RISK ASSESSMENT

1.1 Introduction

rk)
l No.
(1)(b)

1.1.1 *Employers are required to ensure the health and safety of workers and other persons so far as possible, by the application of certain principles, including the evaluation of unavoidable risks and the taking of action to reduce them.*

1.1.2 *Specifically, employers are required to make a suitable and sufficient assessment of the risks to health and safety of workers arising in the normal course of their activities or duties, for the purpose of identifying:*

(a) groups of workers at particular risk in the performance of their duties; and

(b) the measures to be taken to comply with the employer's duties under the Regulations;

The assessment should extend to others on board ship who may be affected by the acts or omissions of the employer.

1.1.3 *Every employer and every self-employed person on board ship is required to inform the Company of any relevant risks to health and safety arising from the conduct of their business.*

1.1.4 *Employers must ensure that measures are taken to ensure an improvement in the safety and health of workers and other persons in respect of those risks identified by the assessment.*

1.1.5 *Employers must review the assessment when there is reason to believe that it is no longer valid, and make any necessary changes.*

d (6)

1.1.6 *Workers must be informed of any significant findings of the assessment and measures for their protection, and of any subsequent revisions made.*

1.1.7 *The Company is also required to ensure that anyone working on the ship, whether or not they are directly employed by the Company, is aware of the findings of the Company's risk assessment and of the measures taken for their protection.*

1.1.8 This chapter explains the principles of risk assessment in relation to occupational health and safety and provides some guidance on how the assessment and control of risks may be approached.

1.1.9 Regulation of occupational health and safety on board ship is of course not new. Existing safety measures may already provide a high level of safety for workers. For example, well-established procedures, inspections by safety officers and the use of "permits to work" which control safety conditions, will contribute to the identification of hazards and measures for safe working.

1.1.10 However, what is new is the explicit requirement in regulation for employers to adopt the risk assessment approach to occupational health and safety. This means that all work activities should be considered from a risk assessment standpoint.

1.1.11 Employers may adapt existing safety management systems to meet the risk assessment principles set out in section 1.3 and the main elements described in 1.10 taking into account the nature of their operations and the type and extent of the hazards and risks to workers.

1.2 Key terms

1.2.1 Key terms, used frequently in this chapter, are defined below.

a) A **hazard** is a source of potential harm or damage or a situation with potential for harm or damage;

b) **risk** has two elements:

- the likelihood that a hazard may occur;
- the consequences of the hazardous event.

1.3 Principles of risk assessment

1.3.1 A "risk assessment" is intended to be a careful examination of what, in the nature of operations, could cause harm, so that decisions can be made as to whether enough precautions have been taken or whether more should be done to prevent harm. The aim is to minimise accidents and ill health on board ship.

1.3.2 The assessment should first establish the hazards that are present at the place of work and then identify the significant risks arising out of the work activity. The assessment should include consideration of the existing precautions to control the risk, such as permits to work, restricted access and use of warning signs or personal protective equipment.

1.3.3 Any risk assessment must address risks to the health and safety of workers. Advice on assessment in relation to the use of personal protective equipment, the use of equipment and manual handling operations are given in Chapters 4,19 and 20. In addition, specific areas of work involving significant risk, and recommended measures to address that risk, are covered in more detail in Sections 3 and 4 of the Code.

1.4 Risk assessment in practice

1.4.1 There are no fixed rules about how risk assessment should be undertaken, although section 1.10 gives the main elements. The assessment will depend on the type of ship, the nature of operations and the type and extent of the hazards and risks. The intention is that the process should be simple, but meaningful. The following sections give advice on good practice.

1.5 What should be assessed?

1.5.1 The assessment should cover the risks arising from the work activities of workers on the ship. The assessment is not expected to cover risks which are not reasonably foreseeable.

1.5.2 Employers are advised to record the significant findings of their risk assessment. Risks which are found to be trivial, and where no further precautions are required, need not be recorded.

1.6 Who has to carry out the assessment?

1.6.1 In all cases, individual employers have responsibility for assessing the risks to their workers and other persons who may be affected by their activities. The Company will be responsible for co-ordinating the risk assessments covering everyone on the ship, including workers directly employed by itself, taking account of the other employers' assessments.

1.6.2 The process of risk assessment should be carried out by suitably experienced personnel, using specialist advice if appropriate.

1.7 How thorough should the assessment be?

1.7.1 Regulation 7(1) requires that a suitable and sufficient assessment be made of the risks to the health and safety of workers arising in the normal course of their duties. This requirement to assess risk relates only to risks which arise directly from the work activity being undertaken and which have the potential to harm the person(s) actually undertaking that work, or those who may be directly affected by that work. The requirement to assess risk does not extend to any consequential peril to the ship resulting from the particular work activity, nor to any external hazards which may imperil the ship, either of which may cause harm to those on board or to others. These aspects are covered by other regulations.

1.7.2 The assessment of risks must be 'suitable and sufficient'. The process need not be overcomplicated. This means that the amount of effort that is put into an assessment should depend on the level of risks identified and whether those risks are already controlled by satisfactory precautions or procedures to ensure that they are as low as reasonably practicable.

1.8 When to assess?

1.8.1 Risk assessment should be seen as a continuous process. In practice, the risks in the workplace should be assessed before work begins on any task for which no valid risk assessment exists. An assessment must be reviewed

and updated as necessary, to ensure that it reflects any significant changes of equipment or procedure.

1.9 Elements of risk assessment

1.9.1 The main elements of the risk assessment process are:

(a) classify work activities;

(b) identify hazards and personnel at risk;

(c) identify risk controls;

(d) estimate the risk;

(e) decide the tolerability of the risks;

(f) prepare risk control action plan (if necessary);

(g) review adequacy of action plan;

(h) ensure risk assessment and controls are effective and up to date.

1.9.2 Further guidance on how each element of risk assessment may be accomplished is in Annex 1.1, which is based on British Standard 8800: 2004.

1.10 Risk assessment pro-forma

1.10.1 Employers may wish to use a simple pro-forma to record the findings of an assessment, covering, for example:

(a) work activity;

(b) hazard(s);

(c) controls in place;

(d) personnel at risk;

(e) likelihood of harm;

(f) severity of harm;

(g) risk levels (sometimes called "risk factor");

(h) action to be taken following the assessment;

(i) administrative details, e.g. name of assessor, date, etc.

The examples at Annex 1.2 and Annex 1.3 illustrate a two stage approach, the first stage being to identify those risks which require further consideration and the second recording the assessment of those significant risks. This is a suggestion only, and is not intended to be prescriptive.

.I

GUIDANCE ON MAIN ELEMENTS OF RISK ASSESSMENT

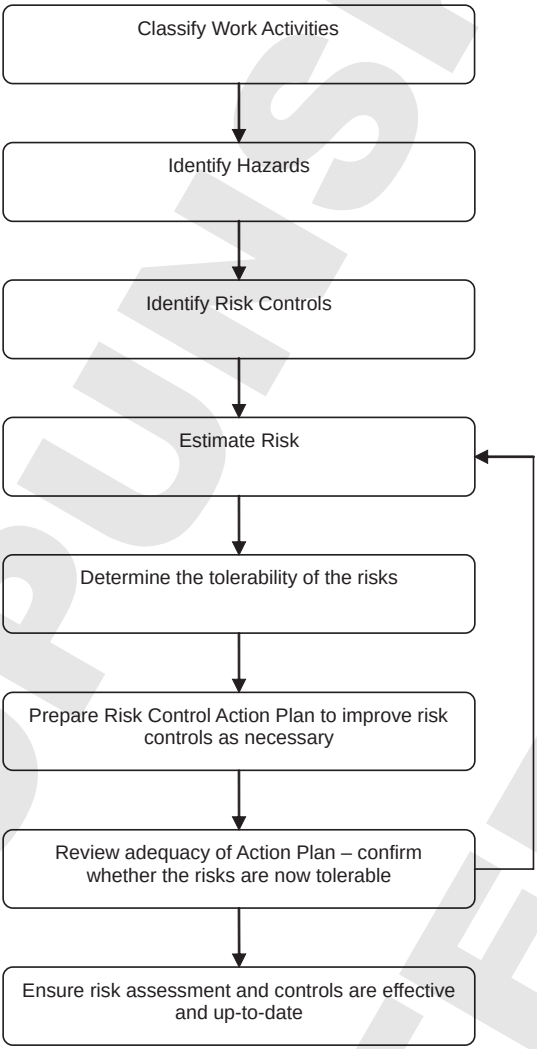

Fig.1: The process of risk assessment and control

Source: British Standard 8800:2004 Pg. 41

1. Classify work activities

1.1 A useful preliminary to risk assessment is to identify separate work activities, to group them in a rational and manageable way, and to gather necessary information (or collate existing information) about them. Infrequent maintenance tasks, as well as day-to-day operations, should be included. Possible ways of classifying work activities include:

(a) department/location on board ship;
(b) stages of an operation or work routine;
(c) planned and unscheduled maintenance;
(d) defined tasks (e.g. loading/unloading cargo).

1.2 Information required for each work activity might include:

(a) tasks being carried out: their duration and frequency;
(b) location(s) where the work is carried out;
(c) who normally/occasionally carries out the tasks;
(d) others who may be affected by the work (e.g. contractors, passengers);
(e) training that personnel have received for the task.

2. Identify hazards

2.1 Asking these three questions should help to identify where there is a hazard:

- Is there a source of harm?
- Who (or what) could be harmed?
- How could harm occur?

Hazards that clearly possess negligible potential for harm should not be documented or given further consideration, provided that appropriate control measures remain in place.

2.2 To help with the process of identifying hazards it may be useful to categorise hazards in different ways, for example by topic, e.g.:

(a) mechanical

(b) electrical
(c) physical
(d) radiation
(e) substances
(f) fire and explosion.
(g) chemical
(h) biological
(i) psychological

2.3 A complementary approach may be to develop a prompt list such as:
During work activities could the following hazards exist?

(a) slips/falls on the level;
(b) falls of persons from a height;
(c) falls of tools, materials, etc, from a height;
(d) inadequate headroom;
(e) inadequate ventilation;
(f) hazards from plant and machinery associated with assembly, commissioning, operation, maintenance, modification, repair and dismantling;
(g) hazards to plant and machinery, which may result in their destruction or the loss of availability of essential equipment;
(h) hazards from manual handling;
(i) hazards from long term physiological effects e.g. exposure to substances above the Threshold Limit Value (TLV).

The above list is not exhaustive, and employers could develop their own 'prompt list' taking into account the particular circumstances.

The most effective way of reducing risk is to eliminate the hazard completely, however in many cases this will be impossible and risk controls will need to be used.

3. Identify Risk Controls

3.1 Risk and hazard identification are essential elements of the risk assessment process and inherently only the application of appropriate control measures reduces risks. In many instances following established good practice will provide the necessary controls.

3.2 A risk assessment should be comprehensive enough to identify hazards and the required control measures to reduce the risk of harm, including those planned or already in place. Separate controls may be applicable to reduce likelihood, e.g. Risk Control Systems and to reduce severity, e.g. improved PPE.

3.3 As well as identifying the necessary control measures for particular risks, the risk assessment process should also consider the arrangements to ensure that these control measures are implemented and kept in place.

3.4 Risk Control Systems provide the method of management control for individual control measures or types of control measure. Using a Permit-to-Work (PTW) system as an example, this would include defining aspects such as:

(a) the scope (range of activities) for which the PTW is needed;
(b) responsibility for the design of the PTW system and the responsibilities of those involved in its operation;
(c) training and competency of those who design or operate the PTW system;
(d) communication and consultation needed in the design and operation of the system;
(e) arrangement for inspection and audits of the system and its implementation;
(f) arrangements to review the performance of the PTW system and determine whether improvements are needed.

3.5 When evaluating existing risk control systems, consideration should be given to measures that reduce the likelihood of and / or the severity of harm. The following hierarchy can be applied:

source;

(b) If elimination is not possible, try to reduce risk at the source;

(c) Reduce risk via procedures and safe systems of work, adopting PPE only as the last resort after all other control measures have been considered.

4. Estimate risk

4.1 The risk from the hazard may be determined by estimating:

(a) the potential severity of harm;

(b) the likelihood that harm will occur.

These two components should be judged independently.

4.2 When seeking to establish potential severity of harm, the following should be considered:

(a) part(s) of the body likely to be affected;

(b) nature of the harm, ranging from slight to extreme.

Care should be taken to ensure that harm category definitions reflect both the short and long term health and safety consequences. A possible categorisation of severity harm levels based on the three bands of slight, moderate and extreme is shown in table 1:

Table 1: Examples of categories for severity of harm

Category	Slight harm	Moderate harm	Extreme harm
Health	Nuisance and irritation (e.g. headaches); temporary ill health leading to discomfort (e.g. diarrhoea).	Deafness; dermatitis; asthma; work related upper limb disorders; ill-health leading to permanent minor disability.	Occupational cancer; severe life shortening diseases; acute fatal diseases; permanent substantial disability.
Safety	Superficial injuries; Minor cuts and bruises; Eye irritation from dust.	Lacerations; burns; concussion; serious sprains; minor fractures; musculo-skeletal disorders.	Amputations; major fractures; poisonings; multiple injuries; fatal injuries.

The health and safety harm categories are effectively defined by quoted examples and these lists are not exhaustive

4.3 Individuals can adapt the structure of table 1 to reflect their objectives. For example the structure described could be expanded from three "harm" bands (slight, moderate and extreme) to four bands by dividing the extreme harm band into two categories such as "severe harm" (e.g. major factures) and "extreme harm" (e.g. fatal).

4.4 In order to establish the likelihood of harm the adequacy of control measures already in place should be considered. Legal requirements and guidance in this Code and other safety publications are good guides to adequate control of specific hazards.

The following issues should then typically be assessed:

(a) number of personnel exposed;
(b) frequency and duration of exposure to the hazard;
(c) effects of failure of power or water supply;
(d) effects of failure of plant and machinery components and safety devices;
(e) exposure to the elements;
(f) protection afforded by personal protective equipment and its limitations;
(g) possibility of unsafe acts by persons for example, who:
    (i) may not know what the hazards are;
    (ii) may not have the knowledge, physical capacity, or skills to do the work;
    (iii) underestimate risks to which they are exposed;
    (iv) underestimate the practicality and utility of safe working methods.

A possible categorisation of severity harm levels based on the four bands, of very likely; likely; unlikely or very unlikely, is shown in table 2: