

ICHCA International Limited



INTERNATIONAL SAFETY PANEL

RESEARCH SERIES #5

PORT AND TERMINAL ACCIDENT STATISTICS

by

Shimon Lior



ICHCA INTERNATIONAL PREMIUM MEMBERS:



Hutchison Ports (UK)



ICHCA International Limited

ICHCA INTERNATIONAL LIMITED is an independent, non-political international membership organisation, whose membership comprises corporations, individuals, academic institutions and other organisations involved in, or concerned with, the international transport and cargo handling industry.

With an influential membership in numerous countries, ICHCA International's objective is the improvement of efficiency in cargo handling by all modes of transport, at all stages of the transport chain and in all regions of the world. This object is achieved inter-alia by the dissemination of information on cargo handling to its membership and their international industry.

ICHCA International enjoys consultative status with a number of inter-governmental organisations. It also maintains a close liaison and association with many non-governmental organisations.

ICHCA International has an Honorary President, a nine person Board and National Sections and Regional Chapters in various countries, together with an International Registered Office in the U.K. The office's primary role is to co-ordinate the activities of the organisation. It has an International Safety Panel, an International Research and Education Panel, an International Security Panel and an Environmental Sub Group. The Registered Office maintains a unique and comprehensive database of cargo handling information, publishes bi-monthly electronic newsletters, an annual hard copy report and operates a dedicated technical enquiry service, which is available to members. It also organises a biennial Conference.

Studies are undertaken and reports are periodically issued on a wide range of subjects of interest and concern to members and their industry.

*ICHCA International Limited
Suite 2, 85 Western Road,
Romford, Essex, RM1 3LS
United Kingdom*

*Tel: +44 (0) 1708 735295
Fax: +44 (0) 1708 735225
Email: info@ichcainternational.co.uk
Website: www.ichcainternational.co.uk*

The International Safety Panel Briefing Pamphlet series consists of the following pamphlets:

- No. 1** International Labour Office (ILO) Convention No. 152 Occupational Safety and Health in Dockwork (*revised*)
- No. 2** Ships Lifting Plant (*revised*)
- No. 3** The International Maritime Dangerous Goods (IMDG) Code (*revised*)
- No. 4** Classification Societies (*Revised*)
- No. 5** Container Terminal Safety (*to be revised*)
- No. 6** Guidance on the Preparation of Emergency Plans (*revised*)
- No. 7** Safe Cleaning of Freight Containers (*revised*)
- No. 8** Safe Working on Container Ships (*to be revised*)
- No. 9** Safe Use of Flexible Intermediate Bulk Containers (FIBCs) (*revised*)
- No. 10** Safe Working at Ro-Ro Terminals (*to be revised*)
- No. 11** The International Convention for Safe Containers (CSC) (*under revision*)
- No. 12** Safety Audit System for Ports
- No. 13** The Loading and Unloading of Solid Bulk Cargoes (*under revision*)
- No. 14** The Role of the Independent Marine Surveyor in Assisting Claims Handling
- No. 15** Substance Abuse
- No. 16** Safe Use of Textile Slings
- No. 17** Shore Ramps and Walkways (*under revision*)
- No. 18** Port State Control
- No. 19** Safe Handling of Interlocked Flats (*under revision*)
- No. 20** Unseen Dangers in Containers
- No. 21** Stow it right
- No. 22** Suspension Trauma
- No. 23** The Safe Handling of Forest Products
- No. 24** Safe Use of Road Vehicle Twistlocks
- No. 25** Illustrated Guide to Container Size and Type Codes
- No. 26** Safe Handling of Bulk Liquids and Gases
- No. 27** Safe Working with Pallets

The International Safety Panel Research Paper series consists of the following research papers:

- No. 1** Semi-Automatic Twistlocks (*to be revised*)
- No. 2** Fumes in Ships Holds (*revised*)
- No. 3** Health & Safety Assessments in Ports (*revised*)
- No. 4** Container Top Safety, Lashing and Other Related Matters
- No. 5** Port & Terminal Accident Statistics (*revised*)
- No. 6** Safe Handling of Radioactive Materials in Ports and Harbour Areas (*revised*)
- No. 7** Ship Design Considerations for Stevedore Safety (*revised*)
- No. 8** Safe Walkways in Port & Terminal Areas
- No. 9** Personal Protective Equipment & Clothing
- No. 10** Back Pain
- No. 11** Lifting Persons at Work for Cargo Handling Purposes in the Port Industry
- No. 12** Vibration
- No. 13** Lifting of Containers by Rubber Tyred Gantry Cranes

The International Safety Panel Technical/Operational Advice series consists of the following:

- No. 1** Vertical Tandem Lifting of Freight Containers
- No. 1A** Vertical Tandem Lifting – Operations Checklist
- No. 2** Container vessels – Safety Aspects of Lashing on Deck 40' and 45' Containers with particular regard to Horizontal Lashings

Plasticised Pocket Cards

- IIL/1** Dangerous Goods by Sea Documentation
- IIL/2** Dangerous Goods by Sea: The IMDG Code Labels, Placards, Marks and Signs
- IIL/3** Confined Spaces on Board Dry Cargo Ships

General Series

- No. 1** Guidelines to Shipping Packaged Dangerous Goods by Sea – Advice to Consignors and Shippers
- No. 2** Fire Fighting in Ports and on Ships

Other titles in many of the series are in preparation

This publication is one of a series developed by the International Safety Panel ("Safety Panel") of ICHCA International Limited ("ICHCA"). The series is designed to inform those involved in the cargo-handling field of various practical health and safety issues. ICHCA aims to encourage port safety, the reduction of accidents in port work and the protection of port workers' health.

ICHCA prepares its publications according to the information available at the time of publication. This publication does not constitute professional advice nor is it an exhaustive summary of the information available on the subject matter to which the publication refers. The publication should always be read in conjunction with the relevant national and international legislation and any applicable regulations, standards and codes of practice. Every effort is made to ensure the accuracy of the information but neither ICHCA nor any member of the Safety Panel is responsible for any loss, damage, costs or expenses incurred (whether or not in negligence) arising from reliance on or interpretation of the publication.

The comments set out in this publication are not necessarily the views of ICHCA or any member of the Safety Panel

All rights reserved. No part of this publication may be reproduced or copied without ICHCA's prior written permission. For information, contact ICHCA's registered office.

ICHCA International Limited - INTERNATIONAL SAFETY PANEL

The International Safety Panel is composed of safety and training officers and directors, transport consultants, representatives from leading safety and training organisations, enforcement agencies, trade unions, insurance interests, institutions and leading authorities on the subject area from around the world.

Mike Compton (Chairman), *Circlechief AP*, UK
John Alexander, UK
Meir Amar, *Port of Ashdod*, ISRAEL
Martin Anderson, *DP World*, DUBAI
Paul Auston, *Checkmate UK Limited*, UK
David Avery, *Firefly Limited*, UK
Peter Bamford, CANADA
Jan Boermans, *DP World*, THE NETHERLANDS
Mike Bohlman, *Horizon Lines*, USA (Deputy Chairman)
Roy Boneham, UK
Darryl Braganza, *Mundra Port*, INDIA
Bill Brassington, UK
Jim Chubb, *BMT Marine & Offshore Surveys Ltd (incorporating BMT Murray Fenton Limited)* UK
Gary Danback, *IICL*, USA
Rob Diedo, *SSA*, USA
Trevor Dixon, *WNTI*, UK
Steve Durham, *Trinity House*, UK
Patricia Esquivel, *OPCSA*, SPAIN
Margaret Fitzgerald, IRELAND
Pamela Fry, *DP World*, CANADA
Fabian Guerra, *Fabian Guerra Associates*, EQUADOR
Harri Halme, *Min. of Social Affairs & Health, Dept for Occupational Health & Safety*, FINLAND
Laurence Jones, *TT Club*, UK
Peter van der Kluit, THE NETHERLANDS
Fer van der Laar, *IAPH*, THE NETHERLANDS
Larry Liberatore, *OSHA*, USA
Catherine Linley, *IMO*, UK
Shimon Lior, *Israel Ports, Development and Assets*, ISRAEL
Anje Lodder, *ECT*, THE NETHERLANDS
Kees Marges, THE NETHERLANDS
Richard Marks, *Royal Haskoning*, UK
Joachim Meifort, *Hamburger Hafen- u Lagerhaus A-G*, GERMANY
Marios Meletiou, *ILO*, SWITZERLAND
John Miller, *Mersey Docks & Harbour Company*, UK
Al le Monnier, *ILWU*, CANADA
Greg Murphy, *Patrick Stevedoring*, AUSTRALIA
Pedro J. Roman Nunez, *Puertos del Estado*, SPAIN
John Nicholls, UK
Nic Paines, *Gordon, Giles & Coy Ltd*, UK
Mick Payze, AUSTRALIA
Irfan Rahim, *IMO*, UK
Risto Repo, *Accident Investigation Bureau of Finland*, FINLAND
Pierre-Yves Reynaud, *Port of Le Havre*, FRANCE

ICHCA International Safety Panel Research Paper #5

Raymond van Rooyan, *SAPO*, SOUTH AFRICA
Ron Signorino, *The Blueocean Company, Inc.*, USA
Tom Sims, UK
Matt Smurr, *Maersk Inc*, USA
Armin Steinhoff, *Behörde für Arbeit, Hamburg*, GERMANY
Peregrine Storrs-Fox, *TT Club*, UK
Bala Subramaniam, INDIA
Markus Theuerholz, GERMANY
Raoul de Troije, *Confidence Shipmanagement Company BV*, THE NETHERLANDS
Hubert Vanleenhove, *Hessanatie*, BELGIUM
Evert Wijdeveld, *Environmental & Safety Affairs, Deltalinqs*, THE NETHERLANDS
(Deputy Chairman)
Bill Williams, *Maersk Inc*. USA
Dave Wilson, *Hutchison Ports (UK) Limited*, UK

OBSERVERS:

Capt. Jim McNamara, *National Cargo Bureau, Inc.*, USA
Charles Visconti, *International Cargo Gear Bureau, Inc.*, USA

CORRESPONDING/ASSOCIATED MEMBERS:

Gerrit Laubscher, *Estivar pty*, SOUTH AFRICA
Paul Ho, *HIT*, HONG KONG
Richard Day, *Transport Canada*, CANADA
Samuel Ng, *Maritime Department*, HONG KONG

The above lists those persons who were members of the Panel when the pamphlet was reviewed. However, membership does change and a list of current members can always be obtained from the ICHCA International Secretariat.

AUTHOR

Shimon Lior joined the International Safety Panel in 1994. He is the Director for Safety and Environment at the "Israel Ports Development & Assets Company Ltd". His responsibilities include: port safety, environment affairs, fire fighting and handling of dangerous cargoes in port areas.

The author is a member of the following national committees: Container Safety Committee, National Policy Committee on Hazardous Cargo Spill Response, the National committee for Ships Fire fighting in Port Areas.

The author lectures extensively on port safety and the handling of hazardous cargoes at the Institute for Occupational Safety and Hygiene (IIOSH), Export Institute (IEI), the Standards Institute (SII) in Israel and Israel Institute of Technology (IIT).

Contents:

Subject	Page
1 Introduction	1
2 Definition of “Work Accident”	1
3 Collection and reporting of work accident statistics	2
3.3 Responding countries that publish accident statistics	2
3.4 Ports and terminals covered by the survey	3
3.5 Employee occupations covered by work accident statistics	3
3.6 Minimum days of absence for inclusion in work accident statistics	4
3.7 Accident rates	4
3.7.1 Accident rates - general	5
3.7.2 Accident rate per 100 employees	5
3.7.3 Accident rate per 1000 tons of cargo	5
3.7.4 Accident rate per full time position	5
3.7.5 Accident rate per 1000 work hours.....	5
4 Work accident statistics analysis	6
4.1 Statistics analysed by type	6
4.2 Comparison with previous years’ accident rate	6
4.3 Year on year comparison – general.....	7
4.4 Year on year comparison – benefits.....	7
5 Use of work accident statistical data.....	7
5.5.1 Benefits for employees	7
5.5.2 Benefits for employers.....	7
6 Conclusions	8
7 Recommendations.....	9
Appendix 1:	Work accident statistics questionnaire
Appendix 2:	Example of a chart produced from statistical data

ISBN: 1-85330-101-9

978-1-85330-101-8

First Published: 2001

Updated and reaffirmed by the author: 2008

Port and Terminal Accident Statistics

1. Introduction

- 1.1 Statistics relating to port and terminal employee work accidents are collected and published by many ports and terminals around the world. These statistics are compiled in order to study the factors relating to accidents, such as location within the port/terminal, primary cause, type of cargo involved, employee occupation, etc.
- 1.2 These statistics are collected to allow critical analysis of the accidents and other related factors, so that appropriate steps may be taken to reduce such accident rates in the future.
- 1.3 The collection and analysis of work accident statistics is beneficial to both employees and employers. From the employee perspective, personal safety at work can be improved, resulting in fewer or less severe injuries, as well as improved health. From the employer's point of view identifying accident causes and the proposal of methods to reduce accident risks improves overall operational efficiency. In addition they may also:
 - reduce costs associated with employee absences
 - minimise damage
 - assist investigation,
 - save on compensation payments and insurance premiums.
- 1.4 This research paper compares work accident statistical methodologies used by a number of ports and terminals around the world on a qualitative (non-quantitative) basis. The ports and terminals covered are principally those represented on the ICHCA International Safety Panel.
- 1.5 The goal of this research paper is not to identify the ports and terminals that have higher or lower accident rates, but to present the different ways that work accident statistics are kept and to provide a comparison of their significance.
- 1.6 This research paper includes information about work accident statistics at ports and terminals in 9 countries. This information has been compiled from responses to the questionnaire at appendix 1 and additional material received.
- 1.7 It is hoped that this research paper will encourage the collection and analysis of work accident statistics in ports and terminals and, as a result, will lead to the improvement of health and safety of their employees.

2. Definition of “Work Accident” used in this research paper

- 2.1 Many ports and terminals worldwide define “work accident” as: “any fortuitous or unexpected event that caused an injury to person(s) and as a result of which the employee(s) did not return to work on the following day, or after a pre-defined period”.

3. Collection and reporting of work accident statistics

3.1 The tables in this research paper show qualitative data from various ports and terminals throughout the world relating to work accident statistics.

3.2 The tables summarise the results as follows:

- responding countries that publish accident statistics,
- number of ports and terminals covered by the research,
- employee occupations covered by work accident statistics,
- minimum days of absence to include work accidents in the statistics,
- work accident rates,
- statistical analysis by type,
- statistical comparison with previous years' accident rate.

3.3 Responding countries that publish accident statistics

Country	Responding organisation	Published by
Belgium (B)	Centrale der Werkgevers aan de Haven van Antwerp	Not specified
Finland (SF)	Labour Safety Inspectorate	Ministry of Labour
Germany (D)	Bremen Port Authority HHLA Hamburg	Trade Supervisory Body HHLA Hamburg
Israel (IL)	Ports & Railways Authority	Ports & Railways Authority
Netherlands (NL)	Havenondernemersverenging Europe Combined Terminals	Havenondernemersvereniging Regional Industrial Medical Services
Slovenia (SL)	Univar d.o.o Ankaran	Ministry of Labour Port Safety Service
Sweden	Port of Helsingborg	Port of Helsingborg
United Kingdom (GB)	Port Safety Organisation, now Port Skills and Safety	Port Safety Organisation, now Port Skills and Safety
U.S.A. (USA)	Steamship Trade Assc of Baltimore Inc. West Gulf Maritime Assc	Steamship Trade Assc of Baltimore West Gulf Maritime Assc

Table 1

Other countries, and other ports and terminals in the countries listed above, may also collect and/or publish statistics.

3.4 Ports and terminals covered by the survey

Country	Ports covered
Belgium (B)	Port of Antwerp
Finland (SF)	12 ports
Germany (D)	Port of Bremen and Bremerhaven, HHLA Hamburg
Israel (IL)	Ports of Haifa, Ashdod & Eilat
Netherlands (NL)	Port of Rotterdam
Slovenia (SL)	Port of Koper
Sweden (S)	Port of Helsingborg
United Kingdom (GB)	113 ports & terminal companies
U.S.A. (USA)	Port of Baltimore West Gulf Maritime Association

Table 2

3.5 Employee occupations covered by work accident statistics

Country Port/Employee Sectors	B	SF	D	D*	IL	NL	SL	S	GB	USA+
Supervisors	Y	Y	Y	Y	Y	Y	Y	W	Y	
Crane operators	Y	Y	Y	Y	Y	Y	Y	W	Y	Y
Fork lift operators	Y	Y	Y	Y	Y	Y	Y	W	Y	Y
Signalmen	Y	Y	Y	Y	Y	Y	Y	W	Y	Y
Stevedores	Y	Y	Y		Y	Y	Y	W	Y	Y
Storemen	Y	Y	Y	Y	Y	Y	Y	W	Y	Y
Dry bulk facility	Y	NS	Y		Y	Y		W	R	Y
Liquid chemical terminal	Y	NS	Y		Y			W	R	Y
Tractor/Container tractor drivers/Straddle carrier	Y	Y	Y	Y	Y	Y	Y	W	Y	Y
Maintenance workers	Y	NS	Y	Y	Y	Y	Y		Y	Y
Construction workers		NS	Y	X					Y	
Marine operators		NS	Y	X	Y				Y	
Office staff				Y	Y	Y		W	Y	
Other sectors			SP	R						

Table 3

Key to table 3:

D* - relates to HHLA Hamburg only

USA+ - details only provided by Port of Baltimore

Y - Yes

☐ - No

NS - Not specified

SP - Ships personnel

P - Statistics analysed by workers and administration

W - Yes – relating to port company personnel only

R - Riggers

3.6 Minimum days of absence for inclusion in work accident statistics

Table 4 shows the minimum days of absence (predefined period) required for inclusion in work accident statistics.

Country	Ports	Days of absence
Belgium (B)	Port of Antwerp	1
Finland (SF)	12 ports	Not specified
Germany (D)	Port of Bremen and Bremerhaven HHLA Hamburg	1 3
Israel (IL)	Ports of Ashdod, Haifa & Eilat	1
Netherlands (NL)	Port of Rotterdam	1
Slovenia (SL)	Port of Koper	3
Sweden (S)	Port of Helsingborg	1
United Kingdom (GB)	113 ports & port companies	4
U.S.A. (USA)	Port of Baltimore West Gulf Marine	1 Not specified

Table 4

3.7 Accident rates

Table 5 shows the accident rates used in the countries.

Country	Ports	Accident rates
Belgium (B)	Port of Antwerp	Accidents per total work hours
Finland (SF)	12 ports	Not specified
Germany (D)	Port of Bremen and Bremerhaven HHLA Hamburg	Rate not available Accident per 1,000 work hours
Israel (IL)	Ports of Ashdod, Haifa and Eilat	Accidents per 1,000 tons of cargo handled.
Netherlands (NL)	Port of Rotterdam	Accidents per 100 employees.

Slovenia (SL)	Port of Koper	Accidents per 100 employees.
Sweden (S)	Port of Helsingborg	No accident rates available.
United Kingdom (GB)	113 ports & port companies	Accidents per 100 employees.
U.S.A. (USA)	Port of Baltimore West Gulf Maritime	Accidents per number of full time employees

Table 5

3.7.1 Accident rates – general

Accident rates provide a means of comparing work accident data:

- in a specific port or terminal, over different time periods,
- between different ports and terminals, providing that accident definitions/criteria are compatible (i.e. data covers similar employee occupations and cargo types; the minimum number of days of absence for an incident to be considered a work accident is identical, etc),

Accident rates may vary unless a uniform index has been agreed. Without this uniform index, comparisons will not be meaningful.

3.7.2 Accident Rate per 100 Employees

This rate is calculated by dividing the number of work accidents by each 100 employees. This is the accident rate calculated by ports in the United Kingdom, Netherlands and Slovenia. This accident rate emphasises the presentation of the accident data according to the actual number of employees in the port or terminal. It does not take into account the quantity of cargo handled in the port or terminal in that year.

3.7.3 Accident Rate per 1000 Tons of Cargo

This rate is calculated by dividing the total number of work accidents by each 1000 tons of cargo. This rate is the accident rate used in the ports of Israel. This rate is useful for general cargo handling. It may be desirable to compare similar types of cargo. This rate emphasises the presentation of the accident data according to the quantity of cargo handled in the port or terminal. The rate does not take into account the number of employees working in the port or terminal.

3.7.4 Accident Rate per Full Time Position

This rate is calculated by dividing the total number of work accidents that occurred in the port or terminal during a particular year by each 2,000 hours (normal annual hours worked) of the total number of hours worked (including overtime) by the employees of that port or terminal. This is the work accident rate used in American ports and terminals. This rate does not take into account the quantity or type of cargo handled in the port or terminal.

3.7.5 Accident Rate per 1000 Work Hours

This rate is calculated by dividing the total number of work accidents by each 1,000 hours worked. This rate is used in the work accident statistics in Hamburg.

4. Work accident statistics analysis

4.1 Statistics analysed by type

Country	Specific Ports/TML	Cargo	Cause	Location	Occupation	Body/Limb	Days lost
Belgium (B)		Y	Y	Y	Y	Y	Y
Finland (SF)		NS	Y	Y	Y	Y	N
Germany (D)	HHLA	Y	Y	Y	N	N	N
		N	Y	Y	Y	Y	N
Israel (IL)		Y	Y	Y	Y	Y	Y
Netherlands (NL)		N	Y	Y	Y	Y	Y
Slovenia (SL)		Y	Y	Y	Y	Y	N
Sweden (S)		N	N	N	Y	N	Y
United Kingdom (GB)		N	Y	Y	N	N	N
U.S.A (USA)	Baltimore	Y	Y	Y	Y	Y	Y
	West Gulf	N	Y	N	N	Y	N

Table 6

Key to table 6:

Y = Yes

N = No

NS = Not specified.

4.2 Comparison with previous years' accident rate

Country	Ports	Comparison done
Belgium (B)	Port of Antwerp	Yes
Finland (SF)	12 ports	number of accidents only
Germany (D)	Port of Bremen and Bremerhaven	Yes
	HHLA Hamburg	No
Israel (IL)	Ports of Haifa, Ashdod & Eilat	Yes
Netherlands (NL)	Port of Rotterdam	Yes
Slovenia (SL)	Port of Koper	Yes
Sweden (S)	Port of Helsingborg	No
United Kingdom (GB)	113 ports & port companies	Yes
U.S.A. (USA)	Port of Baltimore	Yes
	West Gulf Marine Assoc.	Yes

4.3 Year on year comparison – general

- 4.3.1 Ports and terminals routinely compare accident rates from one year to another. They generally also compare other parameters, such as total number of days lost due to work accidents or the average number of days lost per accident, etc.
- 4.3.2 When making such comparisons, ports and terminals take note of the direction of the change in accident rates (increase or decrease) between the years reviewed. The change in the rate is measured as a percentage of the base year. A similar review can be made of the number of days lost or the average number of days lost per accident.
- 4.3.3 When comparing year on year changes in work accident rates, it is important to consider the consistency or variation in the data.

4.4 Year on year comparison - benefits

- 4.4.1 This comparison may enable conclusions to be reached in the following areas:

- was there a change in the accident rate from one year to the next?
- what was the direction of the change (increase or decrease)?
- what was the magnitude of the change (normally expressed as a percentage)?
- did the steps and actions taken by the employer improve the level of employee safety?
- are any additional actions required by the employer to reduce the accident rate in the port or terminal?

5 Use of work accident statistical data

- 5.1 An analysis of work accident statistical data can benefit both employees and employers. For example: identification of cargo types and accident locations with higher accident rates should lead to improved operational and safety procedures to the benefit of both parties.
- 5.2 A high percentage of injuries to particular parts of the body may indicate that it may be necessary to review the need for operational procedures and/or the need for additional or different personal protective equipment.
- 5.3 An increase in the average days of absence per work accident may indicate an increase in the severity of the accidents, and the need to investigate work accidents and devise an appropriate action plan.
- 5.4 Unreasonably high accident rates at a particular work location may require the intervention of management to identify the causes and implement appropriate solutions.

5.5 Presenting a statistical review of work accidents to employees and employers has many benefits.

5.5.1 Benefits for employees

Employees may be given the opportunity, for example during training, to understand:

- the main accident causes,
- locations where accidents are most likely to happen,
- the occupations involved,
- the parts of the body most likely to be injured, etc.

Knowledge of these factors may lead to an improvement in employee awareness of Health & Safety at work.

5.5.2 Benefits for employers

Understanding the factors in section 5.5.1 may enable an employer to identify accident causes and to take appropriate steps, such as:

- improving and changing employee safety training by utilising examples of actual work accidents,
- providing real time supervision by responsible people, including management and safety officers, at work sites, during the handling of cargo, giving preference to locations with the highest accident rates,
- questioning each employee involved in an accident about the circumstances of the accident, and checking their previous accident history,
- providing incentives to employees who have not been involved in work accidents during a specific period,
- implementing recommendations following previous work accidents and publicising these amongst employees.

Implementing these steps should lead to a reduction in the work accident rates, and to a reduction in lost time resulting from work accidents.

6 Conclusions

6.1 The analysis of accident statistics can assist employees and employers to identify safety problems. These problems will then need to be reviewed by persons competent to get to the root cause of the problem and make appropriate recommendations.

- 6.2 The collection of accident statistics is worthwhile. The types of statistics collected need to be meaningful and should be reviewed regularly. Lessons learned from the statistics will need a response both from employees and employers in relation to the health and safety of people working in port and terminal activities.
- 6.3 Consensus about the method of benchmarking accident statistics will be required if cross port/terminal analysis is required.

7 Recommendations

- 7.1 Set out a method of benchmarking accident statistics.
- 7.2 The benchmarking of accident statistics could include:
- accidents resulting in more than one day of absence,
 - workers engaged on handling activities but not ship personnel,
 - statistics should include annual figures.
- 7.3 Useful accident measurement rates could be:
- for container terminals – accidents per 100,000 TEU handled,
 - for general cargo – accidents per 100,000 tonnes handled (excluding dry bulk, liquid bulk and passengers),
 - for ro-ro traffic – accidents per 100,000 units handled.

Work accident statistics questionnaire

To: Members of the Safety Panel

Subject: **Work Accident Statistics Questionnaire**

Survey Completed by: _____

Firm/Organization: _____

Port: _____

Date: _____

- 1 To your knowledge, are annual work accident statistics in regard to the port industry published in your country?

☐ YES
 ☐ NO

- 2 If the answer to question 1 is "yes", who is responsible for publishing the accident statistics? _____

- 3 What employee sectors are covered by the work accident statistics?

3.1 Supervisors	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.2 Crane Operators	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.3 Forklift Operators	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.4 Signalmen	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.5 Stevedores	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.6 Storemen	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.7 Dry bulk facility	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.8 Liquid chemical term.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.9 Tractor/Tug drivers	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.10 Maintenance workers	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.11 Construction workers	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.12 Marine Operations	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.13 Office staff	<input type="checkbox"/> YES	<input type="checkbox"/> NO
3.14 Other Sectors (Please specify)	<input type="checkbox"/> YES	<input type="checkbox"/> NO

- 4 What is the minimum number of days of absence required for an accident to be included in the work accident statistics?

☐ One Day ☐ Two Days ☐ Three Days
☐ Four Days ☐ Five Days

- 5 Please specify the names of the ports included in the statistics:

If more than twelve ports are covered, please indicate the total number of ports included: _____

- 6 Do the statistics cover accidents that occur while handling all types of cargoes in the port (including dry bulk and liquid bulk)?

☐ YES ☐ NO

- 7 If the answer to 6 is no, please specify which cargo types are not included:

- 8 How are accident rates determined (mark "x" in appropriate square)?

8.1 Rates based on accidents per 1,000 tons of cargo ☐
8.2 Rates based on accidents per 100 employees ☐
8.3 Rates based on accidents per 1,000 hours of work ☐
8.4 Rates based on accidents per _____ ☐

- 9 How are employee accident rates analyzed (mark "x" in appropriate square)?

9.1 By Cargo Type ☐
9.2 By Accident Cause ☐
9.3 By Accident Location ☐
9.4 By Employee Sector ☐
9.5 By Injured Body Limb ☐
9.6 By Number of Days Lost ☐

- 10 Do the statistics include comparisons with the previous year's accident rates?

☐ YES ☐ NO

Example of a chart produced from statistical data

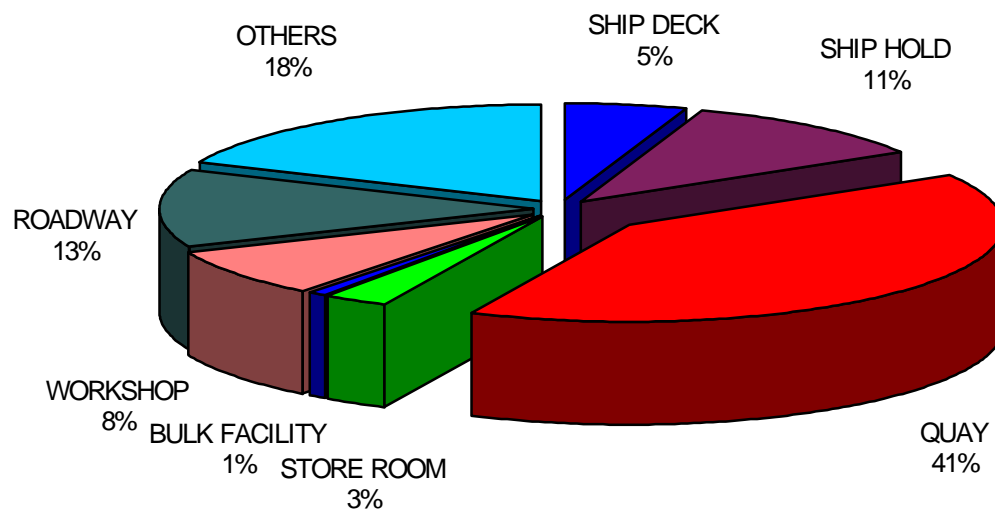


Chart shows location of work accidents in a statistical format