STUDY ON THE SAFETY AND SECURITY OF INDIAN PORTS

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ABSTRACT

When we talk of modern India as the emerging economy, development has become a paramount agenda for the central as well as state governments. Ports play a vital role in the development of a country. Hence it is imperative that India should have world class ports complying with all international standards. To ensure that the standards are maintained, study on the safety, health and environmental concerns for Indian ports becomes crucial. The logistics sector is an important contributor to the development of an economy. It links together various factors of production and to enable a producer reach the consumer of his products. If India’s transport systems are efficient, these can have positive multiplier effects such as improving the nation’s accessibility to global markets, increasing employment opportunities and bringing in additional investments. Given that 90% of India’s trade by volume takes place through water transport, the significance of ports and the shipping sector in India cannot be overstated. Adequate connectivity to the port acts as a catalyst to the growth of a port aiding better performance.

Keywords: Port Health, Port Security, Hazards, Occupational Health.

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INTRODUCTION

Ports constitute an important economic activity in coastal areas. The higher the throughput of goods and passenger’s year-on-year, the more infrastructures, provisions and associated services are required. These will bring varying degrees of benefit or disadvantage to the local and regional economy and to the environment. Ports are also important for the support of economic activities in the hinterland since they act as a crucial connection between sea and land transport.
The safety of port facilities, port workers and the surrounding community, and the protection of the environment are interconnected and synergistic elements in the management and operation of today’s ports. Therefore, they are an integral part of an effective Port Management System. Ports have an ever-increasing responsibility nationally and internationally with regard to policy, legal instruments and objectives covering maritime safety, protection of the marine environment, and sustainable development.

Safe operations, in addition to safeguarding people, the environment and port installations, also enhance the quality of services provided by a port. Many ports have undertaken safety, health and/or environmental reviews or audits to assess their performance. On their own, however, such reviews and audits may not be sufficient to provide an organization with the assurance that its performance not only meets, but will continue to meet, its legal and policy obligations. To be effective, reviews and audits need to be conducted within a structured management system that is integrated within the organization. Presently, there are no common international standards against which port authorities and companies operating in ports can measure the performance of their operation with regard to safety, health and the protection of the environment.

Partnerships in Environmental Management for the Seas of India, in collaboration with the following international non-governmental organizations representing the port industry are also important:

- International Association of Lighthouse Authorities (IALA);
- International Association of Ports and Harbors (IAPH);
- International Labor Organization (ILO);
- Organization for Economic Co-operation and Development (OECD);
- Permanent International Association of Navigation Congresses (PIANC);
- United Nations Committee on Trade and Development (UNCTAD);
- United Nations Environment Programme (UNEP)

The trend of incremental traffic is shown below graphically:
HEALTH AND SAFETY POLICY
The aim is to reduce to the absolute minimum, accidents and cases of ill health in the work places for which it is responsible. It regards good health & safety management and high standards of performance in health and safety as being of the utmost importance and integral to an efficient organization. In order to minimize accidents and cases of ill health, the HEALTH AND SAFETY POLICY of a port should be such that it is committed to:

- Developing and maintaining effective health, safety and welfare arrangements to protect its staff and all who come into contact with its operations.
- Continuously improving health and safety performance and following Industry best practice.
- Complying with legal and other relevant requirements.
- Providing an effective Health and Safety Management System (HSMS) to help manage health & safety risks.
- Providing suitable resources to deliver these commitments.

Health and safety is a line management responsibility. Effective implementation of the HSMS is one of the key responsibilities of all managers. All managers must demonstrate their commitment and leadership by regularly visiting the workplace to observe, discuss and seek ways to improve health and safety arrangements. Every employee is to recognize his/her responsibility to ensure the safety & health at work of themselves and others by following Port rules and guidance and by using their own experience and training.

- Effective systems of information and consultation are to be maintained, including those on incident reporting, investigation and taking corrective actions, plus near miss reporting.
- A systematic management of risk to which persons are exposed is in place.
- Every employee is to have appropriate health and safety training.
- A positive health and safety culture is developed and maintained.
- Suitable first aid arrangements are available.
- This Policy and the HSMS are brought to the attention of all employees.
- This Policy is to be reviewed annually or following any significant change to legislation or circumstances.
- The provision and maintenance of a workplace, plant, equipment and systems of work that are safe and without risks to health.
- Safe arrangements for the use, handling, storage and transportation of articles and substances at work.
- The provision of safety instruction and training to enable employees to contribute positively to their own health and safety at work.
- Compliance with all relevant health and safety legal requirements which relate to its undertakings.
- The Port will provide competent advice on all matters of health, safety and welfare to assist management, employees and their representatives in their tasks and responsibilities. Sufficient resources will be allocated to ensure compliance with this policy.
ENVIRONMENTAL POLICY

Ports need to improve the transparency of the actions that they take in the normal course of operations that also protect the environment. Each major function of the port and harbour requires consideration of the environment within its normal management operation. Yet, the absence of a written statement of environmental policy, environmental review or a formal environmental management system has made it difficult to explain to government, environmental groups and the public the sheer extent of environmental activity within the ports industry.

Preparation of an environmental policy or review

There is no doubt that there will be an ever-increasing requirement for environmental reporting. Some major companies have produced comprehensive environmental reports covering:

- Demonstrate its commitment to tackling the biggest environmental concern of our time, climate change, by determining its carbon footprint and over time working toward reducing it.
- Drive to reduce waste disposal and promote waste reduction, reuse and recycling measures by implementing the waste hierarchy.
- Maintain an ISO14001 certified Environmental Management System to identify and control the significant environmental aspects and impacts of its operations and deliver environmental objectives and targets.
- Train staff in environmental issues and the awareness and control of impacts.
- Seek to reduce the pressure it puts on environmental resources by reducing its resource consumption and considering the environment as part of its procurement processes.
- Prevent pollution and maintain a high level of preparedness to cope with any incident in the port liable to cause environmental harm.
- Work with our partners and stakeholders to assist in improving local air quality.
- Embed the principle of sustainability into the management of its assets and the development of the business.
- Carry out a programme of environmental monitoring that assesses the impacts of port activities, the sensitivity of the environment under the Board’s jurisdiction and the effectiveness of the Environmental Management System.
- Commit as a minimum to comply with all applicable legal requirements and all other requirements to which the Board subscribe which relate to its environmental aspects.
- Embed an ethic of “compliance plus” by promoting a culture of environmental awareness and corporate social responsibility amongst all staff and port users.
- Ensure compliance with existing and future environmental legislation and other requirements to which the company subscribes including commitments towards the prevention of pollution and due regard for nature conservation.
- Establish a programme of continual improvement and environmental monitoring
- Encourage employees of the Authority to play a major role in the implementation of the environmental objectives and targets.
- Perform a regular management review of the Environmental Policy, to ensure its suitability and effectiveness in achieving the Environmental Objectives of the Authority.
- Communicate the commitments made within this policy to all employees.
SECURITY POLICY
Contracting Governments are required to undertake Port Facility Security Assessments (PFSA) of their Port Facilities. These assessments shall be undertaken by the Contracting Government, a Designated Authority, or the Recognized Security Organization. Port Facility Security Assessments will need to be reviewed periodically. The results of the Port Facility Security Assessment have to be approved by the Government or Designated Authority and are to be used to help determine which Port Facilities are required to appoint a Port Facility Security Officer (PFSO). The responsibilities of the Port Facility Security Officers are defined in the ISPS Code, as are the requirements for the training they require and the drills they are responsible for undertaking.

The Port Facility Security Officer is responsible for the preparation of the Port Facility Security Plan (PFSP). Like the Ship Security Plan, the Port Facility Security Plan shall indicate the minimum operational and physical security measures the Port Facility shall take at all times, i.e. while operating at security level 1. The plan should also indicate the additional, or intensified, security measures the Port Facility can take to move to security level 2. Furthermore, the plan should indicate the possible preparatory actions the Port Facility could take to allow prompt response to the instructions that may be issued by the authorities responding at security level 3 to a security incident or threat. The Port Facility Security Plan has to be approved by the port facility’s Contracting Government or by the Designated Authority. The Port Facility Security Officer must ensure that its provisions are implemented and monitor the continuing effectiveness and relevance of the approved plan, including commissioning independent internal audits of the application of the plan. The effectiveness of the plan may also be tested by the relevant Authorities. The Port Facility Security Assessment covering the Port Facility may also be reviewed. All these activities may lead to amendments to the approved plan. Major amendments to an approved plan will have to be submitted to the approving authority for re-approval.

Under the ISPS legislation, the Ports are obliged to:

- Develop and maintain an appropriate Port Facility Security Plan (PFSP), which meets the requirements of the ISPS Code.
- Designate a Port Facility Security Officer and Deputy.
- Co-ordinate, communicate and facilitate the implementation of security measures required by the PFSP to the port community as appropriate.
- Establish a Port Security Committee, comprising representatives of relevant port facility groups, regulators, agencies and other interested parties within Port.
- Provide up to date advice, best practice and information on current security developments and on the implementation of the Port Facility Security Plans (PFSP) to the port community.
- Co-ordinate and facilitate security training and testing of the PFSP and where necessary co-ordinate the overall port response to a security incident.
- Ensure the effective management and resourcing of internal security arrangements in order to meet the requirements of the Port PFSP.
- Review this security policy and recommend revisions to the Board at least every 3 years.
RESEARCH OBJECTIVES

- Creation of an improved HSE (Health Safety and Environment) culture throughout the Indian ports by increasing staff awareness via training and open-discussion forums.
- Reduction of accidents/incidents by proper monitoring, reporting and recording of all "near misses".
- Establish, Implement, Maintain and Improve a Port safety, health, and environmental management system.

REVIEW OF LITERATURE

Work at ports takes place throughout the day and night and in all types of weather. There are often pressures to load or unload a ship’s cargo quickly to catch a tide or to free up a wharf. Visiting drivers want to pick up or drop off their cargo as quickly as possible and get back on the road. These factors make it an exciting but also a potentially high-risk industry to work in. Ever-changing circumstances lead to ever-changing risks. Companies must put appropriate health and safety measures in place to manage these risks properly.

The international port industry dates from the earliest days of civilization. Since that time it has developed steadily over the years. However, cargo-handling methods that were both arduous and dangerous remained largely unchanged until the introduction of containers and roll-on-roll-off (“ro-ro”) systems in the 1960s. Technical developments have continued since then, including the introduction of increasingly sophisticated cargo-handling equipment with greatly increased capacity and reach. While many of these changes in cargo-handling methods have resulted in insignificant improvements for the safety of port workers, some changes have introduced new hazards and port work is still regarded as an occupation with very high accident rates.

Moreover, privatization in the industry has led to considerable changes in the organization of ports and the employment of people in them, including increased use of nonpermanent workers. Fortunately, systems for identifying and managing risks have also been developed and the need for investment in the training and skills of port workers has been increasingly recognized. Each port needs to develop working practices that will safeguard the safety and health of port workers in the light of its own specific circumstances; these can be based on guidelines, such as those included in this code of practice, and on the well-established general principles set out in the relevant Safety and health in ports international labour (ILO) Conventions and Recommendations, other codes of practice and guidelines.

Before technological or other innovations, and/or new work practices involving such innovations, are introduced in ports that may impact on safety and health of port workers, the following should apply:

- It has been well established on the basis of evidence and data that the new operations can be done in a safe and proper manner and that safe working conditions are maintained.
• Consultations on safety and health aspects have taken place between employers and workers and their representatives, and agreement on these matters has been reached between them on the introduction of the innovations in question, with the involvement, as appropriate, of the competent authority of the State.

• Mechanisms have been established for monitoring the safe use of any technology; such monitoring should involve employers and workers, and their representatives.

• Relevant national laws and regulations, as well as all safety and health standards, have been complied with Introduction, scope, implementation and definitions and the guidance in this ILO code of practice should be taken into account.

MANAGEMENT OF PORT SAFETY AND HEALTH

• The resources necessary to safeguard the safety and health of all persons affected by port operations should be managed so that a balance is achieved between the risks of operations and the cost of eliminating or reducing accidents. The real costs of injuries and ill health and the risks from the hazards of operations should therefore be assessed.

• The true financial costs of accidents and illness should include the cost of direct damage, lost time and personal injury claims, as well as consequential costs such as time spent in administration, defending any claims that might be made, and replacing workers. The costs of accidents that do not result in injury should not be overlooked; they can provide an effective warning of potentially more serious incidents in future, thus saving considerable sums.

• The outcome of an event may range from no injury to fatal injury and major damage, with only the smallest change to one factor. A “total loss” approach to accident prevention recognizes this fact and includes investigation of non-injury incidents. Organizations need to learn from all such incidents in order to achieve effective control.

SAFE SYSTEMS OF WORK

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 may 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.

SAFETY AND HEALTH IN PORTS

• investigation into the causes of accidents that lead to death, serious injury or serious material damage;

• informing management and portworkers of such accidents and the lessons to be learned from them;

• informing management of incidents involving non-compliance with safety regulations;

• making formal reports on breaches of legal requirements;

• where necessary, drawing the attention of the relevant competent authority to urgent cases in which its immediate action or advice may be required;

• at regular intervals, drawing up reports of relevant activities, including accident statistics and practical advice on safety and health.
The port authority, even if not directly involved in port operations, should have the overall control of the operation of safe systems of work, the promotion of a safety culture and the development of safety and health in the port. The port authority should set up a central port safety and health committee with the help of employers and portworkers for fostering the necessary cooperation between all bodies involved in port work.

**FIRE PRECAUTIONS & FIRE ALARMS**

Fire precautions in ports should be provided in accordance with national legal requirements.

An effective fire alarm system should be provided throughout port areas. This may be by “break glass” fire alarm points or otherwise. If the system involves the use of a radio or telephone system, the system should operate at all times. Automatic systems can be arranged to sound alarms in relevant areas, alert the fire authority and operate automatic fire-extinguishing appliances, as appropriate. In large premises, it may not be necessary to alert all persons in the port area immediately in the event of a fire, and a staged fire alarm system that allows different areas to be alerted may be appropriate. The fire alarm system in any building should be audible throughout the entire building. The fire alarm system should be maintained in a fully operational condition at all times, particularly when maintenance work or alterations to premises are in progress.

**HEALTH HAZARDS**

Portworkers should be fit for the work which they are employed to carry out. They should be protected from health hazards that may 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 should be taken to avoid them.

The health and fitness for work of portworkers who regularly work in areas or on operations known to include health hazards should be regularly monitored by persons competent to do so. Those carrying out the monitoring process should 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.

Health hazards should be identified, the risks known and evaluated, the dangers to health understood and effective preventive measures put in place to ensure the health of the portworkers concerned. There should be a management system for identifying such risks and a strategy for responding to them. Arrangements for the participation of workers should include health matters.

The principal health hazards that can arise from port operations are noise, fatigue, fumes, vibration and exposure to hazardous substances, including cargoes. These hazards should be controlled in accordance with national legal requirements.

Exposure of portworkers to particular hazardous substances should be kept below the relevant maximum 15-minute and eight-hour time-weighted occupational exposure levels for the substances concerned.

Portworkers exposed to hazardous materials should be trained, and provided with material safety data sheets. The materials should be adequately labeled with the contents. Workers should be advised as to the precautions to be taken when exposed to these materials.
Dangerous goods and fumigation

- Health hazards may arise from specialized activities associated with dangerous goods.
- Great care should be exercised when it is necessary to inspect or sample such goods. Particular attention should be paid to the hazards of the cargo as indicated by the labels or placards and documentation.
- Cargo transport units that have been transported under fumigation should be declared and should bear the fumigation sign. They should be ventilated before entry into them is permitted. In order to ensure that the atmosphere is safe for entry, it will normally be necessary to test it first.
- If the cargo, packaging or dunnage in a cargo transport unit is of a category that might need to be fumigated, fumigant residues may still be present in the unit. Precautions before entry should be taken, even though the cargo may not be “dangerous goods” and may not have been declared as being transported under fumigation.
- When cargo is required to be fumigated within the port area before onward transportation, the operation should be carried out by competent specialists in an area away from normal operations. Precautions should be taken to ensure that the fumigant is confined to the immediate area where it is being applied.
- Bulk cargoes such as grain which have been fumigated before entry into the port area from shore or from sea should be declared and the port authority should require such a declaration to be made before entry.

DUSTY CARGOES

Exposure of portworkers to dust should be prevented as far as is practicable. This should include nuisance dusts for which no specific occupational exposure level has been assigned. National legal requirements should specify maximum occupational exposure levels of individual dusts and nuisance dusts. Ideally, loading or unloading of dusty cargoes should be totally enclosed. Where this is not practicable, dust emissions should be prevented as far as possible and controlled.

NOISE

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 shed, warehouse or ship’s hold. Noise levels may affect the equipment operator and/or port workers that work with or in the vicinity of such equipment when it is being used. In coordination with the workplace safety committee, noise levels should be periodically monitored and sources of excessive noise identified. Noise levels should be controlled at source whenever it is practicable to do so. Noise levels, as defined by national legal requirements, should be specified when new equipment is ordered. The noise specification should be as low as possible. The need to work in noisy areas should be avoided or minimized as far as possible. Appropriate hearing protection should be supplied and worn when necessary. When appropriate, consideration should be given to the periodic monitoring of hearing loss of portworkers.

FATIGUE

Fatigue can affect health, safety and work performance. Regular breaks should be incorporated into work periods. Excessively long shifts or work periods should be avoided. 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.
INDIAN PORTS AND THEIR IMPACTS
Port development can create a wide range of impacts on the environment through dredging, construction work, landfills, discharges from ships and waterfront industries, cargo operations, and other port related activities. The potential adverse effects of port development include water pollution, contamination of bottom sediments, loss of bottom habitat, damage to marine ecology and fisheries, beach erosion, current pattern changes, waste disposal, oil leakage and spillage, hazardous material emissions, air pollution, noise, vibration, light and visual pollution.

Aside from the environmental impacts on communities, ports are responsible for several direct and indirect social impacts as well. The most significant and direct impact is the displacement of communities through land acquisition (where community land rights exist) or simply displacement of settlements without any compensation either. There are numerous indirect environmental and social costs of port development which we examine in further sections.

The three major sources of these adverse effects are:

(a) Site location: The location of the port site will determine the nature and severity of impacts. This could be both environmental (near high erosion areas or turtle nesting areas) as well as social (proximity to fishing settlements or near fishing grounds).

(b) Construction activities: Construction activities for ports take place both in the offshore waters and on land. The most significant of this is construction of breakwaters or groynes, dredging, disposal of dredged materials, and transport of construction materials.

(c) Port operation: This includes ship traffic and discharges, cargo handling and storage, and land transport. Port operation consists of ship-related factors such as vessel traffic, ship discharges and emissions, spills and leakage from ships; and cargo-related factors such as cargo handling and storage, handling equipment, hazardous materials, waterfront industry discharges, and land transport to and from the port.

Highlighted below are the main ecological concerns with port development:

ENVIRONMENTAL REGULATION FRAMEWORK
The International Association of Ports and Harbours ‘Guidelines for Port Planning and Design, 2001’ makes the following observation: ‘Ports are areas where several modes of transport come together and where industrial activities take place. This means that in port areas, the environmental components such as water, air, soil are at risk of being contaminated as a result of a large number of activities occurring within a relatively small area. In the decision making process, the environmental must be considered alongside economic aspects.’

India uses a combination of laws to make decisions on permitting, monitoring and regulating industrial and infrastructure related activities. The influence of these laws ranges from decisions regarding the location of a port up to its daily operation aspects.

Environmental clearance for a port project also attracts provisions of other environment-related laws such as the Water and Air Acts38, which seek to offer special protection to particular components of the ecosystem.

Other legislations that govern port operations are:

- Manufacture, Storage and import of Hazardous Chemical Rules, 1989
- Hazardous Wastes (Management and Handling) Rules, 1989
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- Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Micro Organisms, Genetically Engineered Organisms or Cells, 1989
- The Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976
- Merchant Shipping Act, 1958
- Ancient Monuments and Archaeological Sites and Remains Act, 1958
- Offshore Minerals (Development and Regulation) Act, 2002
- Forest (Conservation) Act, 1988
- Many national specifications and regulations relating to loading and safety at sea are largely based on international agreements and conventions. International regulations relevant to ports and harbours are:
  - International Convention for the Prevention of Pollution from ships (MARPOL)
    (Deals with the prevention of pollution of the marine environment from discharges of oil and other harmful substances during the operation of the port and the minimisation of accidental discharges)
  - International Maritime Dangerous Goods Code (IMDG-code)
    (Concerned with methods of safe transport of dangerous cargo and related activities. It sets procedures for labelling, documentation, marking, storage, segregation, and packing of dangerous goods)
  - (The Law of the Sea Convention defines the rights and responsibilities of nations in their use of the world’s oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources. The main objective is the obligation to prevent pollution damage by addressing particular sources of pollution, including those from land-based activities, sea-bed activities, dumping, vessels and from or through the atmosphere.

**INSTITUTIONAL MAPPING OF LAWS IN INDIA**
INDIAN SEAPORTS SECURITY CONCERNS

Port-related security issues should be addressed in accordance with the ILO/IMO code of practice Security inports (2004), and, as appropriate, with the IMO’s ISPSCode, 2003 edition (International Ship and Port Facility Security Code and SOLAS Amendments, 2002)

India’s entire coastline and smaller ports are probably even more vulnerable, not only because of poorly trained and inefficient security personnel but because of widespread corruption. Heads have rolled across the country’s entire security apparatus.

As an example of the porous condition of security at India’s ports, drugs and contraband are smuggled in constantly and more so at the Mumbai areas, the commercial hub of the country. Gujarat ports such as Dahej and Hazira, with proximity to the Mumbai can easily be affected. Beyond that, however, India has 12 major ports and nearly 200 minor ones, with about 90 percent of the volume of foreign trade and nearly 80 percent of total value of foreign trade via containers.

The devastating November attack on Mumbai which killed 179 people in a three-day siege has awakened India’s navy to the idea that the 10 terrorists who arrived in the Mumbai harbor by rubber boats to create such mayhem could just as easily have eluded detection if they had been carrying a "dirty" nuclear bomb.

Sources in India’s Intelligence Bureau (IB) have spoken about Indian fears that jihadi terror groups are looking smuggle ‘loose nukes’ into countries such as India with lax security and anti-terror apparatus. India, the officials say, lacks a well-implemented action plan at the ports with inadequate ‘special security audits’ at major sea ports, ‘vehicle tracking systems’ and ‘keeping tabs on all trucks entering the port premises.’ Beyond that kind of operation, containers pose a bigger problem. Ports lack adequate security measures, saying that 70-75 percent of global cargo is shipped in containers which could be successfully used by terrorist organizations to ship weapons of mass destruction or nuclear weapons into India. The containers could also be used to smuggle related equipment/technology unless thoroughly scanned by X-ray machines.

The fact remains that the perpetrators of the November Mumbai attacks escaped notice of a bewildering myriad of authorities involved in the security of Indian waters and ports. From the sea-side it is the Indian Coast Guard that patrols the waters under the federal ministry of defense, traversing an area between 10 and 30 nautical miles. From shore to five nautical miles out is under the coastal police and customs authorities. The high seas are protected by the Indian Navy. From land, it is the Central Industrial Security Force under the federal Home Ministry that mans the ports.

While the involvement of a multi-layered security network with different reporting structures makes infiltration difficult, it is hardly impossible. Corruption is a big issue. IB sources say that this is best reflected in resistance by staff to be continuously monitored by CCTV cameras at ports. And even if CCTV cameras are installed, there is no guarantee that they work, that they are pointed at the right direction or recordings of proceedings are happening. Personnel in various agencies are known to be familiar with known agents and middle men, who use secret codes that are understood by staff. In such coordinated efforts money is known to change hands with the slush fund then divided between security personnel.
In the wake of the Mumbai attacks, New Delhi announced a new coastal security apparatus, though Indian implementation standards need to be fine tuned. The government is establishing a Coastal Command headed by the Coast Guard Director General and a Maritime Security Advisory Board for effective linkages across the entire maritime domain. Joint operation centers on both the east and west coasts are being drafted for better co-ordination. Security agencies will outfit trawlers with transponders to pin point their position in the high seas. The Indian Navy has stressed the stringent application of an ‘International Ship and Port Facility Security Code’ (ISPS) that forms part of the international convention ‘Safety Of Life At Sea,’ a set of measures on security arrangements for ships, ports and government agencies.

**CONCLUSION**

It highlights the main hazards found in ports and outlines what you need to do to comply with the law.

**Consequences of Accidents**

**Cost to Individuals**
- Pain, loss of work, loss of income
- Loss of limbs, end of working life
- death, loss of breadwinner
- Low morale of colleagues

**Cost to the port / terminal**
- Disruption of operations
- Administrative work
- Compensation (individual, cargo owner, transport owner)
- Repair costs
- Increased insurance costs

**Establishing a Company Safety Culture**
- Set up a safety organization
- Establish a safety policy
- Set company safety rules and regulations
- Lay down safe working procedures
- Publish a safety handbook
- Provide safety training

**Safe Working Conditions**
- Lighting levels Routes 5 lux working areas 20 lux
- Signs and markings
- Work area conditions

**Major Danger Factors**
- Large, Heavy, Fast moving equipment
- Size and activity of terminal
Mixture of equipment, vehicles and pedestrians
24 hour working
Weather

**Human Error as Cause of Accident**
- Not paying attention
- Lack of job knowledge and skills
- Taking short cuts
- Showing off
- Poor mental state
- Poor physical state

**Environmental concerns**
- Emissions to air
- Releases to water
- Land contamination
- Nuisance and other local community issues, e.g. noise
- Dust and odours
- Waste and its management

**REFERENCES**


