various Regulations and sections of the Code | Correctly identifies safety criteria from a multi-choice list, describing each |
| Knows the correct PPE to wear *for* the operation being performed | Identifies and explains the correct use of PPE for any particular operation including hazardous cargo | Indicates the correct application of PPE in relation tc a given situation (as listed) |
| Knowledge of how to safely access a ship, holds, cargo stows | Demonstrates how to use a variety of access methods | Correctly demonstrates how to safely use access equipment. |
| Understands the dangers associated with the consumption of alcohol and drugs. | Understands the effects of alcohol and drugs on the body and the dangers to him and his fellow workers | Conveys that it is dangerous to use alcohol and drugs before going on shift. |
| General knowledge of various types of ships and cargoes | Explains the differences of various ships and cargoes | Demonstrates that he or she can identify various ship and cargo types using diagrams and photographs |
| Knowledge of common lifting equipment used on a ship and the dangers of swinging and falling cargo | Explains the difference between types of lifting equipment | Demonstrates that he or she :an identify various types of ifting equipment using diagrams and photographs and explains the dangers of standing near moving loads |
| Understands why it is dangerous to stand in the square of a hatch while cargo is being lifted | Explains that cargo can fall out of a lift and that another person can throw shackles or dunnage down the hold | States that he must stand in he wings when cargo is being ifted and that items must be owered into a hold and not hrown |
| Understands symbolic safety signs displayed on a vessel | Identifies and explains the application of a variety of shipboard safety signs | Explains his or her actions alevant to safety signs |
| Knows who to and how to sport and unsafe act and conditions | dentifies who to contact and explains how to report an unsafe act, condition or ncident | Knows the role of the safety appointee, officer and committee |
| Knows what to do in the event of various emergency situations | Explains the correct procedure for those situations | Details the procedures |
| Jnderstands the importance of good housekeeping | dentifies poor housekeeping n d explains the necessity of naintaining a safe working rea | Correctly identifies poor iousekeeping and how to naintain a clean and safe vorking area |

# Annex 2 Accreditation of medical practitioners and stevedore medical fitness standards

## Medical standards for stevedoring industry

### 1. Objectives

These regulations—

- make provision for and in relation to the medical examination and assessment of fitness for specific job types in the stevedoring industry;
- provide the minimum physical and medical requirements to ensure a safe environment for workers and a guide to medical examiners: and
- MUST BE READ IN CONJUNCTION WITH THE PARTICULAR JOB SPECIFICATIONS (attached as Annexure)

### 2. Definitions

**2.1 Medical examiner.** A person who has appropriate qualifications and experience and who has under gone orientation and gained in-sight to the extreme requirements experienced in the stevedoring industry. He must be approved by the Authority.

**2.2 Authority.** The South African Maritime Safety Authority (SAMSA).

**2.3 Labour brokers and employers of stevedores.** Any organization that employs workers to handle cargo on board a ship.

2.4 **Stevedore.** Any person engaged in the work of handling cargo on board a ship.

2.5 **Medical certificate.** A prescribed, regulated and controlled certification of job specific medical fitness.

**2.6 Valid. A** medical certificate will be valid for a period of 12 months.

2.7 **Categorization** of **stevedores.**

- Category **1:** Crane drivers, Forklift drivers, Winch men, Gangway men and Lashers.
- Category 2: Supervisors, Foremen, General workers.

**2.8 Job specifications.** These are the industry-established job requirements and appropriate physical demands.

### 3. Requirements to be medically fit

A person to whom these regulations apply must not perform the specific role or perform duties as a stevedore, or be taken into employment, or allowed onto the shift, unless the person is medically fit to perform these duties without being a danger to himself or herself or others. This is the responsibility of the Stevedoring Company.

**4. Evidence of medical fitness**

For purposes of these regulations a person is medically fit to perform duties as a stevedore if that person —

- holds a valid medical certificate declaring him/her fit to perform the specific duty: and
- there is no evidence that the medical condition has changed since the last medical certificate was issued;

**5. Application for medical certification**

A stevedore must apply to a registered, approved medical practitioner. The responsibility of the upkeep of the medical certification is that of the employer.

**6. Determination of fitness**

6.1 In determining the medical fitness of a stevedore, the medical examiner must have regard to the guidelines as well as applying normal medical fitness considerations.

6.2 If an employee is found to be unfit, the employee or employing companies can, at its own cost appeal the findings.

**6.3** This appeal will be considered by a committee of three persons, two of which will be medical practitioners appointed by the recognized authority, one of whom must be the Chairman. One must be a specialist in the particular field.

6.4 A quorum for a medical appeal committee must be three. The decision of the majority of members will be the final decision.

6.5 This Medical Appeal Committee will regulate the proceedings, subject to the regulations and any direction given by the Authority.

6.6 In determining the appeal the medical appeal committee can confirm, vary or set aside the medical examiners findings.

**7. Medical examinations**

7.1 The examination must be conducted in such a way that the examination, appropriate tests and interviews and make such inquiries in relation to an applicant as appear appropriate to the determination of medical fitness to a specific job description. He is to have full disclosure as to the requirements needed to perform the particular task.

7.2 The applicant is to disclose all pre-existing medical conditions that can well effect the determination of medical fitness.

**8.** Issue **of** a medical certificate

**8.1** A medical certificate can be issued if the medical examiner has—

- confirmed identification of the applicant;
- been able to attest to the true state of health of the application; and
- has a full understanding of the applicant's job specifications.

8.2 The medical examiner can issue a certificate as laid down in section 2.1 **8** of the Code.

**8.3** The medical examiner can classify the applicant as—

- fit for a specific type of work. (A)
- unfit for a specific type of work.(B)
- temporarily unfit for a specific type of work. (C).

**9.** Approval **of** medical practitioners

Any practitioners applying for authorization must—

- hold a qualification in Occupation Health;
- have at least 3 years experience in occupational health in the stevedoring industry;
- have undergone an approved ports orientation and job analysis of the stevedoring industry; and
- have access to the appropriate equipment.

**10.** Colour and visual requirements

- Category **1.** As per Traffic Act and additional depth perception. Included no diplopia, congenital night blindness, Retinitis pigmentosa, or other progressive eye disease. No visual field disorders of less than 120 degrees bilaterally. Those with monocular vision and pathological field deficit must have a field of vision of at least **120** degrees in the horizontal as per the Goldman perimeter using the iii/4 (or equivalent perimeter) setting. There must be no significant defect in the binocular field which encroaches within 20 degrees of fixation above or below the meridian.

- Category **2.** As per the visual standards No. 1107 (GG **26878)** MERCHANT SHIPPING (EYESIGHT AND MEDICAL EXAMINATION) Regulations 2005. Better eye no less than **6/60;** other eye not less than **6/60;** higher visual acuity (aided if necessary); better eye not less than **6/18(6/9*);** other eye not less than **6/18.** (* if monocular vision with no sign of progressive disease in the other eye).

- Colour vision *to* be conducted with Ishihara plates.

- Night vision and glare compensation to be checked in Category 1 employees.

11. Application **for** visual test

This testing is compulsory and completed by **an** approved medical practitioner with the appropriate equipment or an approved optician

**12.** **Certification** of vision

This will be incorporated in the standard medical certification certificate. The validity will be that of the medical certificate,

**13.** Hearing standards

**13.1** The employee must be able to hear at least **40** dB in his best ear (without any assistance equipment, such as a hearing aid) at the frequencies **500,1000,2000** and 3000 **Hz.**

**13.2** This must be tested using a true tone audiometer.

**14.** Medical standards

**14.1** Diabetes. Insulin dependent diabetes not acceptable. Category **B**

**14.2** Diabetes with oral or dietary control and monitored on a **1** monthly basis, as per the CDC. HbA1c must be normal and monitored 6 monthly. Category C

**14.3** Hypertension. Category C until controlled and monitored. Maintenance must be normal on medication **(BP=150/90** or less) with no complications or sequelae. There must be allowance for health surveillance and continuity of treatment. Any worker that is newly diagnosed with hypertension must be temporarily declared unfit until controlled.

**14.4** Asthma. Well controlled asthma (confirmed by investigation and appropriate supporting evidence) treated and monitored on oral inhaled medication without a history of exacerbations and hospitalisation or oral corticosteroids, and subject to suitable monitoring. Any worker suffering from occupational asthma must be appropriately placed to avoid specific allergens work.

**14.5** Asthma and **COPD.** These illnesses affect the endurance of the worker as well as their ability to use airway protectors such as respirators. These diseases must be assessed with this in mind as well as be appropriately treated prior to working in the industry. It must also be taken into account when placing the worker in a dusty or confined space. If this is to take place, workers with **FEV1** less than **65%, FVC>70%** and **FEV1/FVC > 70%** are grounds for concern.

**14.6** Hearing disorders. There must be no deficit of hearing that will result in the loss of communication. Levels acceptable are any loss of hearing greater that PLH **= 10%** or greater then unfit for duty until a referral to an audiologist and treatment has been completed. This applies to all Category 1 applicants.

**14.7** Obesity. Excessive obesity significantly affects exercise tolerance, mobility and/or general performance and may well impair safe performance. It also is directly linked to other chronic disease and

risks of mortality and morbidity. Allow for **25%** excess weight, making use of the BMI and Metropolitan Life tables. A **BMI >** 35 must also be accompanied by a Glucose Tolerance Test.

**14.8 Infectious diseases**

**14.8.1** Gastro enteritis: Requires appropriate treatment. Temporarily unfit. **Category C**

**14.8.2** Acute infective illnesses: Temporarily unfit until treated. **Category C**

**14.8.3** Active pulmonary tuberculosis: Category C until the treatment has been instituted and there are signs of complications of either disease or medication side effects. **Category** C

**14.8.4** Sexually transmitted disease: These must be treated appropriately and the worker must be assessed for non-genital sequelae. **Category** C

**15. Mental disease**

**15.1 Depression:** Not accepted until controlled. **Category** C

**15.2 Anxiety:** Not acceptable until appropriately treated and stabilized. **Category B**

**15.3 Psychosis:** As listed by DSM V. Not accepted. **Category B**

**15.4 Alcohol dependency:** If persistent and effecting health by causing physical or behavioural disorder. **Category** B

**15.5 Drug dependency:** A history of drug abuse or substance abuse in the last 3 years. **Category** B.

**16. Cardiovascular disease**

**16.1 Valvular disease. Category C**

**16.2 Cardiac event:** Any category 1 applicant must have documented evidence of the degree of damage and the remedial action taken. A period of six months post-infarct and clinically stable required prior to returning to work and regular treatment and assessment required. Standard testing incorporating a three stage Bruce Protocol without any ischemic changes on the ECG. **Category C**

**16.3 Arrhythmia:** Category **1.** As long as the arrhythmia does not effect effort tolerance and there is a clearance from a cardiologist. **Category** C

**16.4 Cerebral-vascular disease:** Assessment must be done with the job specifications in mind. Category **1** excluded.

**16.5** Arterial disease: This will be allowed as long as it does not affect the effort tolerance of the worker. Regular follow-up is suggested. Category C

**16.6** Venous disease: Current or recent history of deep vein thrombosis with or without embolisation presents a high risk. Category C

**16.7** Varicose veins: High risk with ulcers or other complications. Category C

**17.** Respiratory disease

**17.1** Sinusitis: This can result in both the loss of hearing and loss of balance. Until treated Category C

**17.2** Bronchitis: Essential to be assessed with the job specification considered. Category C

**17.3** Emphysema: Essential to be assessed with the job specification considered. These employees will be considered in a similar way to asthmatics. Category C

**18.** Digestive system disease

**18.1** Ulcer disease: Acute ulceration is a high risk and this requires to be treated before work is allowed. Category C

**18.2** Hernia: These are often the result of heavy manual work. It is essential that, on examination, the medical examiner examine all possible hernia sites. These will need to be dealt with, but must be recorded on the records. Small hernias are not a risk, but will require intervention. Large hernias will be Category C due to the chance of herniation.

**18.3** Liver disease. Category C

**18.4** Pancreatitis. Category C

**19.** Genito-urinary disease

Any evidence of blood or protein in the urine requires intense investigation prior to deeming the stevedore fit to work. Any history of renal calculi must be taken into account in hot working conditions and fluid intake must be advised.

**20.** Pregnancy

**20.1** Pregnancy affects the work performance due to the risk of hypo tension, worse in hot conditions.

20.2 Increases the risk of falls due to the change in centre of gravity.

**20.3** Actual climbing becomes difficult.

20.4 Nausea and vomiting can alter the state of hydration.

20.5 It is strongly advised that heavy physical work be avoided after 28 weeks.

21. Skin disease

21.1 These are to be treated individually and in severe cases it must be treated first. Category C

21.2 Close observation must be made if there is a suspicion that this is an occupational skin disease.

22. Muscular-skeletal disease

22.1 Normal mobility, agility and strength in the spine and all limbs are all important for tasks involving climbing, lifting and confined space work. Ships have steep stairs, cranes, rope ladders and vertical steel rung ladders which must be climbed and hatches that need to be passed through.

22.2 Arthritis: Advanced disease that inhibits ability to perform a full 8 hour shift will result in unfit to work in all categories.

22.3 Back pain: Intractable back pain that inhibits the free movement and limits the duration and effort tolerance will exclude the applicant from passing the medical examination.

22.4 Co-ordination and Power: These requirements and testing protocols to be developed with the assistance of OT and physiotherapist.

23. Speech Disorders

Inability to communicate will result in disability. Category C.

24. HIV/AIDS

24.1 Due to the current confidentiality and ethical issues, HIV will not be tested for. In the case of a known HIV positive patient, the category for employment will be A. However, in the case of associated illnesses and inability to work due to ill health, the employee will be Category B, and must be either treated or advised to seek attention. The category will change in the situation that the employee becomes fit to work and not be a safety risk to fellow workers.

24.2 HIV is not routinely tested for and a test must not be done unless there is a clinical indication. While HIV positive is not a bar to employment, evidence of AIDS can present a high risk. Of particular concern are neurologic or neuropyschiatric and other complications that would compromise safety.

**25.** Neurological disorders

25.1 Epilepsy: This neurological disorder will not be accepted in all classes unless the stevedore has been fit-free for a period of 12 months. A single seizure will require intense investigation and this will only be accepted once a neurologist has given, in writing, the results of such investigations. Epilepsy that follows head injury or surgery will only be accepted after 12 months of no seizures.

25.2 Meniere's disease: This is classified as B in Category 1 workers. If it is well controlled, it will be C in category 2 workers.

25.3 Vertigo: This is a strict rejection criterion until treated. This is due the severe consequence in the stevedoring industry. Category **B.**

26. Chronic illnesses

Cancer, haematological disorders, and employees on chronic medication will be treated on an individual basis, the practitioners keeping in mind the extreme conditions of this working environment, prior to declaring the worker fit for duty.

# Annex 3 Job specification – (medical)

| JOB SPECIFICATION<br>Winch man/Gantry | | | | | |
|---|---|---|---|---|---|
| ***Physical quirements*** | | ***Working environment*** | | ***Job requirements*** | |
| Climbing stairs | x | outside | x | use of safety glasses | x |
| Climbing ladders | x | inside | x | use of dust masks/respirator | |
| Handling delicate equipment | x | temperature high | x | use of gloves sometimes | x |
| Lifting of equipment | x | temperature low | x | use of hard hat sometimes | x |
| Use of left arm | x | noise | x | use of safety belt/harness | |
| Use of right ann | x | humidity | x | use of ear muffs sometimes | x |
| Walking | | dampness | x | use of kidney belt | |
| Use of left leg - some cranes | x | vibration | x | use of reflective vest | x |
| Use of right leg - some cranes | x | elevated position | x | driving vehicles | x |
| Standina | | confined spaces | x | | |
| Bending | x | abnormal position | | **Bio-mechanical** | |
| Working bent | | radiation | | action repeating | x |
| Speech | | dust | x | high physical exertion | |
| Vision | x | gas | | | |
| Night vision | x | fumes | x | | |
| Colour distinction | x | odours | x | | |
| Depth perception | x | hazardous | x | | |
| Hearing | x | | | | |
| Eye/hand/foot coordination | x | | | | |

| *Physical requirements* | | *Working environment* | | *Special requirements* | |
|---|---|---|---|---|---|
| Climbing stairs | x | outside (limited) | x | use of safety glasses | x |
| Climbing ladders | x | inside | x | useofdust mask/respirator | x |
| Handling delicate equipment | x | temperature high | x | use of gloves | x |
| Lifting of equipment | x | temperature low | x | use of hard hat | x |
| Use of left arm | x | noise | x | use of safety belt/harness | x |
| Use of right arm | x | humidity | x | use of ear muffs | x |
| Walking | x | dampness | x | use of kidney belt | |
| Use of left leg - some cranes | x | vibration | x | use of reflective vest | x |
| Use of right leg - some cranes | x | elevated position | x | driving vehicles | x |
| Standina | x | confined spaces | x | | |
| Bending | x | abnormal position | | **Bio-mechanical** | |
| Working bent | | radiation | x | action repeating | x |
| Soeech | x | dust | x | hinh physical exertion | |
| Vision | x | gas | x | | |
| Niaht vision | x | fumes | x | | |
| Colour distinction | x | odours | x | | |
| Depth perception | x | [illegible] | x | | |
| Hearina | x | | | | |
| Eye/hand/foot coordination | x | | | | |

Supervise the operation on board

| JOB SPECIFICAT ON<br>Gangway | | | | | |
|---|---|---|---|---|---|
| ***Phvsical reaoirements*** | | ***Workinn environm :nt*** | | ***Special requirements*** | |
| Climbing stairs | x | outside | x | use of safety glasses | x |
| Climbing ladders | x | inside | x | use of dust masks/respirator | x |
| Handling delicate eauipment | | temperature high | x | use of gloves sometimes | x |
| Lifting of equipment | | eratu \ | x | use of hard hat sometimes | x |
| Use of left arm | x | noise | x | use of safety belt/harness | x |
| Use of right arm | x | humidity | x | use of ear muffs sometimes | |
| Walking | | damoness | x | use of kidney belt | x |
| Use of left leg - some cranes | x | vibration | x | use of reflective vest | x<br>x |
| Use of right leg - some cranes | x | elevated position | x | driving vehicles | |
| Standing | | confined spaces | | | |
| | | abnormal positior | | | |
| Working bent | | radiation | | action repeating | x |
| Speech | x | dust | x | high physical exertion | |
| Vision | x | gas | | | |
| Night vision | x | fumes | x | | |
| Colour distinction | x | odours | x | | |
| Depth perception | x | hazardous substances | | | |
| Hearing | x | | | | |
| Eye/hand/foot coordination | x | | | | |

Signal and communicate with winch men/gantry operator/forklift operator
Standing in elevated and sometimes confined spaces

| JOB SPECIFICATION<br>Forklift operator | | | | | |
|---|---|---|---|---|---|
| ***Physical requirements*** | | ***Working environment*** | | **Special *reauirements*** | |
| Climbing stairs | x | outside (limited) | x | use of safety glasses | x |
| Climbing ladders | | inside | x | use of dust masklrespirator | x |
| Handling delicate equipment | x | temperature high | x | use of gloves | x |
| Lifting of equipment | x | temperature low | x | use of hard hat | x |
| Use of left arm | x | noise | x | use of safety belt/harness | |
| Use of right arm | x | humidity | x | use of ear muffs | x |
| Walking | | dampness | | use of kidney belt | x |
| Use of left leg - some cranes | x | vibration | x | use of reflective vest | x |
| Use of right leg - some cranes | x | elevated position | x | driving vehicles | x |
| Standing | | confined spaces | | | |
| Bending | x | abnormal position | | **Bio-mechanical** | |
| Working bent | | radiation | | action repeating | x |
| Speech | x | dust | x | high physical exertion | |
| Vision | x | aas | | | |
| | | | | | |
| Colour distinction | x | odours | x | | |
| Depth perception | x | hazardous substances | x | | |
| iearing | x | | | | |
| Eye/hand/foot coordination | x | | | | |

| *Physical requirements* | | *Working environment* | | *Special requirements* | |
|---|---|---|---|---|---|
| Climbing stairs | x | outside | x | use of safety glasses | x |
| Climbing ladders | | inside | x | use of dust mask/respirator | x |
| Handling delicate equipment | x | temperature high | x | use of gloves | x |
| Lifting of equipment | | temperature low | x | use of hard hat | x |
| Use of left arm | x | noise | x | use of safety belt/harness | x |
| | | | | | |
| Walking | | dampness | | use of kidney belt | |
| Use of left leg - some cranes | x | vibration | x | use of reflective vest | x |
| Use of right leg - some cranes | x | elevated position | x | driving vehicles | |
| Standing | x | confined spaces | x | | |
| Bending | x | abnormal position | x | **Bio-mechanical** | |
| Working bent | x | radiation | x | action repeating | x |
| Speech | x | dust | x | high physical exertion | x |
| Vision | x | gas | x | | |
| Night vision | | fumes | x | | |
| Colour distinction | | odours | x | | |
| Depth perception | | hazardous substances | x | | |
| Hearing | x | | | | |
| Eye/hand/foot coordination | x | | | | |

| JOB SPECIFICATION<br>General worker | | | | | |
|---|---|---|---|---|---|
| Physical requirements | | Working environment | | Special requirements | |
| g stairs | x | ut le (limited) | x | use of safety glasses | x |
| Climbing ladders | x | | x | | |
| Handling delicate equipment | x | | x | use of gloves | x |
| Lifting of rt | x | temperature low | | f rd h | x |
| Use of left arm | x | noise | x | use of safety belt/harness | x |
| Use of right arm | x | humidity | x | use of ear muffs | x |
| Walking | x | dampness | x | use of kidney belt | x |
| Use of left leg - some cranes | x | vibration | x | use of reflective vest | x |
| Use of right leg - some cranes | x | elevated position | x | driving vehicles | |
| Standina | x | confined spaces | x | | |
| Bending | x | abnormal position | | Bio-mechanical | |
| Working bent | | radiation | | action repeating | x |
| Speech | x | dust | x | high physical exertion | |
| Vision | x | gas | x | | |
| Niaht vision | | fumes | x | | |
| Colour distinction | | odours | x | | |
| | | haza dous substa ces | x | | |
| Hearing | x | | | | |
| Eye/hand/foot coordination | x | | | | |

General housekeeping
Working in elevated confined space
Changing gear on forklift and crane
Carrying dunnage or other equipment
Climbing onto work areas
Working with spades rakes and other hand-tools