ICHCA International Limited

INTERNATIONAL SAFETY PANEL BRIEFING PAMPHLET NO 12

SAFETY AUDIT SYSTEMS FOR PORTS

By Jan Wubbeling

ICHCA International Limited

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SHORT PERSONAL HISTORY OF THE AUTHOR

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Jan Wubbeling was employed by Europe Combined Terminals (ECT) in Rotterdam for over twenty years. For the last ten of those years he was responsible for the Safety Department where he became Manager of Safety, Health and Welfare Policy. He passed his Safety study at the University of Antwerp.

Jan left ECT in 2000 to set up his own consultancy, Wubbeling & Associates.

He is actively involved with numerous health, safety and environmental committees and working groups, both national and international, and has completed safety assessments and management training programmes for several large companies all over the world, on behalf of ECT International Consultancy.

He joint the International Safety Panel in 1990

1 INTRODUCTION

1.1 There are many reasons why the management of a port company should carry out a safety audit of part, or all, of its organisation. A safety audit enables accidents, interruptions to operations and any underlying factors and conditions to be identified. Suitably trained persons should carry out a safety audit.

1.2 The purpose of an audit is to highlight the risks that are present and to identify their underlying causes. This booklet shows how to do this. It also indicates the organisational and procedural measures that need to be taken to deal with the risks.

1.3 Every port company is different. The safety audit system should therefore be adapted, as necessary, to fit the circumstances of individual ports and companies. The results of a safety audit should be reported to management and to all others concerned. However, the carrying out of safety audits will not, by themselves, guarantee that the minimum legal requirements have been satisfied.

1.4 There are a number of proprietary safety audit systems available but few ere developed for ports. The safety audit system described in this booklet is primarily intended for use in ports.

1.5 A safety audit can be supplemented by safety inspections carried out periodically by appropriate responsible port personnel.

1.6 In this booklet ‘safety’ includes occupational health and related matters but is not intended to relate to non-work created medical conditions.

2 MANAGEMENT OF SAFETY

2.1 The aim of safety management should be to control the level of risk within the company. However safety should not be considered in isolation, but should be an essential integral part of the overall operational picture. Safety overlaps with quality management systems, environmental issues and problem solving and affects the overall efficiency of the company.

2.2 Safety management involves the structured assessment of risks and the setting up of a system of control that identifies the causes of unwanted events and their consequences. Safety management can be complicated but is based on simple principles:

- know what the minimum requirements are
- know what needs to be done
- know how to achieve it
- achieve it and continue to achieve it

2.3 Monitoring is an extremely important aspect of managing safety. Without effective monitoring to compare “how it should be done” against “how it is actually done”, lasting success is not possible. Such monitoring will highlight areas that need attention. Monitoring should be aimed at all levels in the company from basic operations to the Boardroom. Positive support of senior management is essential for the effective management of safety.

3 WHAT IS A SAFETY AUDIT

3.1 A safety audit is an objective periodical monitoring of the organisation and its operations. An audit is a means of measuring the level of risk and control in a company, its work places and its work activities.

3.2 In most countries legislation is aimed at ensuring the health, safety and welfare of people at work. To audit safely, people need to know:

- what the current situation is, ie. where they are
- what they want to achieve within a specified time, ie. where they want to go
- how they intend to achieve their intended objective, ie. how they intend to get there.

4 WHY AUDIT? – THE REASON FOR AUDITS

4.1 Audits should be used as the primary method of monitoring safety because they are:

- unbiased
- constructive
- systematic
- objective
- planned
- regular
- documented
- process and not people orientated.

Additionally:

- the results of the audit are reported in a clear and acceptable form to company management
- the whole company is stimulated to be aware of safety matters
- audit reports should form an essential part of all company safety reports.

4.2 The safety audit process should identify other matters that are not always understood as being safety related, such as purchasing of materials, designing of buildings, training of people, etc.

4.3 The audit process will also identify the root causes of incidents, rather than symptoms.

4.4 A safety audit should be seen as complementing any physical safety inspections, which are carried under the safety policy. Review of the operational efficiency of such inspections should form part of the safety audit report.

5 WHO AUDITS? – THE PEOPLE INVOLVED IN AUDITS

5.1 Although the audit process is basically simple, this is not always the case in practice. Trained people should, therefore, carry out auditing. Top management will decide to initiate the safety audit system, but the carrying out of audits will involve people at all levels.

6 HOW TO AUDIT – AUDITING PROCEDURES

6.1 Initiation

6.1.1 The initiative to organise an audit should come from senior management within a port company and the results should be reported back to senior management. Careful thought should be given to the introduction of an audit so that everyone clearly understands the audit process. It is especially important to make clear that an audit has as its target the identification of any deficiencies in the safety policy and the organisation and arrangements for carrying out the policy in order to ensure that corrective measures are taken. The first step is to devise and circulate an audit plan.

6.2 Audit plan

6.2.1 The audit plan should identify all the processes to be reviewed and include the number of meetings with people to advise them what is about to take place and what will be expected of them. Meetings should include:

- senior management
- workers representatives
- safety representatives
- other people likely to be involved in the audit.

6.2.2 During each meeting the participants should be advised of their involvement in the audit process. Open answers should be given to all questions and any documentary evidence necessary to confirm compliance should be made available.

6.2.3 The auditors and the directors and/or management should draw up the audit plan. The audit plan should be distributed throughout the company.

6.2.4 Once the audit plan has been agreed, the detailed arrangements of the audit should be considered and may include:

- the number of inspections to be carried out (x times per year)
- that all accidents are reported
- that safety is a standard item on the agenda of all relevant meetings, for example directors meetings
- the number of advisory meetings to be organised
- that work with equipment is in accordance with established procedures
- that operational personnel are aware of the safety instructions
- that inspections are carried out in an orderly manner
- that lifting equipment is inspected at appropriate intervals
- that personal protective equipment is worn as required

6.3 Basic information

6.3.1 To carry out the audit certain basic information will be required. This information may be obtained from company policy, statutory regulation, company rules, records, literature, inspection reports, etc.

6.3.2 Matters that should be considered include:

- the directors' policy
- the training of directors and management
- tasks and authorisations relating to safety (including purchasing and design procedures etc.)
- consultation arrangements (safety committee, staff consultation)
- the position of the safety officer (the person with particular responsibility for safety advice)
- personal protective equipment
- investigation and monitoring of accidents
- safety inspections
- safety regulations and company rules
- task analysis and procedures
- general information and promotion of safety
- instruction and training of all personnel
- induction of new personnel
- emergency procedures for fire, medical and hazardous materials incidents

6.4 Methodology

6.4.1 An effective audit starts with a checklist relating to activities and documented procedures elating to those activities. The checklist should be used as a guide to the questions that need to be asked during the audit. The audit should direct itself exclusively to the process being examined; people and personalities must not be taken into account.

6.4.2 Appendix 2 of this booklet is an example of an audit questionnaire for use in connection with stevedoring operations at a container terminal.

6.5 Monitoring (looking to see if it is done in the way intended)

6.5.1 Monitoring can be carried out by:

- counting – verification of planned elements, eg. safety inspections, staff consultations taking place as planned
- random sampling
- professional judgement.

6.5.1.1 Counting. This is the simplest method to establish actual numbers. This may be, for example:

- the number of safety inspections, the number of times staff consultation takes place
- the number of reported accidents compared to the number recorded
- the number of hours of training given when starting a job.

6.5.1.2 Random sampling. An arbitrary number of people can review matters such as:

- the correct use of personal protective equipment
- the knowledge of safety instructions
- the subject of the last advisory meeting
- the distribution of information from meetings
- what was talked about during consultation.

Through observation and discussion a great deal of useful information can be collected which can make the effectiveness of the safety policy clear.

6.5.1.3 Professional judgement. Qualitative judgements can be made by giving weight factors to the matters that are to be reviewed. To do this:

- the items to be reviewed should be split up into relevant sections
- a weight factor should be given to each of the elements
- enough information should be collected about each element to allow a review to be carried out in the most effective way.

6.5.1.4 The weight factor to be applied to each element should reflect the importance, or lack of importance, of that element in the overall operation.

6.5.1.5 The review mark should reflect the standard of performance of that element. It may be prudent to ensure that the review mark system used does not have a “mean” value; for example, marks from 1 to 5 have a mean value of 3, but marks from 1 to 8 do not have a whole number mean value so a mark of 4 tends towards poor whereas a mark of 5 tends towards good.

6.5.1.6 The total mark of an element is obtained by multiplying the review mark by the weight factor.

6.5.1.7 An example of a professional judgement table is given below. This is based on a review mark scoring from 1 to 8 with 1 being the worst and 8 being the best. It can be seen that by using weight factors the relevant importance of each element can be taken into account. The total review marks can then be compared to the ideal (maximum) total review mark, for example as a percentage, to show where the priorities for action are needed.

The example uses the review mark and weight factor to identify those elements that should be given priority for correction. This could be those items showing below 70% of the “Per cent of ideal”. It may also be wise to pay special attention to those items showing a very low percentage of ideal, say less than 35%, of which there are three in the example judgement table.

Factors for review	Weight factor	Review mark: Actual	Weighted	Ideal	Per cent of ideal
The level of accuracy and completeness of personal and general information	3	6	18	24	75
Clear and logical description of the incident	6	2	12	48	25
Thorough analysis of cause of the incident	7	3	21	56	38
Evaluation of the potential risks relating to the severity of an incident and its potential consequences	8	1	8	64	13
Recommendations to avoid repetition	5	2	10	40	25
Speed at which investigation was begun	2	7	14	16	88

6.6 **Agreeing and reporting the findings**

6.6.1 After the information has been gathered and reviewed an audit report should be drafted. This should include:

- an introduction of the process and the people involved in the audit
- statements of non-compliances
- observations (matters that it would be nice, but not essential, to correct)
- a summary of the main non-compliances
- documentary evidence supporting the reports
- copies of accident reports, investigation reports, etc.
- forms identifying each specific non-compliance as used within the company. These should include space for proposed action to be specified and for the action to be verified later.

6.6.2 Once the draft audit report and its attachments have been accepted by line management, the final report can be made.

6.6.3 The completed audit report and its attachments should be distributed to all those involved in the audit and senior management. When necessary for clarification, a meeting may take place with senior management, line management and the auditors. Senior management should decide the action to be taken following the report and its time scale.

6.7 Follow up

6.7.1 After the period agreed by senior management, the auditors should review the matters that were agreed as requiring attention and their effectiveness in order to determine progress. A report of the review should be drawn up and distributed to the same people as the original audit report.

6.8 Senior management review

6.8.1 The audit report, the agreed corrective actions and the follow up review may be used by senior management to continue to increase safety awareness within the company. This may be done by, for example, refresher training, review of the organisation and arrangements needed to implement the company safety policy, etc,

6.8.2 Senior management should decide the appropriate timing of further safety audits.

7 CONCLUSIONS

7.1 A safety audit system can be a very important means of improving safety and achieving a higher level of safety awareness. This makes it possible to adjust the organisation, review staff training etc.

7.2 A safety can be an important resource for organisational improvement in working conditions.

7.3 Because a safety audit involves people at all levels, it helps to improve safety awareness throughout the whole company.

7.4 A safety audit is aimed at improving an organisation (from the angle of incident safety/loss control) and controlling unwanted incidents and losses. Safety audits should therefore be carried out by every organisation that wishes to seriously look at the control of risks and losses.

Appendix 1

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Appendix 2

SAFETY CHECKLIST

			Mark
1	**Directors policy, management involvement**		
1.1	How well does the company safety policy cover all operations		
1.2	The safety structure in the company is:		
	1.2.1	Line Management acceptance of responsibility is:	
	1.2.2	Availability of expertise is:	
1.3	Inclusion of safety in the job description of line management		
1.4	An annual Safety plan is used in updating safety policy and procedure		
	1.4.1	Periodic progress reports are made	
	1.4.2	An annual report is made	
2	**Training of personnel**		
2.1	Formal safety training exists for all line management		
2.2	New personnel are informed of safety procedures when they start with the company		
2.3	Training needs are considered as part of the selection of personnel		
2.4	Training is considered as part of the criteria for promotion		
2.5	All personnel are trained on safety regulations and company rules		
2.6	Specific personnel are selected for critical tasks (high incident risk)		
2.7	The training of personnel includes all those carrying out critical tasks		
2.8	Operating instructions are clearly set out in writing		
2.9	Refresher courses relate to professional and safety knowledge		
2.10	Training is given to all personnel in the use of small fire extinguishers		
2.11	Visitors to the company are informed of the site rules		
2.12	Safety information is always given to contractors that work within the company		

3 Design, purchasing and maintenance

3.1	Safety specialists are always involved when designing or altering equipment, terminals and buildings	
3.2	Risk analysis is completed regarding the design of equipment, terminals or buildings	
3.3	Design specifications are available when equipment and apparatus are purchased	
3.4	Preventative maintenance is routinely carried out	
3.5	Safety matters are considered in the selection of contractors	

4 Safety communications and consultation

4.1	Safety consultations take place between directors and employees' representatives	
4.2	Minutes of these meetings are made available to all employees	
4.3	Safety is a permanent item on the agenda of all works consultative meetings	
4.4	Periodical safety consultations take place with the contractors	
4.5	Specific campaigns exist to draw attention to safety topics	

5 Risk identification and task analysis

5.1	Safety and health risks that can occur during work activities are identified	
5.2	Appropriate measures are taken once the risks have been identified	
5.3	Periodic medical checks take place to identify individual health risks	
5.4	Risk analysis is carried out	

6 Reporting, investigation and recording of accidents and incidents

6.1	Written procedures for reporting, investigating and recording accidents exists	
6.2	Senior management is involved in the investigation, subsequent discussion and decision relating to the action to be taken	
6.3	Formal systems exist to report unsafe conditions or situations	

7 Safety inspections / observations

7.1	There are formal systems for periodic safety inspections	
7.2	Formal follow-up systems exist for unsafe situations / actions found	

8 Rules and regulations / standards

8.1	There are general safety regulations/standards	
8.2	There are safety rules and regulations/standards for special work activities	
8.2.1	There are work permit systems	
8.2.2	Authority to sign work permits is formally recorded	
8.2.3	There is training for those that are authorised to sign work permits	
8.3	Rules, regulations and standards are discussed periodically with the auditors	

9 Preparation for emergency situations

9.1	The company has an emergency plan to deal with foreseeable emergencies	
9.1.1	Regular practices are carried out periodically	
9.2	First aid and emergency arrangements	
9.2.1	A first aid post is available, manned by trained staff	
9.2.2	An emergency team is available during all working hours	
9.2.3	Sufficient emergency and life saving equipment is available at all times	

10 Personal protective equipment

10.1	There are clear instructions for the use of personal protective equipment	
10.2	There is adequate knowledge of the wearing of personal protective equipment	
10.3	Appropriate warning-signs are placed in risk-areas	

GUIDANCE NOTES TO THE SAFETY CHECKLIST

1.1 A safety policy should contain a clear statement of the company's policy on safety and the organisation and arrangements to put it into effect. A director should sign the policy.

1.2 Responsibilities for safety within the company should be clearly defined.

1.2.1 Line responsibility for safety should be clearly defined from the top management to the lowest level.

1.2.2 A company should be able to call on internal expertise. An organisation chart should show the availability of such advisors and their access to top management.

1.3 Responsibility for safety should be included in the job description of all involved, so that everybody knows what their responsibilities are in this area.

1.4 All staff should be aware of safety aspects within their own operations and those of others. The plan should be reviewed periodically but at least annually.

2.1 Line management should be well aware of the safety rules and regulations that apply to their operations and realise the necessity for them.

2.2 It is important that new personnel, before they begin their work, realise the risks with which they will be working. Suitable instruction is, therefore, important. Matters to be considered include:

- General safety rules and regulations
- Emergency plans
- Reporting of unsafe situations and actions
- Accident procedures (including first aid).

2.3 The relevant professional knowledge is important for the safety of personnel. Company rules should be drawn up with this purpose in mind. For each operation there should be a summary of the relevant rules.

2.4 Appropriate knowledge of a function is very important. Training for future functions should be included in promotion criteria.

2.6 This relates to operators of heavy lifting and hoisting equipment, container top safety, etc.

2.7 This relates to the training of personnel. Safety aspects of their work that require extra attention should be identified and given the attention they require.

2.8 This includes handbooks, cards or other documents in which details are given about how the machine or equipment should be operated for safe use.

2.11 There should be a brochure or hand-out in which the most important safety rules that should be upheld are detailed.

2.12 There should be a brochure or hand-out in which the most important safety rules that should be upheld are detailed.

3.1 This includes, amongst other things, the company purchasing policy.

3.4 For example, inspection programmes of safety critical apparatus, such as transport equipment, hoisting and lifting equipment.

4.1 The holding of meetings with personnel for discussion of relevant safety matters, frequency and time limit, preparation, support and use of visual means are important aspects.

4.3 Safety should be a fixed item on the agenda of all work consultative meetings. This stimulates the idea that safety is an integral part of the company activities

4.4 In almost every company there are “in house contractors” who constantly have personnel working on site. These contractors often decide their own level of safety. It is essential that these contractors are included in the safety discussions.

4.5 General promotion, actions that are supported with, for example, posters with respect to personal protective equipment and dangerous situations.

5.1 An inventory should be made of tasks where risks to the health and safety of personnel may exist

5.2 Measures aimed at reducing the hazard, eliminate, reduce, protect process, and protect persons.

5.3 Continuous programmes for the evaluation of health risks by changes in process, procedures and work methods.

5.4 This involves specifically the tasks identified as critical (safety, quality, production, costs, etc).

6.1 A clear and concise report of accidents, their analyses and the production of statistics.

6.2 Management participation in the investigation, accepting responsibility for the measures to be taken and supervising their implementation.

7.1 In order for a high level of safety to be maintained in the work place, it is essential that supervisors, as responsible persons, regularly inspect the work place. Periodic safety inspections completed by middle and senior management, emphasise the importance that management attach to a safe place of work.

7.2 A follow-up system for unsafe situations/actions is necessary to ensure that the correct actions are carried out.

8.1 The existence of general safety regulations that apply to everyone in the company or in a certain department, the announcement of and their maintenance.

8.2 For example, work such as paving, painting, building, etc

8.2.1 The work permit should be completed to show permission to act in accordance with a pre-set procedure.

9.2.1 A general rule of thumb is that for 100 or more personnel at least one good First Aid Room must be available in order to handle small accidents. It is desirable to place supplementary first aid boxes at critical points of the terminal.

9.2.2 This includes fire extinguishers, detection equipment, personal life saving equipment, etc.

10.1 Instruction covering the use of personal protective equipment should be kept with the equipment.

10.3 Risk-areas should be marked with correct, preferably picture-type, warning signs.