

# Port Safety, Health and Environmental Management Code (PSHEM Code)



Partnerships in Environmental Management  
for the Seas of East Asia (PEMSEA)





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May 2012

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## Introduction

The integrity of port facilities, the safety and health of 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. 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 integrated 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.

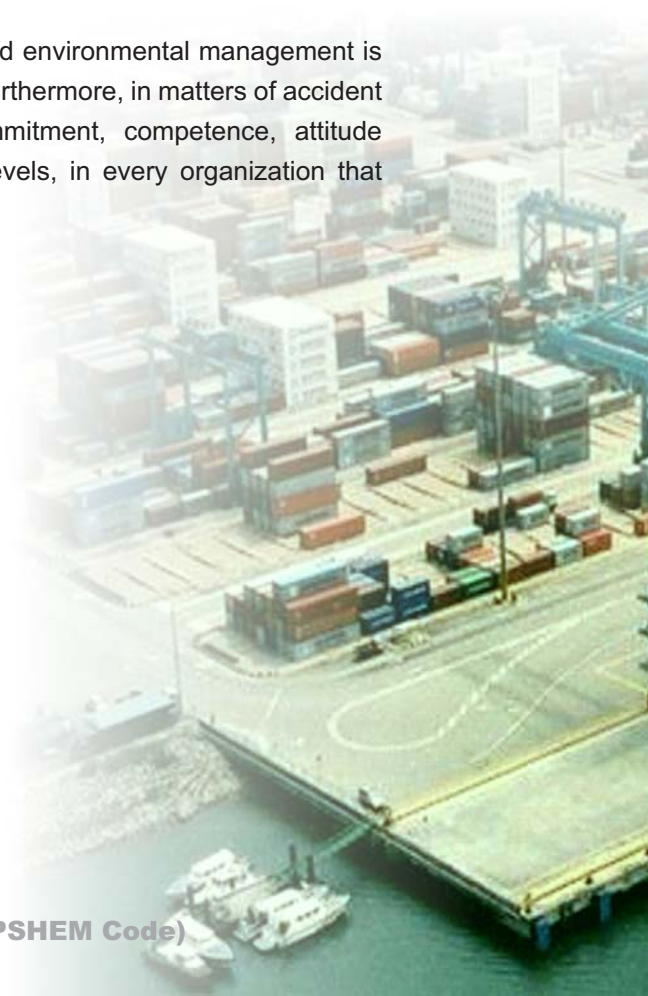
Recognizing this gap and being of the opinion that the availability of such an international standard would be of great value and benefit to the port industry and maritime transport as a whole, the Port Safety, Health and Environmental Management (PSHEM) Code was developed. The PSHEM Code is for voluntary use by port authorities and those companies operating in a port, whose operations may have an effect on health and safety of people, the environment and port installations.

## The PSHEM Code

The PSHEM Code specifies requirements for an effective port safety, health and environmental management system (PSHEMS) to enable an organization to develop and implement policy and objectives that take into account legal requirements and information about hazards associated with its activities, which have or can have significant risk or impact to safety, health and environment. The PSHEMS is intended to be integrated with other management requirements of the organization, thereby helping to achieve business and economic goals as well.

The PSHEM Code is intended to apply to all types and sizes of ports. For this reason, the requirements are expressed in broad terms as guiding principles and objectives so that they can have widespread application. It is for this reason that the PSHEM Code does not state specific port safety, health and environmental protection criteria.

The cornerstone of good safety, health and environmental management is commitment from the top management. Furthermore, in matters of accident and pollution prevention, it is the commitment, competence, attitude and motivation of all individuals, at all levels, in every organization that determines the end result.







## Relationship with other International Standards

The PSHEM Code incorporates the requirements of three prevailing international standards in Environmental Management System (ISO 14001:2004), Occupational Health and Safety Management System (OHSAS 18001:2007) and Quality Management System (ISO 9001:2008). Through the application of the PSHEM Code, port authorities and operators will be able to strengthen their management system consistent with the requirements of ISO 14001:2004, OHSAS 18001:2007 and ISO 9001:2008. The PSHEM Code also describes its relationship with other international conventions, requirements and protocols and these conventions relate to the development and implementation of the PSHEMS.

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**Annex B** describes the correspondence between ISO 14001:2004, OHSAS 18001:2007, ISO 9001:2008 and the PSHEM Code.

**Annex C** describes the PSHEM Code relationship with relevant International Conventions.

**Annex D** describes the process for development and approval of PEMSEA Codes, Guidelines and Good Practices.

# Port Safety, Health and Environmental Management Code

## 1. Scope and Application of the PSHEM Code

The PSHEM Code specifies requirements for a port safety, health and environmental management system, to enable port authorities or companies operating in a port to control identified risks and to improve their performance.

The PSHEM Code is applicable to any port authority or company operating within a port that wishes to:

- a. Establish, implement, maintain and improve a port safety, health and environmental management system;
- b. Assure itself of its conformance with its stated safety, health and environmental policy;
- c. Implement and seek recognition of its PSHEMS by an external organization.

The application of the PSHEM Code and its requirements is voluntary and may be applied in any port and by any organization operating within the port.

When applied, it can cover the following core processes and the potential hazards associated with the related activities, equipment, facilities, products or services within the port area:

- Marine Services (Vessel Traffic Management, Pilotage, Tug and Mooring);
- Navigation;
- Conservancy;
- Cargo handling;
- Storage of cargo;
- Transport within the port area;
- Engineering and Maintenance of port marine crafts, cargo handling equipment and transport means;
- Waste management including reception of ship-generated wastes;
- Emergency preparedness and response;

As well as support processes, including:

- Administration;
- Procurement and Purchasing;
- Human Resource Development;
- Information Technology; and
- Security and Emergency.

**Section 1** covers the scope and application of the PSHEM code while **Section 2** covers Terms and Definitions. **Section 3** defines the requirements for a Port Authority in the development of the

safety, health and environmental (SHE) governance system, while **Section 4** of the Code defines the requirements for a Port Operator implementing a PSHEMS. When a Port Authority chooses to establish and maintain a PSHEMS, the Port Authority shall also ensure that the PSHEMS fulfills the applicable requirements specified in **Section 4**.

**Annex A** is provided to assist in understanding the requirements specified in the Code and to give guidance in those areas where it is thought that additional explanation is necessary. Annex A is not intended to be a comprehensive guide to implementing the requirements of port safety, health and environmental management systems. Further information and guidance on the application of the PSHEM process may be found in the PSHEMS Development and Implementation Guideline.

### 1.1. Objective

The overall objective of the PSHEM Code is to define clear and unambiguous performance criteria and provisions in order to facilitate the development, implementation, monitoring, evaluation and refinement of a PSHEMS by a port authority/operator to ensure safety in the port, the prevention of human injury or loss of life, and the avoidance of damage to the environment, to property, and to cargo.

## 2. Terms and Definitions

### Continual Improvement

A recurring process of enhancing the management system in order to achieve improvements in overall safety, health and environmental performance consistent with the organization's port safety, health and environmental policy . Note that the process need not take place in all areas of the port simultaneously.

This Code is based on the methodology of Plan-Do-Check-Act (PDCA), which entails continually improving the performance of the PSHEMS (see **Figure 1**). PDCA can be briefly described as follows:

**Plan:** Establish the objectives and processes necessary to deliver results in accordance with the organization's safety, health and environmental policy;

**Do:** Implement the process;

**Check:** Monitor and measure processes against safety, health and environmental policy, objectives, targets, legal and other requirements, and report the results;

**Act:** Take actions to continually improve performance of the port safety, health and environmental management system.

## **Documented system**

A formal management system that is established and written to define the organizations goals and objectives, the processes and procedures; to ensure that processes are under control to achieve the desired result and meet agreed requirements. An undocumented system is a management system that exists by word of mouth and depends largely on supervision to ensure that practices are performed consistently.

## **Environment**

Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna and humans, and their interrelations.

## **Hazard**

A source or situation with a potential for harm in terms of human injury or ill health, damage to property, damage to the workplace, and/or damage to the environment.

## **Health and safety**

Conditions and factors that affect the well-being of employees, temporary workers, contractor's personnel, visitors and any other person in the workplace.

## **Industrial hygiene**

The science of anticipating, recognizing, evaluating, and controlling workplace conditions that may cause workers' injury or illness.

## **Organization**

The port authority or any company operating in a port, whose operation may have an effect on the health and safety of people, the environment, port installations and cargoes, and which has agreed to implement the duties and responsibilities stipulated in the Code.

## **Process Approach**

The systematic identification and management of the processes employed within an organization and particularly the interactions between such processes (see **Figure 2**).

## **Port Area**

The port area established by national legislation under the responsibility of a Port Authority.

## **Port Authority/Administration**

The statutory organization legally responsible for ensuring safety, health and environment protection in the port.

## **Port Operator**

A port operator is either the designated port authority or a company that contracts with the port authority to move, handle and store cargo passing through the port. They may be state-owned (particularly for port authorities) or privately-run.

## Port Safety, Health and Environmental Management (PSHEM) Code

Means this Code.

## Port Safety, Health and Environmental Management System (PSHEMS)

A documented management system developed, implemented and maintained by the organization to achieve the objectives of the PSHEM Code.

## Risk

The combination of the likelihood and consequence(s) of a specified hazardous event occurring.

## Safety, Health and Environmental Objectives

Overall safety, health and environmental goals, consistent with the corresponding policies that the port authority or operator sets to achieve.

## Safety, Health and Environmental Targets

Detailed performance requirement, applicable to the port that arises from the safety, health and environmental objectives and that needs to be set and met in order to achieve those objectives.

**Figure 1. PSHEMS Continual Improvement Process.**





### **3. Governance**

#### **3.1 Port Authority Commitment**

The Port Authority shall establish, document, implement and maintain a PSHEMS and continually improve its effectiveness in accordance with the requirements of the PSHEM Code.

The Port Authority shall:

- a. Define the scope (coverage) of the PSHEMS;
- b. Establish a safety, health and environmental (SHE) governance policy, strategic vision and mission, strategies, objectives and programs to support the implementation of the PSHEMS
- c. Review the SHE policy and the results and outcomes of implementation on a regular basis;
- d. Establish an appropriate organizational arrangement for the PSHEMS and institutionalize this arrangement by means of policies and regulations;
- e. Formulate, adopt and implement regulations related to the implementation and continual improvement of the PSHEMS;
- f. Identify and define the governance processes of the Port Authority relevant to the implementation of the PSHEMS;
- g. Determine the criteria and methods to ensure that the implementation and control of the processes are effective;
- h. Ensure availability of resources and information necessary to support the implementation and monitoring of the processes;
- i. Monitor, measure and analyze the processes;
- j. Implement actions necessary to achieve the planned results and continual improvement of the processes.
- k. Communicate to the members of the PSHEMS, including government and nongovernment stakeholders, the importance of achieving the policy, legislation and regulations, strategies, objectives and action plans for the PSHEMS.

##### **3.1.1 SHE Governance Policy**

The Port Authority shall establish and adopt a governance policy that includes its overall intentions and directions with regard to SHE management within the port area.

The Port Authority shall ensure that the SHE governance policy:

- a. Includes a commitment to comply with applicable national statutory and regulatory requirements, as well as with other relevant policies of national and local governments, and applicable international conventions, codes, guidelines, recommendations and standards of international governmental organizations and nongovernmental port industry associations and organizations, as subscribed to by the organization; and
- b. Serves as a framework to develop, implement and update the SHE management objectives of the port.

### **3.1.2 Vision and Mission**

The Port Authority shall develop, adopt and promulgate strategic vision and mission statements.

The vision statement shall define the Port's long-term objectives and expectations regarding safety, health and environment.

The mission statement shall include commitments to protect the people working for, or on behalf of the Port, the community and the environment.

### **3.1.3 Objectives and Targets**

The Port Authority shall establish, implement and maintain documented SHE management objectives and targets that are consistent with the strategic vision and mission.

The objectives shall define the desired improvements, outcomes and impacts of improved SHE management in the port.

Targets which are time-bound and measurable as a consequence of the implementation of the PSHEMS shall be developed for each objective, where practicable.

When establishing and reviewing the objectives and targets, the Port Authority shall consider the relevant legal and other requirements to which the port subscribes.

## **3.2 Safety, Health and Environmental Management Regulations**

The Port Authority shall establish, implement and maintain a procedure(s) to identify and have access to legal and other requirements that are applicable to the port activities and processes, safety, health and environmental aspects and hazards and for periodically evaluating compliance.

The Port Authority shall ensure that applicable legal requirements and other requirements, including requirements specified by stakeholders, are considered in establishing the Port Authority's policy, vision, mission, objectives and targets.

## **3.3 Management Arrangements**

### **3.3.1 PSHEMS Control**

The Port Authority shall ensure that programs and processes associated with the significant risks, consistent with its port safety, health and environmental policy are planned and carried out by the Port Operator under specified conditions, including:

- a. The establishment, implementation and maintenance of documented procedure(s) to control situations where their absence could lead to deviation from the port safety, health and environmental policy and regulations;
- b. The stipulation of the operating criteria and procedure(s); and
- c. The establishment, implementation and maintenance of control(s) related to the identified significant risk(s) of goods and services handled by the port.

### **3.3.2 Monitoring and Measurement**

The Port Authority shall establish, implement and maintain monitoring, measurement, analysis and improvement processes needed to:

- a. Ensure the effectiveness of governance activities;
- b. Determine that objectives and targets are being achieved in line with the Port Authority's strategic vision and mission;
- c. Confirm that the PSHEMS implemented by the Port Operator is performing effectively; and
- d. Ensure compliance with mandatory national rules, regulations and standards and applicable international conventions, codes, guidelines, recommendations and standards of international governmental organizations and nongovernmental port industry associations and organizations, as subscribed to by the Organization.

### **3.3.3 Review and Improvement**

The Port Authority shall establish, implement and maintain a review process to determine the effectiveness of the Safety, Health and Environmental Management governance of the ports under its control.

The outputs of governance reviews shall include decisions and actions related to possible changes to governance policy, regulations, objectives, targets and other elements of the PSHEM, consistent with the commitment to continual improvement.

## **3.4 Awareness and Communication**

The Port Authority shall define and implement a process for communicating the PSHEM governance policies, strategic vision, mission, regulations, controls, requirements, objectives, programs and accomplishments to aid in effective implementation of PSHEMS in ports under its jurisdiction.

## **3.5 Port Resources Management**

The Port Authority shall ensure the availability of resources essential to govern, establish, implement, maintain and improve the PSHEMS in the ports under its jurisdiction. Resources include human resources with required skills, infrastructure, technology and financial resources for the achievement of the PSHEM policy, objectives and targets.

## **4. Port Operation, Safety, Health and Environmental Management System Requirements**

### **4.1 General Requirements**

The Port Operator shall establish, document, implement, maintain and continually improve a port safety, health and environmental management system in accordance with the requirements of this Code and determine how it will fulfil these requirements.

In developing the PSHEMS, the Port Operator shall:

- a. Define the scope of its PSHEMS;
- b. Define the processes involved in the operation(s) covered by the scope of PSHEMS;
- c. Determine the sequence of the processes, and their interactions;
- d. Determine criteria and methods needed to ensure that both the operation and control of these processes are effective; and
- e. Manage the processes in accordance with the requirements of this Code.

When a Port Operator chooses to outsource any process within the scope of the PSHEMS, the organization shall ensure control over such processes. Control of outsourced processes shall be identified within the PSHEMS.

### **4.2. Port Operation, Safety, Health and Environmental Management System Policy Statement**

The Port Operator shall establish and implement a port safety, health and environmental management system policy statement within the defined scope of its PSHEMS, which includes a commitment to pollution prevention, compliance with applicable legal requirements, prevention of accidents and continual improvement.

The Port Operator shall ensure that its policy is documented, communicated and understood within the organization, and is implemented and maintained at all levels of the organization.

Where an overall port policy is in place, the Port Operator's port safety, health and environmental policy shall be in line with the overall port SHE policy.

The Port Operator shall review its port safety, health and environmental policy periodically to ensure that it remains relevant and appropriate.

### **4.3. Planning**

The Port Operator shall ensure that the planning of the PSHEMS is carried out to meet the requirements specified in Clause 4.1

#### **4.3.1 Hazard Identification, Risk Assessment and Control Measures**

The Port Operator shall establish, implement and maintain procedures for:

- a. The ongoing identification of hazards associated with its activities, equipment, facilities, products or services;
- b. The assessment of risks and impacts to safety, health and environment from the identified hazard(s); and
- c. The determination of the adequacy of the available measures for eliminating, reducing and controlling the hazards.

The procedures shall cover routine and non-routine activities, activities of all personnel having access to the port area, including subcontractors and visitors, and facilities in the port, whether provided by the organization or others.

The Port Operator shall document the identified hazard(s), assessment(s) of risk, and determination of control measures, and keep the information up to date.

The Port Operator shall ensure that activities/processes that have significant risk are considered in establishing objectives, targets and programs.

#### **4.3.2 Legal and Other Requirements**

The Port Operator shall establish, implement and maintain a procedure for identifying and accessing the legal and other requirements that are applicable to its PSHEMS.

The Port Operator shall ensure that applicable legal requirements and other requirements to which the organization subscribes are considered in establishing objectives, targets and programs.

#### **4.3.3 PSHEMS Objectives and Targets**

The Port Operator shall establish, document, implement and maintain safety, health and environmental objectives and targets at relevant functions and levels of the organization.

The objectives and targets shall be measurable, where feasible, and consistent with the safety, health and environmental policy.

When establishing and reviewing the objectives and targets, the Port Operator shall consider all significant risks and their impact to port safety, health and the environment, as well as the relevant legal and other requirements to which the organization subscribes.

#### **4.3.4 PSHEMS Programs**

The Port Operator shall establish, implement and maintain (a) program(s) for achieving its objectives and targets. The program(s) shall include designation of responsibility for achieving objectives and

targets at relevant functions and levels of the organization, and the means and time frame by which the objectives are to be met.

#### **4.3.4.1 Safety Programs**

For port safety and the protection of property, cargo and employees and other personnel working or doing business in the port, the Port Operator shall establish and implement a safety program that covers hazards associated with activities and operations related to, but not necessarily limited to, the following processes:

- a. Marine/Vessel Services;
- b. Terminal Operations;
- c. Storage, Handling and Transport of Cargoes/Dangerous Cargoes;
- d. Engineering and Maintenance of Infrastructure/Equipments; and
- e. Warehousing Services.

#### **4.3.4.2 Health Programs**

For protection of employees from health hazards that may arise from the different port activities and/or the work environment, the Port Operator shall establish and implement a health program that includes:

- a. Monitoring the health and fitness of port employees to adequately perform their job functions;
- b. Maintaining regular health check-ups of employees who work in areas or on operations with identified health hazards;
- c. Ensuring that adequate facilities are provided and available at all times to address risks associated with industrial hygiene.

#### **4.3.4.3 Environmental Programs**

For protection of the environment and natural resources within the boundaries and vicinity of the port, the Port Operator shall establish and implement an environmental management program that covers hazards associated with activities and operations that have a potential negative impact on:

- a. Ambient air quality;
- b. Surface water and groundwater quality;
- c. Land use and soil quality;
- d. Health and functionality of natural resource systems; and
- e. Livelihood and food security of the surrounding community.

### **4.4 Implementation and Operational Control**

#### **4.4.1 Responsibility and Authority**

The Port Operator shall define, document and communicate within the organization the responsibilities and authorities of personnel who manage, perform and verify activities within the PSHEMS.

#### **4.4.2 Management Representative(s)**

The Port Operator shall appoint a management representative to provide a link between organizations working in the port area and the highest level of management.

The responsibility and authority of the management representative, irrespective of other duties, shall be defined to ensure that:

- a. The PSHEMS is established, implemented, maintained and monitored;
- b. Adequate resources are applied, as required; and
- c. The performance of the PSHEMS, including recommendations for improvement, is reported regularly to top management for review.

#### **4.4.3 Resource Management, Training and Awareness**

The Port Operator shall ensure the availability and adequacy of resources necessary to establish, implement, maintain and improve the PSHEMS. Resources include human resources, infrastructure, technology and financial resources.

Personnel shall be fit for the work with which they are employed to carry out.

Personnel shall be competent to perform tasks that may impact on safety, health and protection of the environment. Competence shall be defined in terms of appropriate education, training and/or experience, as well as medical fitness in accordance with national requirements. The organization shall retain associated records.

The Port Operator shall establish, implement and maintain procedures:

- a. To ensure that new personnel and personnel transferred to new assignments related to safety, health and protection of the environment are given, as appropriate, proper familiarization with or training related to their duties;
- b. To ascertain that all personnel involved in the PSHEMS are aware of the importance of conformity with the environmental policy and procedures and with the requirements of the PSHEMS;
- c. To identify training that may be required in support of the PSHEMS and ensure that such training is provided for all concerned personnel, taking into account different levels of responsibility and ability; and
- d. To communicate relevant information on the PSHEMS to personnel and stakeholders, and to receive feedback/participation of personnel and stakeholders in PSHEMS implementation and continual improvement.

#### **4.4.4 PSHEMS Documentation**

The PSHEMS documentation shall be referred to as the "Port Safety, Health and Environmental Management System (PSHEMS) Manual."



The PSHEMS Manual shall define how the Port Operator fulfils the requirements of the PSHEM Code.

The PSHEMS documentation shall include:

- a. The PSHEMS policy, objectives, targets and programs;
- b. A description of the scope of the PSHEMS;
- c. A description of the processes within the PSHEMS and their interactions, and reference to related documents;
- d. Documents, including procedures and records required by this Code; and
- e. Documents, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of processes that relate to its significant risks.

The organization shall establish and maintain procedures necessary to periodically review and improve the PSHEMS Manual.

#### **4.4.5 Control of Documents**

The Port Operator shall establish and maintain procedures to control all documents and data relevant to the PSHEMS.

The organization shall ensure that :

- a. Approved documents are available at all relevant locations;
- b. Changes to documents are reviewed and approved by authorized personnel; and
- c. Obsolete documents are promptly removed from the system.

Documentation shall be kept in a form that the organization considers most effective (paper or electronic format shall be both acceptable).

#### **4.4.6 Operational Control**

The Port Operator shall identify, plan and implement its processes consistent with its port safety, health and environmental policy. The Port operator shall ensure that these processes are controlled and managed, by:

- a. Establishing, implementing and maintaining a documented procedure(s) to control situations where their absence could lead to deviation from the port safety, health and environmental policy;
- b. Stipulating the operating criteria and procedure(s); and
- c. Establishing, implementing and maintaining a procedure(s) related to the identified significant risk(s) of goods and services used by the organization and communicating applicable procedures and requirements to suppliers, including contractors..

#### **4.4.7 Emergency Preparedness and Response**

The Port Operator shall establish, implement and maintain procedures to identify and describe the natural or man-made hazards and inherent dangers of its operation to safety, health and the environment based on quantified risk assessment methods and how to respond to emergency situations.

The PSHEMS shall provide for measures ensuring that the Port Operator can respond at any time to hazards, accidents and emergency situations within the port or installation to prevent or mitigate the associated safety, health and environmental impacts.

The Port Operator shall establish and implement programs for drills and exercises to prepare for emergency response actions.

The Port Operator shall periodically review and where necessary revise the emergency preparedness and response procedures, in particular after the occurrence of an accident or emergency situation.

### **4.5 Measurement, Analysis and Improvement**

#### **4.5.1 Monitoring and Measurement**

The Port Operator shall establish, implement and maintain a procedure to monitor the key characteristics of the PSHEMS. The monitoring shall include PSHEMS performance, implementation of operational controls and conformity with objectives and targets.

The Port Operator shall use calibrated or verified monitoring and measurement equipment. Calibration or verification records shall be maintained.

The Port Operator shall establish, implement and maintain a procedure for periodically evaluating compliance with relevant legal and other requirements to which it subscribes. Records shall be kept of the periodic evaluations.

#### **4.5.2 Nonconformity, Corrective Action and Preventive Action**

The Port Operator shall establish and maintain a procedure(s) for defining responsibility and authority for:

- a. The handling and investigation of accidents, incidents and nonconformities with the PSHEMS;
- b. Taking action to mitigate the consequences arising from accidents, incidents or nonconformities;
- c. The initiation and completion of corrective and preventive actions; and
- d. Confirmation of the effectiveness of corrective and preventive actions taken.

Actions taken shall be appropriate to the magnitude of the problem(s) and commensurate with the risk encountered.

The Port Operator shall implement and record any changes to the documented procedures resulting from the corrective or preventive action.

#### **4.5.3 Control of Records**

The Port Operator shall establish and maintain records to demonstrate conformity to the requirements of the PSHEMS and of this Code, and the results achieved.

The Port Operator shall establish, implement and maintain a procedure(s) for the proper identification, storage, protection, retrieval, retention and disposal of records.

Records shall remain legible, identifiable and traceable.

#### **4.5.4 PSHEMS Audit**

The Port Operator shall carry out internal safety, health and environment protection audits at planned intervals to:

- a. Determine whether the implementation of the PSHEMS conforms to the planned procedures and the requirements of this Code;
- b. Review the results of previous audits; and
- c. Provide information on the results of audits to top management.

The audit programme(s) shall be planned, established, implemented and maintained by the organization, taking into consideration the assessment of risk(s) and the results of previous audits.

Audit procedure(s) shall be established, implemented and maintained, covering the scope, frequency and methodologies, as well as the responsibilities and requirements for conducting audits and reporting results.

Personnel carrying out internal audits shall be properly qualified and shall be independent of the areas being audited.

The result of the internal audits and reviews shall be brought to the attention of all personnel having responsibility in the area involved.

The management personnel responsible for the area involved shall take timely corrective action on deficiencies or non-conformities found.

#### **4.6 Management Review and Continual Improvement**

At planned intervals, the Port Operator's top management shall review the overall effectiveness, continuing suitability, and adequacy of the PSHEMS.

The review shall include:

- a. Results of internal audits and evaluations of compliance with legal and other requirements;
- b. Communication from external parties including complaints;
- c. The environmental performance of the organization;
- d. The extent to which PSHEMS policy, objectives, targets and programs have been met;
- e. Status of corrective and preventive actions;
- f. Followup actions from previous management reviews;
- g. Changing circumstances, including developments in legal or other requirements related to port safety, health or protection of the environment; and
- h. Recommendations for improvement.

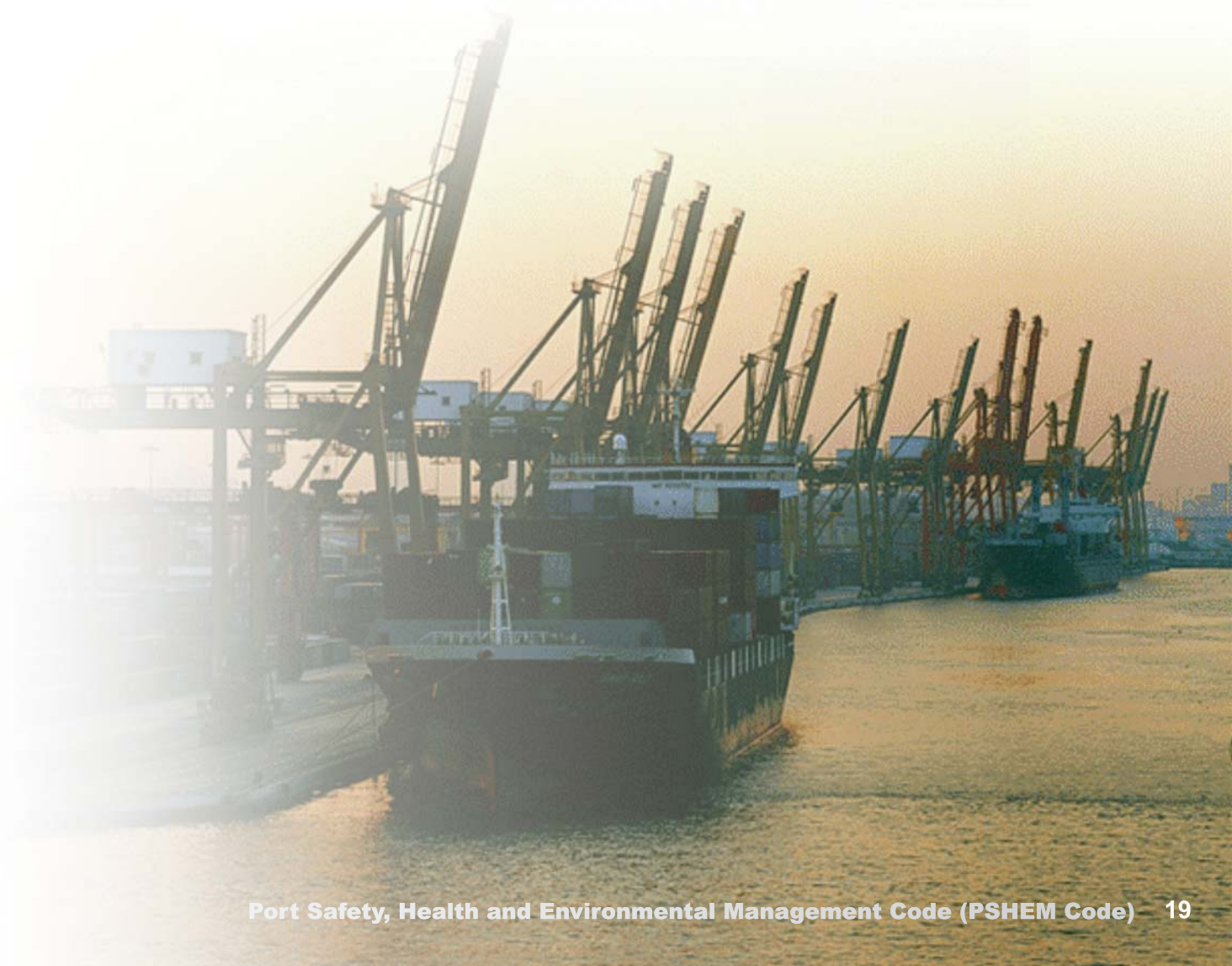
The outputs of management reviews shall include decisions and actions related to possible changes to policy, objectives, targets and other elements of the PSHEMS, consistent with the commitment to continual improvement.

Records of the management review shall be maintained.

#### Reference:

PSHEMS Development and Implementation Guideline

## **Annexes**



## **Annex A (Informative)**

### **Guidance on the Background and Use of the PSHEM Code**

#### **General Comments**

This annex is provided to assist in the understanding of why the clause (in boxes) specified in the PSHEM Code has been used, and to give some guidance in those areas where it is thought that additional explanation is necessary. Where clauses of the PSHEM Code are deemed to be self-explanatory, no additional guidance is provided.

This explanation is not intended to be a comprehensive guide to implementing PSHEMS. The PSHEMS Development and Implementation Guideline is available for such purpose.

#### **Process Approach in PSHEMS**

A management system refers to what an organization does to manage the concerned processes in order that the objectives and targets it has set for itself are met. Management system standards contain many common requirements. Figure 1 identifies common requirements of management systems and illustrates how the PSHEM Code draws together these common requirements into the PSHEMS Development and Implementation Process. The PSHEMS Development and Implementation Process is a set of easily understood processes that allow stage-by-stage development of the policy direction and management options of a PSHEMS. It is equivalent to the PDCA cycle that most management systems follow.

It is important to recognize that there may be specific requirements in individual management systems that are not included in the generic requirements defined in the PSHEM Code. In such cases, those requirements that are not common need to be addressed in addition to those in the PSHEM Code in order for a Port Authority/Operator to meet a desired standard/specification, (e.g., the Purchasing Process clause in ISO 9001 is not specifically detailed in the PSHEM Code). Annex B provides further information on the conformance of the PSHEM Code with three international standards for management systems, namely ISO 9001, ISO 14001 and OHSAS 18001.

**3. Port Authority Commitment**

The Port Authority shall establish, document, implement, maintain a PSHEMS and continually improve its effectiveness in accordance with the requirements of the PSHEM Code.

The Port Authority shall:

- a. Define the scope (coverage) of the PSHEMS;
- b. Establish a safety, health and environmental (SHE) governance policy, strategic vision and mission, strategies, objectives and programs to support the implementation of the PSHEMS
- c. Review the SHE policy and the results and outcomes of implementation on a regular basis;
- d. Establish an appropriate organizational arrangement for the PSHEMS and institutionalize this arrangement by means of policies and regulations;
- e. Formulate, adopt and implement regulations related to the implementation and continual improvement of the PSHEMS;
- f. Identify and define the governance processes of the Port Authority relevant to the implementation of the PSHEMS;
- g. Determine the criteria and methods to ensure that the implementation and control of the processes are effective;
- h. Ensure availability of resources and information necessary to support the implementation and monitoring of the processes;
- i. Monitor, measure and analyze the processes;
- j. Implement actions necessary to achieve the planned results and continual improvement of the processes;
- k. Communicate to the members of the PSHEMS, including government and nongovernment stakeholders, the importance of achieving the policy, legislation and regulations, strategies, objectives and action plans for the PSHEMS.

**Guidance Notes**

The ongoing leadership and visible commitments of the top management of the Port Authority, and the active participation of Port Operators, are essential elements of a PSHEMS.

The benefits that can be derived from the PSHEMS as well as the challenges that the PSHEMS can address should be identified and presented to top management. The idea is to ensure that top management understands the relevance of PSHEMS to the port, and thereby confirms its commitment and support for proceeding with the development, implementation and management of the PSHEMS.



### 3.1.1 SHE Governance Policy

The Port Authority shall establish and adopt a governance policy that includes its overall intentions and directions with regard to SHE management within the port area.

The Port Authority shall ensure that the SHE governance policy:

- a. Includes a commitment to comply with applicable national statutory and regulatory requirements, as well as with other relevant policies of national and local governments, and applicable international conventions, codes, guidelines, recommendations and standards of international governmental organizations and nongovernmental port industry associations and organizations, as subscribed to by the organization; and
- b. Serves as a framework to develop, implement and update the SHE management objectives of the Port.

#### Guidance Notes

The SHE governance policy is the driver for implementing and improving a port's safety health and environmental management system, so that it can implement and potentially improve its sustainable development performance. The policy also forms the basis upon which the Port Authority will set its objectives and targets. Its area of application (scope) should be sufficiently clear to be understood by stakeholders in all sectors, and should be periodically reviewed and revised to reflect changing conditions and information.

The SHE governance policy is put into practice by the Port Authority through:

- a. Adoption by administrative and/or regulatory means;
- b. Implementation and regular review to ensure its continuing suitability; and
- c. Dissemination and communication to all stakeholders and interested parties.

In establishing the SHE governance policy the Port Authority should consider that the policy:

- a. Adopts participatory and integrated approaches in the development and implementation of PSHEMS;
- b. Contains an assurance to comply with applicable statutory and regulatory requirements, as well as with other relevant policies of local and national governments;
- c. Serves as a framework to develop, implement and update the objectives of the Port Authority with respect to managing the safety health and environmental management of the port;
- d. Provides a platform for coordination and cooperation among Port Authority, Operators and other stakeholders

### 3.1.2 Vision and Mission

The Port Authority shall develop, adopt and promulgate strategic vision and mission statements.

The vision statement shall define the Port's long-term objectives and expectations regarding safety, health and environment.

The mission statement shall include commitments to protect the people working for or on behalf of the Port, the community and the environment.

#### Guidance Notes

##### *Vision and Mission*

The vision and mission can be used to guide the Port Authority in the development, implementation, monitoring and continual improvement of the PSHEMS.

The vision should contain the long-term outcomes expected by the Port Authority and stakeholders, provides direction for setting up and implementing the PSHEMS, and serves as the basis for measuring progress toward desired changes.

The mission statement contains the means by which the vision will be achieved, who will be involved, and their roles/responsibilities.

### 3.1.3 Objectives and Targets

The Port Authority shall establish, implement and maintain documented SHE management objectives and targets that are consistent with the strategic vision and mission.

The objectives shall define the desired improvements, outcomes and impacts of improved SHE management in the port.

Targets, which are time-bound and measurable as a consequence of the implementation of the PSHEMS, shall be developed for each objective, where practicable.

When establishing and reviewing the objectives and targets, the Port Authority shall consider the relevant legal, national and other requirements to which the port subscribes.

## Guidance Notes

### *Objectives and Targets*

Objectives are goals for PSHEMS performance. An objective may be qualitative or quantitative in nature, and should be capable of being measured. Some examples of measureable objectives include:

- a. To reduce lost time accidents (LTA);
- b. To improve compliance with legal requirements and discharge permit limits; and
- c. To improve the effectiveness of the inspection system.

When establishing objectives, the Port Authority should consider:

- a. Current and future state of the port and its surrounding areas;
- b. Needs of employees and stakeholders;
- c. Statutory and regulatory requirements;
- d. Sustainable development aspects and risk assessment results;
- f. Resources needed to meet the objectives;
- g. Capacity to meet the objectives;
- h. Continual improvement of the performance of the PSHEMS; and
- i. Measurability and assessability.

Targets are short-term and medium-term results, which are usually quantitative in nature, and capable of being measured. Some examples of targets include:

- a. To achieve (LTA) of 2.5 within two years;
- b. 100% compliance to discharge permit limit within one year; and
- c. 100% implementation of planned SHE inspection;

The objectives and targets should be communicated in such a way that the stakeholders can contribute to their achievement. Responsibility for deployment of objectives should be defined.

Objectives and targets should be systematically reviewed and revised as necessary through a monitoring and assessment process. The Port Authority should regularly report on the fulfillment of the objectives and targets to the stakeholders.

In setting objective and target the Port Authority should also consider other relevant requirements which may include national, international codes and standard.

### **3.2 Safety, Health and Environmental Management Regulations**

The Port Authority shall establish, implement and maintain a procedure(s) to identify and have access to legal and other requirements that are applicable to the port activities and processes, safety, health and environmental aspects and hazards and for periodically evaluating compliance.

The Port Authority shall ensure that applicable legal requirements and other requirements, including requirements specified by stakeholders, are considered in establishing the Port Authority's policy, vision, mission, objectives and targets.

#### **Guidance Notes**

Legal and/or regulatory arrangements are put in place to ensure that the Port Authority has the necessary authority and responsibility to facilitate the implementation of the PSHEMS.

The Port Authority and/or responsible agencies should establish regulations, ordinances and/or decisions to facilitate the implementation of the PSHEMS and related safety health and environmental programs.

The Port Authority should also identify regulatory requirements applicable to the PSHEMS and ensure compliance with such requirements. To keep track of legal requirements, the Port Authority can establish and maintain a list of laws and regulations pertaining to the implementation of activities, processes and programs of the PSHEMS (i.e., a legal register).

To facilitate the preparation and maintenance of a legal register, the Port Authority should establish, implement and maintain a procedure(s) to identify and have access to legal and non-regulated requirements that are applicable to its activities, processes, environmental aspects and hazards.

The Port Authority may also subscribe to voluntary requirements, other than legal requirements. These requirements may include: voluntary principles or codes of practice, international agreements, requirements of trade associations, agreements with community groups or nongovernmental organization and public commitments. Some of these commitments or agreements may apply to several issues of the PSHEMS, and the Port Authority should exert efforts to identify and address such requirements.

### **3.3 Management Arrangements**

#### **3.3.1 PSHEMS Control**

The Port Authority shall ensure that programs and processes associated with the significant risks, consistent with its port safety, health and environmental policy are planned and carried out by the Port Operator under specified conditions, including:

- a. The establishment, implementation and maintenance of documented procedure(s) to control situations where their absence could lead to deviation from the port safety, health and environmental policy and regulations;
- b. The stipulation of the operating criteria and procedure(s);
- c. The establishment, implementation and maintenance of control(s) related to the identified significant risk(s) of goods and services handled by the port.

#### **Guidance Notes**

The Port Authority should ensure that the functional links between the Port Authority and the Port Operator are defined for the implementation of the PSHEMS in the port. The Port Authority should communicate to the respective Port Operators their responsibilities with regard to the implementation of PSHEMS. This can be accomplished by establishing relevant regulations in the port and clear stipulations in the Port Operators' operating contracts or operating permits, and by the provision of policy and technical guidance to the Port Operators.

The Port Authority should also conduct regular inspection and compliance monitoring to determine if the Port Operators have established and implemented the necessary controls within their processes.

#### **3.3.2 Monitoring and Measurement**

The Port Authority shall establish, implement and maintain monitoring, measurement, analysis and improvement processes needed to:

- a. Ensure the effectiveness of governance activities;
- b. Determine that objectives and targets are being achieved in line with the Port Authority's strategic vision and mission;
- c. Confirm that the PSHEMS implemented by the Port Operator is performing effectively;
- d. Ensure compliance with mandatory national rules, regulations and standards and applicable international conventions, codes, guidelines, recommendations and standards of international governmental organizations and nongovernmental port industry associations and organizations, as subscribed to by the organization.

## Guidance Notes

The Port Authority should ensure that it has the capability to implement the monitoring and surveillance process, and, if included in the Port Authority's responsibilities, enforcement of mandatory national and international regulations and standards as subscribed to by the organization. This includes availability of competent personnel, equipment and other infrastructure needed to implement a monitoring and surveillance process.

### 3.3.3 Review and Improvement

The Port Authority shall establish, implement and maintain a review process to determine the effectiveness of the Safety, Health and Environmental Management governance of the ports under its control.

The outputs of governance reviews shall include decisions and actions related to possible changes to governance policy, regulations, objectives, targets and other elements of the PSHEM, consistent with the commitment to continual improvement.

## Guidance Notes

The Port Authority should conduct a regular review of the safety, health and environmental management to evaluate its performance and the performance of its governance process and to identify opportunities for improvement. The Top management of the Port Authority should be involved directly through the management review process.

The result of the reviews should be used by the Port Authority to formulate changes and improvement to SHE governance policy, objectives and targets, and other elements of the governance process, as appropriate.

### 3.3.3 Review and Improvement

The Port Authority shall establish, implement and maintain a review process to determine the effectiveness of the Safety, Health and Environmental Management governance of the ports under its control.

The outputs of governance reviews shall include decisions and actions related to possible changes to governance policy, regulations, objectives, targets and other elements of the PSHEM, consistent with the commitment to continual improvement.

## Guidance Notes

The Port Authority should conduct a regular review of the safety, health and environmental management to evaluate its performance and the performance of its governance process and

to identify opportunities for improvement. The Top management of the Port Authority should be involved directly through the management review process.

The result of the reviews should be used by the Port Authority to formulate changes and improvement to SHE governance policy, objectives and targets, and other elements of the governance process, as appropriate.

### **3.4 Awareness and Communication**

The Port Authority shall define and implement a process for communicating the PSHEM governance policies, strategic vision, mission, regulations, controls, requirements, objectives, programs and accomplishments to aid in effective implementation of PSHEMS in ports under its jurisdiction

#### **Guidance Notes**

Communication aids in the effective implementation of the PSHEMS and leads to improved PSHEMS performance. Communication is a two-way mechanism for sharing information, experience, feedback and insights among the various stakeholders.

The Port Authority should develop and implement a communication plan to raise awareness, motivate and help the Port Operators to maintain good safety, health and environmental practices.

The Port Authority should encourage feedback and communication from stakeholders as a means of involving them. The Port Authority should establish, implement and maintain procedures for receiving, documenting and responding to relevant communication from external parties.

The participation of Port Operators and stakeholders is a key contribution to the successful implementation of the PSHEMS.

The Port Authority should establish a process and mechanisms to improve:

- a. Port Operator and stakeholder commitments to safety, health and environment;
- b. Coordination and cooperation;
- c. Partnerships; and
- d. Port Operators' and stakeholders' ownership of established policies and programs.

Advocacy and communication activities should also be implemented at various levels to gain commitment, support and involvement of Port Operator and stakeholders.

In order to determine the effectiveness of its Port Operator and stakeholder awareness and participation program, the Port Authority needs to identify the measurement requirements for assessing the perception and behavioral changes among stakeholders.



The Port Authority should also establish procedures for evaluating and reporting the benefits and impacts of PSHEMS implementation. In evaluating the benefits of the PSHEMS, the Port Authority should consider the compliance/performance indicators, the conduct of external audits and the measurement of progress among PSHEMS and the safety, health and environmental programs.

### **3.5 Port Resources Management**

The Port Authority shall ensure the availability of resources essential to govern, establish, implement, maintain and improve the PSHEMS in the ports under its jurisdiction. Resources include human resources with required skills, infrastructure, technology, and financial resources for the achievement of the PSHEM policy, objectives and targets.

#### **Guidance Notes**

The Port Authority should implement a procedure for identifying and accessing resources necessary for the realization of the PSHEMS in ports under its jurisdiction, including people, infrastructure, work area, information, contractors, suppliers, materials and financing.

The Port Authority should develop a resource utilization plan for the management and maintenance of the port facilities and the effective implementation of the port governance activities.

## **4.0 Port Operation, Safety Health and Environmental Management System Requirements**

### **4.1 General Requirements**

The Port Operator shall establish, document, implement, maintain and continually improve a port safety, health and environmental management system in accordance with the requirements of this Code and determine how it will fulfil these requirements.

In developing the PSHEMS, the Port Operator shall:

- a. Define the scope of its PSHEMS.
- b. Define the processes involved in the operation(s) covered by the scope of PSHEMS;
- c. Determine the sequence of the processes, and their interactions;
- d. Determine criteria and methods needed to ensure that both the operation and control of these processes are effective; and
- e. Manage the processes in accordance with the requirements of this Code.

When a Port Operator chooses to outsource any process within the scope of the PSHEMS, the organization shall ensure control over such processes. Control of outsourced processes shall be identified within the PSHEMS.

## Guidance Notes

This clause is fundamental as it establishes the basis for the rest of the PSHEMS. It defines the elements that enable a Port Operator to document, implement and maintain a PSHEMS.

The Port Operator needs to define the scope (coverage) of the PSHEMS, as the boundaries of the port where the PSHEMS applies. Once the scope has been defined, activities, products or services of the Port Operator within the defined scope should be included in the PSHEMS.

The Port Operator has the flexibility to choose to implement the PSHEMS with respect to the entire organization or specific operating units or activities of the Port Operator.

The Port Operator can follow the continual improvement cycle (PDCA cycle) in developing the PSHEMS and the programs to identify and address the elements of its activities, products and services that are having a significant risk to safety, health and environment.

In developing the PSHEMS, the Port Operator should use the business process approach, meaning that the Port Operator should consider to integrate the PSHEMS within its existing management system and not treat it as a separate system.

### **4.2 Port Operation, Safety, Health and Environmental Management System Policy Statement**

The Port Operator shall establish and implement a port safety, health and environmental management system policy statement within the defined scope of its PSHEMS, which includes a commitment to pollution prevention, compliance with applicable legal requirements, prevention of accidents and continual improvement.

The Port Operator shall ensure that its policy is documented, communicated and understood within the organization, and is implemented and maintained at all levels of the organization.

Where an overall port policy is in place, the Port Operator's port safety, health and environmental policy shall be in line with the overall port SHE policy.

The Port Operator shall review its port safety, health and environmental policy periodically to ensure that it remains relevant and appropriate.

## Guidance Notes

A policy statement acts as a guiding principle by which an organization determines its aims and objectives. A policy formally endorsed and adopted by the organization is a public declaration of its commitment to improve performance.

The Port Operator should ensure that:

- a. The policy is established by the most senior management, is appropriate to the needs of the organization and complies with the PSHEM Code.
- b. The policy reflects commitment to meeting customers (including regulatory bodies) requirements and continual improvement.
- c. The policy is communicated, understood and implemented throughout the organization.
- d. The policy is continuously reviewed with the aim of improvement and assessing whether it is still suited to the needs of the organization.

In developing policy the Port Operator should consider:

- a. The overall Port's vision, mission, policy as established by the Port Authority;
- b. Its mission, vision, core values and beliefs;
- c. Coordination with other policies (e.g. quality policy);
- d. Specific local and regional conditions;
- e. Its commitment to protect its employees and stakeholders;
- f. Its commitment to prevent pollution; and
- g. Its commitment to comply with legal requirements and other requirements to which the port subscribes.

The policy should be communicated to the employees and stakeholders, consideration should be given to ensure awareness of all employees and interested parties.

### 4.3 Planning

The Port Operator shall ensure that the planning of the PSHEMS is carried out to meet the requirements specified in Clause 4.1.

#### 4.3.1 Hazard Identification, Risk Assessment and Control Measures

The Port Operator shall establish, implement and maintain procedures for:

- a. The ongoing identification of hazards associated with its activities, equipment, facilities, products or services;
- b. The assessment of risks and impacts to safety, health and environment from the identified hazard(s);
- c. The determination of the adequacy of the available measures for eliminating, reducing and controlling the hazards.

The procedures shall cover routine and non-routine activities, activities of all personnel having access to the port area, including subcontractors and visitors, and facilities in the port, whether provided by the organization or others.

The Port Operator shall document the identified hazard(s), assessment(s) of risk, and determination of control measures, and keep the information up to date.

The Port Operator shall ensure that activities/processes that have significant risk are considered in establishing objectives, targets and programs.

#### Guidance Notes

Safety, health and environmental risk assessment refers to the scientific methods used to quantify risks to particular systems, as a prelude to managing the identified risks to minimize potential damage. It varies widely in scope and applications, and various methodologies are available to suit specific applications.

Risk assessment involves systematically identifying the two elements of risk (or likelihood of harm): the potential harm or hazard associated with a certain substance, activity or process; and the likelihood of exposure of the target to the potential harm/hazard.

Risk assessment is the process of estimating the likelihood of occurrence of and the severity of the adverse effect.

Approaches to the conduct of risk assessment vary. Different approaches are discussed in the PSHEMS Development and Implementation Guideline.

The risk assessment can lead a risk manager to decide whether a substance or activity is:

- a. Safe (there is no significant risk);
- b. Unsafe (risk is too high, abandon the project); or
- c. Safe but exposure must be limited to maintain the desired margin of safety (i.e., risk management is needed).

Applied on a suite of substances/processes, risk assessment can provide a ranking of priority concerns, based on an objective assessment of available scientific evidence.

The technical results from the risk assessment are designed to serve as inputs in formulating policies, objectives, targets and management programs.

#### **4.3.2 Legal and Other Requirements**

The Port Operator shall establish, implement and maintain a procedure for identifying and accessing the legal and other requirements that are applicable to its PSHEMS.

The Port Operator shall ensure that applicable legal requirements and other requirements to which the organization subscribes are considered in establishing objectives, targets and programs.

#### **Guidance Notes**

Legal, regulatory and other requirements refer broadly to any requirements or authorization that is relevant to the Port Operator's PSHEMS and its sustainable development aspects.

Legal requirements can take many forms, including:

- a. Legislation, including statutes and regulations;
- b. Decrees and directives;
- c. Permits, licenses and other forms of authorization;
- d. Orders issued by regulatory agencies;
- e. Judgments of courts or administrative tribunals;
- f. Customary or indigenous law; and
- g. Treaties, conventions and protocols.

To facilitate the identification of legal and other requirements, the Port Operator should maintain an up-to-date register or list of applicable requirements.

### 4.3.3 PSHEMS Objectives and Targets

The Port Operator shall establish, document, implement and maintain safety, health and environmental objectives and targets at relevant functions and levels of the organization.

The objectives and targets shall be measurable, where feasible, and consistent with the safety, health and environmental policy.

When establishing and reviewing the objectives and targets, the Port Operator shall consider all significant risks and their impact to port safety, health and the environment, as well as the relevant legal and other requirements to which the organization subscribes.

#### Guidance Notes

In setting objective and targets, the Port Operator can consider several inputs including:

- a. Principles and commitments in the port safety, health and environmental management system policy statement;
- b. Sustainable development aspects and risk assessment results;
- c. Applicable legal and other requirements including national and international codes and standards (see Annex C for further information on applicable international conventions and codes)
- d. Views and needs of employees and stakeholders;
- e. Technological options and feasibility;
- f. Financial and organizational capabilities and resources; and
- g. Possible effects on the public image of the port.

Objectives should be set at all levels and functions of the Port Operator where activities needed to meet the port safety, health and environmental management system policy statement are performed. Objectives should be consistent with the port safety, health and environmental management system policy statement.

Targets are short-term and medium-term results, which are usually quantitative in nature, and capable of being measured. Objectives can be further defined by one or more targets. Targets should be measurable and express performance levels that need to be met to ensure achievement of the specified objectives. Targets should include a specified timeframe for delivery.

The objectives and targets should be communicated in such a way that the stakeholders can contribute to their achievement. Responsibility for deployment of objectives should be defined.

#### **4.3.4 PSHEMS Programs**

The Port Operator shall establish, implement and maintain a program(s) for achieving its objectives and targets. The program(s) shall include designation of responsibility for achieving objectives and targets at relevant functions and levels of the organization, and the means and timeframe by which the objectives are to be met.

##### **Guidance Notes**

PSHEMS programs are designed to address significant risks and impacts to safety, health and environment from identified hazards. PSHEMS programs should include:

- a. An action plan, including objectives, targets, strategies, processes and time table;
- b. Personnel allocation, including designation of responsibility for achieving objectives and targets;
- c. Allocation of resources, including infrastructure, equipment and budget or necessary financing mechanism to support implementation;
- d. Organizational arrangements, including roles and responsibilities to facilitate continual implementation;
- e. Monitoring and reporting of implementation, performance and achievement of objectives and targets; and
- f. Documentation requirements.

Program reviews should be conducted regularly, and the program adjusted or modified where necessary.

##### **4.3.4.1 Safety Programs**

For port safety and the protection of property, cargo and employees and other personnel working or doing business in the port, the Port Operator shall establish and implement a safety program that covers hazards associated with activities and operations related to, but not necessarily limited to, the following processes:

- a. Marine/Vessel Services;
- b. Terminal Operations;
- c. Storage, Handling and Transport of Cargoes/Dangerous Cargoes;
- d. Engineering and Maintenance of Infrastructure/Equipments; and
- e. Warehousing Services.

## Guidance Notes

The Port Operator should establish safety programs to address the identified hazards and prevent accidents throughout the organization and areas within the scope of the PSHEMS. The safety programs should take a total management approach, looking at every aspect of the workplace to improve safety.

Safety programs may require new or improved controls to address the identified risks. The controls should be determined and prioritized in accordance with a tiered approach involving: (a) eliminating the hazards where applicable; (b) reducing risks associated with identified hazards; and (c) utilizing personal protective equipment to preserve workers' and visitors' safety and health.

Safety programs may include:

- a. Safety Training;
- b. Workplace Monitoring and Control;
- c. Electrical and Mechanical Works safety;
- d. Guarding of Machinery;
- e. Work Permit System;
- f. Use and handling of hazardous materials;
- g. Construction Works safety;
- h. Fire Protection and Control;
- i. Hazard Communication;
- j. Engineering Change Management; and
- k. Provision of Personal Protective Equipment.

### 4.3.4.2 Health Programs

For protection of employees from health hazards that may arise from the different port activities and/or the work environment, the Port Operator shall establish and implement a health program that includes:

- a. Monitoring the health and fitness of port employees to adequately perform their job functions;
- b. Maintaining regular health check ups of employees who work in areas or on operations with identified health hazards; and
- c. Ensuring that adequate facilities are provided and available at all times to address risks associated with industrial hygiene

## Guidance Notes

The Port Operator should promote, protect and maintain the health and well-being of its employees through the implementation of the health programs which may include the following:



- a. Health examination – pre-employment, periodic, special, transfer/separation and other health examination deemed necessary by qualified health authority;
- b. Management and treatment of occupational injuries and diseases;
- c. Immunization programs;
- d. Health education and counseling;
- e. Keeping of medical records; and
- f. Other relevant health programs.

The Port Operator should also consider the implementation of health monitoring/surveillance programs that may include the following activities:

- a. Biological monitoring;
- b. Medical surveillance; and
- c. Symptoms injury, inspection and examination.

The Port Operator should provide the necessary medical and dental services and facilities. The Port Operator should also maintain necessary additional emergency medical supplies and medicines as recommended by its medical personnel. In the absence of a clinic or hospital near and/or in the proximity to the place of work, every employer should ensure that suitable transport facilities are readily available, and sufficient number of persons are adequately trained and readily available to render first aid. The employer should also provide the necessary sanitary and welfare facilities in the workplace.

The Port Operator should establish programs for industrial hygiene. Industrial hygiene is the process devoted to the recognition, evaluation and control of environmental factors or stresses (i.e., chemical, physical, biological and ergonomic) that can cause sickness, impaired health or significant discomfort to employees or residents of the community.

Programs and facilities should be made available for jobs that require industrial hygiene control. The type extent of controls depends on the physical, chemical, and toxic properties of contaminants, evaluations made of the exposure, and the operation that disperses or removes the contaminant. This may include good housekeeping measures, special monitoring devices and safety/hygiene training and education to help ensure a safe, healthy workplace.

#### **4.3.4.3 Environmental Programs**

For protection of the environment and natural resources within the boundaries and vicinity of the port, the Port Operator shall establish and implement an environmental management program that covers hazards associated with activities and operations that have a potential negative impact on:

- a. Ambient air quality;
- b. Surface water and groundwater quality;
- c. Land use and soil quality;
- d. Health and functionality of natural resource systems; and
- e. Livelihood and food security of the surrounding community.

## Guidance Notes

Environmental problems at the port can have a major impact not only on workers but also on the surrounding areas and community. The port operator should take appropriate actions to protect their workers; and public health and welfare; and natural resources from a wide range of toxic materials and environmental threats.

The Port operator should seek to prevent environmental pollution; address general and hazardous waste problems; facilitate effective use of resources; and prevent natural resources degradation.

Examples of environmental programs are:

- a. Energy and resources conservation;
- b. Facilities improvement to improve efficiency;
- c. Waste minimization;
- d. Recycling of materials;
- e. Reducing the amount of hazards waste produced;
- f. Eliminating the source of pollution and/or provision of additional controls;
- g. Natural resources habitat rehabilitation, protection and management;
- h. Establishing sound environmental strategies; and
- i. Active participation in an Integrated Coastal Management Program.

## 4. 4 Implementation and Operational Control

### 4.4.1 Responsibility and Authority

The Port Operator shall define, document and communicate within the organization the responsibilities and authorities of personnel who manage, perform and verify activities within the PSHEMS.

## Guidance Notes

The functions, responsibilities and authorities of the personnel involved in the PSHEMS should be clearly described.

Documentation of roles and responsibilities can be done in several ways, including, for example:

- a. Preparing an organizational chart indicating the hierarchy level and communication lines;
- b. Preparing job descriptions;

- c. Defining and documenting responsibilities in process procedures and/or other management documents;
- d. Issuing announcements or memoranda; and/or
- e. Making use of existing documentation (e.g., operational manuals).

#### **4.4.2 Management Representative(s)**

The Port Operator shall appoint a management representative to provide a link between organizations working in the port area and the highest level of management.

The responsibility and authority of the management representative, irrespective of other duties, shall be defined to ensure that:

- a. The PSHEMS is established, implemented, maintained and monitored;
- b. Adequate resources are applied, as required; and
- c. The performance of the PSHEMS, including recommendations for improvement, is reported regularly to top management for review.

#### **Guidance Notes**

The Port Operator should designate a Management Representative for the PSHEMS implementation. This Management Representative should be a member of the Port Operators' top management who has sufficient authority and independence to ensure the vision, mission and objectives are achieved.

The responsibility for the effective implementation of the PSHEMS lies throughout the organization. The role of the Management Representative may include interaction with the members of the organization, as well as other interested parties to facilitate effective implementation of the PSHEMS, as well as to monitor the progress of the implementation process.

### 4.4.3 Resource Management, Training and Awareness

The Port Operator shall ensure the availability and adequacy of resources necessary to establish, implement, maintain and improve the PSHEMS. Resources include human resources, infrastructure, technology and financial resources.

Personnel shall be fit for the work which they are employed to carry out.

Personnel shall be competent to perform tasks that may impact on safety, health and protection of the environment. Competence shall be defined in terms of appropriate education, training and/or experience, as well as medical fitness in accordance with national requirements. The organization shall retain associated records.

The Port Operator shall establish, implement and maintain procedures:

- a. To ensure that new personnel and personnel transferred to new assignments related to safety, health and protection of the environment are given, as appropriate, proper familiarization with or training related to their duties;
- b. To ascertain that all personnel involved in the PSHEMS are aware of the importance of conformity with the environmental policy and procedures and with the requirements of the PSHEMS;
- c. To identify training that may be required in support of the PSHEMS and ensure that such training is provided for all concerned personnel, taking into account different levels of responsibility and ability;
- d. To communicate relevant information on the PSHEMS to personnel and stakeholders, and to receive feedback/participation of personnel and stakeholders in PSHEMS implementation and continual improvement.

### Guidance Notes

The Port Operator should consider developing and implementing a procedure for identifying and allocating resources necessary for the realization of the PSHEMS, including people, infrastructure, work area, information, contractors, suppliers, materials and financing.

In order to ensure the availability of competent personnel, the Port Operator may consider implementing the following practices:

- a. Specifying job profiles for key positions, including educational qualifications;
- b. Defining the required competence (e.g., training, skills and experience);
- c. Monitoring and evaluating the performance of personnel; and
- d. Keeping records of job performance.

The Port Operator should develop and implement a capacity-development program for maintaining and improving the capacity of personnel who are performing work for the implementation of the PSHEMS.

Strengthening the skills and competence of personnel implementing the PSHEMS can be facilitated through Port Operators' actions and programs to:

- a. Determine training or other needs by comparing the job requirement with the current competence levels of the personnel;
- b. Implement awareness programs to familiarize personnel with the PSHEMS policy, objectives and targets, and the action programs to achieve them;
- c. Organize training programs or other activities needed to ensure the availability of competent personnel, such as on-the-job training, appropriate supervision and coaching until personnel become fully competent, or hiring of new personnel with the necessary competence;
- d. Assess the results of training and other actions performed to determine the benefits to PSHEMS implementation; and
- e. Review the training needs and determine further actions as necessary.

The Port Operator should evaluate the effectiveness of the capacity-development program and maintain appropriate records of the education, training, skills and experience of people involved in the implementation of the PSHEMS.

Some of the basic training requirements associated with PSHEMS development include:

- a. PSHEMS development and implementation;
- b. Policy, Objective, targets and program development;
- c. PSHEMS Awareness;
- d. PSHEM Code requirements;
- e. Legal and Regulatory requirements;

As the PSHEMS moves into full implementation, specialized training courses may be needed for personnel to acquire appropriate skills necessary to ensure the efficiency and effectiveness of programs, covering issues such as: risk assessment; emergency preparedness and response; dangerous goods handling; waste management and pollution reduction.

A process of recognition may be developed as a means of acknowledging and providing incentives for personnel that contribute to the effective implementation of the PSHEMS.

The Port Operator should also establish an information and knowledge sharing mechanism by developing means to disseminate information such as newsletters, websites and other means.

#### 4.4.4 PSHEMS Documentation

The PSHEMS documentation shall be referred to as the “Port Safety, Health and Environmental Management System (PSHEMS) Manual”.

The PSHEMS Manual shall define how the Port Operator fulfils the requirements of the PSHEM Code.

The PSHEMS documentation shall include:

- a. The PSHEMS policy, objectives, targets and programs;
- b. A description of the scope of the PSHEMS;
- c. A description of the processes within the PSHEMS and their interactions, and reference to related documents;
- d. Documents, including procedures and records required by this Code; and
- e. Documents, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of processes that relate to its significant risks.

#### Guidance Notes

Documentation refers to the documents and records relating to the PSHEMS that the Port Operators maintains. A document normally refers to information concerning planning, development and implementation of the PSHEMS and its processes. Therefore, because of changing circumstances and conditions over time, documents must be periodically reviewed and revised (e.g., handling of hazardous goods procedure).

A record refers to data or information that provides evidence of activities performed or results achieved. A record is a historical document that does not change over time (e.g., minutes of a meeting with an attendance list).

Documentation provides the Port Operator with:

- a. A formal methodology for ensuring ease of directing PSHEMS;
- b. Consistency and uniformity of practice;
- c. A means of measuring the performance of each process in the PSHEMS, thereby making it verifiable; and
- d. A way for the Port Authority, customers and Port Operator to view and assess PSHEMS implementation and its impacts.

The PSHEMS manual may be seen as a road map that explains how all the processes, functions and stakeholders involved in the PSHEMS fit together. It can also be viewed as a description of a formal system, i.e., one that is documented, implemented and verifiable.

The manual should not be complex or difficult to read, with every bit of information on the PSHEMS. Rather, it may contain references to other documents and applicable procedures that are not included in the manual.

The nature and level of the documented manual can vary depending on the size and complexity of the PSHEMS.

#### **4.4.5 Control of Documents**

The Port Operator shall establish and maintain procedures to control all documents and data relevant to the PSHEMS.

The organization shall ensure that:

- a. Approved documents are available at all relevant locations;
- b. Changes to documents are reviewed and approved by authorized personnel; and
- c. Obsolete documents are promptly removed from the system.

Documentation shall be kept in a form that the organization considers most effective (paper or electronic format shall be both acceptable).

#### **Guidance Notes**

During the implementation of the PSHEMS, personnel and other stakeholders will use available documents to accomplish their roles and responsibilities. To ensure that every one is doing the right job consistently, they must be provided with the correct tools, which include proper and up-to-date procedures. Without a mechanism to control the documentation, the Port Operator will not know or be able to verify if the right information is being used.

The Port Operator should have a procedure in place that describes how documents are controlled. The procedure should describe:

- a. Mechanisms to issue, revise and approve documents for internal use by port personnel, including their identification and revision status;
- b. Mechanisms for controlling documents that should be made available to stakeholders, such as policies, strategies, applicable legal documents, PSHEMS progress reports and other documents; and
- c. Mechanisms to facilitate access to the latest version of documents by employees and other stakeholders.

The document control procedure should designate responsibility and authority for preparing documents, making changes to these and keeping these up-to-date.

If there are already effective document control procedures in the organization, then the PSHEMS documentation can be integrated into the existing procedures. If it is necessary to start a new system, or improve upon an existing one, a simple step-by-step approach may be followed:

- a. Identify the documents that need to be controlled;
- b. Designate responsibility for managing documents;
- c. Establish document control procedures; and
- d. Document, maintain and communicate control procedures.

#### **4.4.6 Operational Control**

The Port Operator shall identify, plan and implement its processes consistent with its port safety, health and environmental policy. The Port operator shall ensure that these processes are controlled and managed, by:

- a. Establishing, implementing and maintaining a documented procedure(s) to control situations where their absence could lead to deviation from the port safety, health and environmental policy;
- b. Stipulating the operating criteria and procedure(s); and
- c. Establishing, implementing and maintaining (a) procedure(s) related to the identified significant risk(s) of goods and services used by the organization and communicating applicable procedures and requirements to suppliers, including contractors.

#### **Guidance Notes**

Operational control should be established and implemented to manage significant risks to acceptable levels, for operational areas and activities (e.g., administration; purchasing and contracting; marine service; terminal operation; storage, handling and transportation; and infrastructure and equipment maintenance; and day to day operations).

The Port Operator should establish operational controls to eliminate, reduce and/or control significant risks to port by employees, contractors, visitors, the general public and cargoes handled by the port.

Operational control can take various forms, such as provision of physical devices (e.g., barriers, access control, and treatment facility), procedures, work instructions and other administrative controls (alarms and signages) or combination of these. The choice of the specific control methods depends on a number of factors, such as skills and experience of people carrying out the task; the complexity of the operation; and the significance of the risk.

Operational control may include provision for measurement and evaluation, and for determining whether operating criteria are being met.



#### 4.4.7 Emergency Preparedness and Response

The Port Operator shall establish, implement and maintain procedures to identify and describe the natural or man-made hazards and inherent dangers of its operation to safety, health and the environment based on quantified risk assessment methods and how to respond to emergency situations.

The PSHEMS shall provide for measures ensuring that the Port Operator can respond at any time to hazards, accidents and emergency situations within the port or installation to prevent or mitigate the associated safety, health and environmental impacts.

The Port Operator shall establish and implement programs for drills and exercises to prepare for emergency response actions.

The Port Operator shall periodically review and, where necessary, revise the emergency preparedness and response procedures, in particular after the occurrence of an accident or emergency situation.

#### Guidance Notes

Procedure and controls for emergency preparedness and response should, as a minimum, cover the following:

- a. Fire and explosion;
- b. Release of hazardous material or gases (e.g., chemical spills, hazardous gas leaks);
- c. Natural disasters, including high intensity storms, droughts and flooding;
- d. Loss of utility supply (e.g., water, electricity);
- e. Accident/incidents leading to serious injury or ill health;
- f. Pandemic/epidemic outbreak;
- g. Civil disturbances;
- h. Failure of critical equipment; and
- i. Breach of legal and regulatory requirements.

The Port Operator should develop plans and procedures to ensure that there will be an appropriate prevention and response to emergencies.

The emergency prevention and management plans and procedures may include:

- a. Programs to prevent the occurrence of emergencies;
- b. Hazard and emergency management organization and responsibilities,
- c. List of key personnel;
- d. Details of emergency services (e.g. spill cleanup services);
- e. Internal and external communication plans;

- f. Information on hazards and emergencies including its potential impacts;
- g. Measures to be taken in the event of different emergencies; and
- h. Training plans and testing for emergency management plans and procedure effectiveness.

## **4.5 Measurement, Analysis and Improvement**

### **4.5.1 Monitoring and Measurement**

The Port Operator shall establish, implement and maintain a procedure to monitor the key characteristics of the PSHEMS. The monitoring shall include PSHEMS performance, implementation of operational controls and conformity with objectives and targets.

The Port Operator shall use calibrated or verified monitoring and measurement equipment. Calibration or verification records shall be maintained.

The Port Operator shall establish, implement and maintain a procedure for periodically evaluating compliance with relevant legal and other requirements to which it subscribes. Records of the periodic evaluations shall be kept.

#### **Guidance Notes**

Once a PSHEMS has been developed and implemented, it is necessary to ensure that it is functioning as intended and that improvements can be made. This must take place on an on-going basis.

The following elements should be measured and reported on under the PSHEMS measuring and reporting system:

- a. Progress of the implementation of improvement programmes;
- b. Critical process parameters;
- c. Objectives and targets;
- d. Compliance with legal and statutory requirements;
- e. System compliance to the PSHEM Code and other management system standards.

The procedures should be implemented, in order to enable the Port Operator to determine the success of the processes and programs of the PSHEMS, as well as areas for corrective action and improvement, to prove conformance with planned arrangements, and to determine the satisfaction of stakeholders.

The results of monitoring and evaluation should be one of the inputs to the management review process, in order to provide information for improving the performance of the PSHEMS.

The Port Operator should determine the monitoring and measurement requirements, and the corresponding instruments needed, to provide evidence of conformity to policy, objectives, targets,

action programs and legal requirements. It then establishes processes to ensure that monitoring and measurement can be carried out and are carried out in a manner that is consistent with the monitoring and measurement requirements. The processes can include direct measurements, surveys, simulations and other measurement and monitoring activities, as appropriate.

In order to provide confidence in data, the measuring and monitoring process should include calibration or verification of instruments to ensure that they are fit for use and are maintained according to suitable accuracy and accepted standards. The port operator should establish which monitoring and measurement instruments need to be calibrated or verified, and the degree of accuracy, error and frequency with which the calibration/verification should be done.

When a verification or calibration is necessary, the port operator should establish verification/calibration methods and define the records to be maintained.

Where necessary to ensure valid results, measuring equipment should be:

- a. Calibrated or verified at specified intervals, or prior to use against measurement standards traceable to national or international standards;
- b. Adjusted as necessary;
- c. Identified to enable calibration status to be determined; and
- d. Protected from damage and deterioration.

When used in the monitoring and measurement of specified requirements, the ability of computer software to satisfy the intended application needs to be confirmed.

Control of monitoring and the required measuring instruments should be performed by qualified and impartial personnel.

#### **4.5.2 Nonconformity, Corrective Action and Preventive Action**

The Port Operator shall establish and maintain a procedure(s) for defining responsibility and authority for:

- a. The handling and investigation of accidents, incidents and nonconformities with the PSHEMS;
- b. Taking action to mitigate the consequences arising from accidents, incidents or nonconformities;
- c. The initiation and completion of corrective and preventive actions; and
- d. Confirmation of the effectiveness of corrective and preventive actions taken.

Actions taken shall be appropriate to the magnitude of the problem(s) and commensurate with the risk encountered.

The Port Operator shall implement and record any changes to the documented procedures resulting from the corrective or preventive action.

## Guidance Notes

The Port Operator should continually seek to improve the effectiveness of the PSHEMS to enable it to achieve its defined objectives. This requires involvement of all personnel and stakeholders in identifying areas for improvement in their activities.

The Port Operator should ensure that any necessary changes to PSHEMS documentation, resulting from the corrective and preventive actions, are recorded.

Methods/sources to identify potential improvements in the PSHEMS include:

- a. Evaluation of the awareness of all personnel and stakeholders towards the PSHEMS policy, objectives and programs;
- b. Performance and achievement of its objectives;
- c. Process implementation results;
- d. Monitoring and evaluation reports;
- e. Inputs from customers and stakeholders;
- f. Complaints received;
- g. Results of audits; and
- h. Non-conformities identified in the monitoring and measurement of the PSHEMS.

Corrective and preventive actions should be properly documented, recorded and properly communicated to ensure effective implementation.

### 4.5.3 Control of Records

The Port Operator shall establish and maintain records to demonstrate conformity to the requirements of the PSHEMS and of this Code, and the results achieved.

The Port Operator shall establish, implement and maintain a procedure(s) for the proper identification, storage, protection, retrieval, retention and disposal of records.

Records shall remain legible, identifiable and traceable.

## Guidance Notes

Records provide information regarding the activities performed by the Port Operator and are kept as proof of the result of the implementation of the PSHEMS. As such, records should remain legible, readily identifiable and retrievable.

Most port operators already have a records management system in place, in which case the PSHEMS records need to be integrated into the existing system rather than starting a new system.

Port Operators should also establish a policy and procedures covering access to records by stakeholders.

If it is necessary to start a new system, or improve upon an existing one, or even simply add the PSHEMS records into the existing system, a simple step-by-step approach may be followed:

- a. Identify those records that need to be managed;
- b. Establish retention times for those records;
- c. Generate a master list of records;
- d. Establish a procedure to secure storage and easy retrieval; and
- e. Document and communicate the records management procedure.

Records may cover:

- a. Hazard, risk and control measures registers
- b. Legislative and regulatory requirements;
- c. Permits;
- d. Relevant management programs and their associated activities, outputs, outcomes and impacts;
- e. Training activities;
- f. Operational activities
- g. Measurement, calibration, and maintenance activities;
- h. Monitoring data;
- i. Incidents, complaints and followup actions; and
- j. Audits and reviews.

#### 4.5.4 PSHEMS Audit

The Port Operator shall carry out internal safety, health and environment protection audits at planned intervals to:

- a. Determine whether the implementation of the PSHEMS conforms to the planned procedures and the requirements of this Code;
- b. Review the results of previous audits;
- c. Provide information on the results of audits to top management.

The audit programme(s) shall be planned, established, implemented and maintained by the organization, taking into consideration the assessment of risk(s) and the results of previous audits.

Audit procedure(s) shall be established, implemented and maintained, covering the scope, frequency and methodologies, as well as the responsibilities and requirements for conducting audits and reporting results.

Personnel carrying out internal audits shall be properly qualified and shall be independent of the areas being audited.

The result of the internal audits and reviews shall be brought to the attention of all personnel having responsibility in the area involved.

The management personnel responsible for the area involved shall take timely corrective action on deficiencies or non-conformities found.

#### Guidance Notes

The internal audit process provides the Port Operator with the information on the extent to which the PSHEMS is meeting requirements of the PSHEM Code and its effectiveness in meeting objectives and stakeholder expectations and needs.

The procedure should define the steps involved in the internal audit, this includes; planning the audit, conducting the audit, audit reporting, audit followup and close-out. The procedure should also define the methodology, scope and criteria that will be used in conducting and reporting the audit.

The selection of auditors and conduct of audits should be conducted in a manner that ensures objectivity and impartiality of the audit process. The internal audit process should be an independent assessment of the designated activities.

The Port Operator should facilitate the selection and training of auditors to assure competence. Auditors should be selected so that they are independent of the area/activities being audited.

Internal Audit reporting should also include assessment of performance in order to provide opportunities for recognizing the processes and/or sections that achieve good performance based on established objectives and targets.

#### **4.6 Management Review and Continual Improvement Management**

At planned intervals, the Port Operator's top management shall review the overall effectiveness, continuing suitability and adequacy of the PSHEMS.

The review shall include:

- a. Results of internal audits and evaluations of compliance with legal and other requirements;
- b. Communication from external parties including complaints;
- c. The environmental performance of the organization;
- d. The extent to which PSHEMS policy, objectives, targets and programs have been met;
- e. Status of corrective and preventive actions;
- f. Follow-up actions from previous management reviews;
- g. Changing circumstances, including developments in legal or other requirements related to port safety, health or protection of the environment; and
- h. Recommendations for improvement.

The outputs of management reviews shall include decisions and actions related to possible changes to policy, objectives, targets and other elements of the PSHEMS, consistent with the commitment to continual improvement.

Records of the management review shall be maintained.

#### **Guidance Notes**

The members of the top management of the Port Operator should conduct a regular review of the PSHEMS. The result of the review should be used by the top management for activities related to policy establishment, planning, implementation, monitoring, evaluation and improvement of the system.



## **Annex B (Informative)**

### **Correspondence between ISO 9001:2008, 14001:2004, OHSAS 18001:2007 and the PSHEM Code**

#### **General Comments**

The PSHEM Code uses the same fundamental system requirements as the ISO 9001 – Quality Management Systems, ISO 14001 – Environmental Management Systems and the OHSAS 18001 – Occupational Health and Safety Management Systems, including requirements for documentation control, management system auditing, operational control, control of records, management policies, audits, training, corrective and preventative action and management review.

This annex is provided to help the Port Authority/Operator relate the concepts of quality management as defined in ISO 9001; environmental management as defined in ISO 14001; and safety and health management as defined in OHSAS 18001 with the practices and terminology employed in the PSHEMS. This document identifies the broad technical correspondence between ISO 9001 and the PSHEM Code, ISO 14001, OHSAS 18001 and the PSHEM Code.

The objective of the correspondence is to demonstrate that the development and implementation of a PSHEMS System (PSHEM System) consistent with the PSHEM Code can also satisfy the requirements of ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007.

## Correspondence between International Management System Standards and PSHEM Code

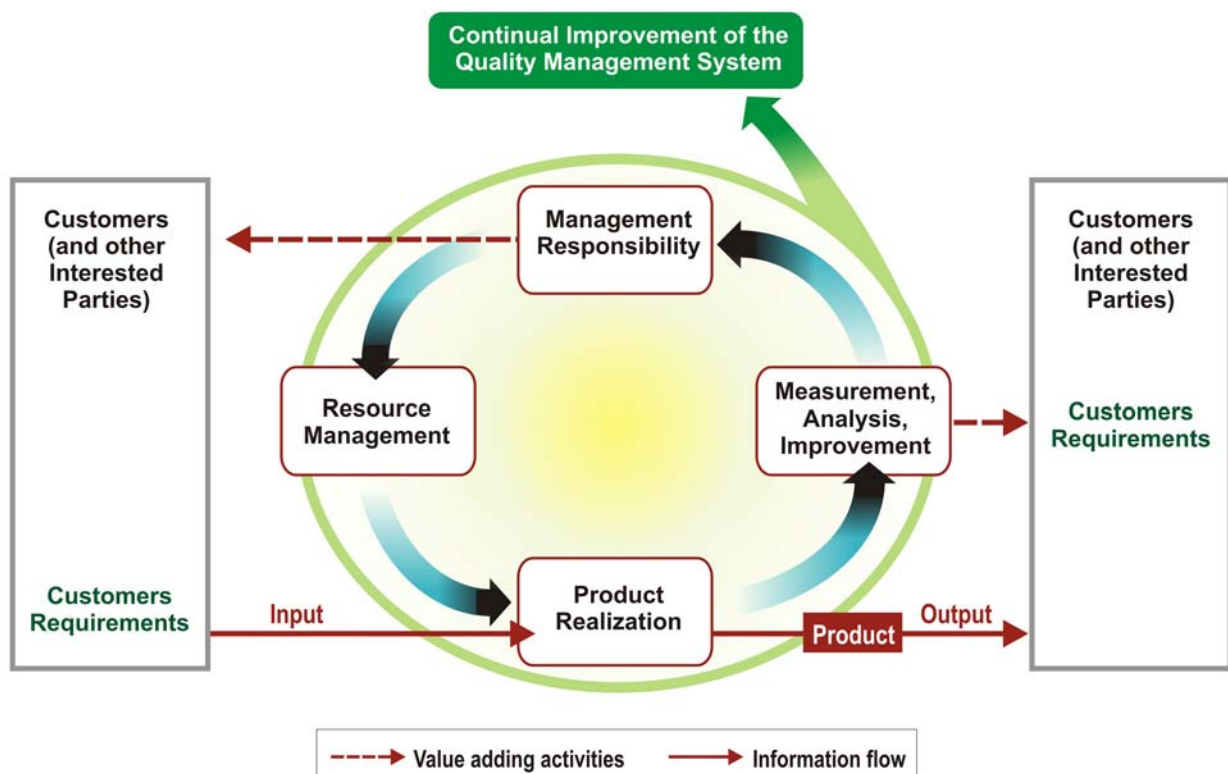
### ISO 9001:2008

The ISO 9001 promotes the adoption of the process approach when developing implementing and improving the effectiveness of a quality management system to enhance customer satisfaction by meeting customers' requirements.

The model for a process-based management system (**Figure A**) illustrates the process linkages presented in clause 4 to 8 of the ISO 9001:2008 Standard.

The model covers all the requirements of the ISO 9001:2008 Standard.

**Figure A.** Model of a Process-based Quality Management System (ISO 9001: 2000).



**Table 1. Correspondence between ISO 9001:2008 and the PSHEMS Code.**

ISO 9001:2008		PSHEMS Code	
Quality management system (title only)	4		
General requirements	4.1	3.1	Port Authority Commitment
Documentation requirements (title only)	4.2	4.1	General Requirements
General	4.2.1	4.4.4	PSHEMS Documentation
Quality manual	4.2.2	4.4.4	PSHEMS Documentation
Control of documents	4.2.3	4.4.5	Control of Documents
Control of records	4.2.4	4.5.3	Control of Records
Management responsibility (title only)	5		
Management commitment	5.1	3.1 4.1 4.2	Port Authority Commitment General Requirements Port Operation Safety, Health and Environmental Management System Policy Statement
Customer Focus	5.2	4.3.1 4.3.2 4.6	Hazard Identification, Risk Assessment and Control Measures Legal and Other Requirements Management Review and Continual Improvement
Quality Policy	5.3	3.1.1 3.1.2 4.2	SHE Governance Policy Vision and Mission Port Operation Safety, Health and Environmental Management System Policy Statement
Planning (title only)	5.4	4.3	Planning
Quality objectives	5.4.1	3.1.3 4.3.3	Objectives and Targets PSHEMS Objectives and Targets
Quality management system planning	5.4.2	4.3.3 4.3.4	PSHEMS Objectives and Targets PSHEMS Programs
Responsibility, authority, communication (title only)	5.5		
Responsibility and authority	5.5.1	4.4.1	Responsibility and Authority
Management representative	5.5.2	4.4.2	Management Representative(s)
Internal communication	5.5.3	3.4 4.4.3	Awareness and Communication Resource Management, Training and Awareness
Management Review	5.6	4.6	Management Review and Continual Improvement
Resource Management (title only)	6		
Provision of resources	6.1	4.4.3	Resource Management, Training and Awareness
Human resources (title only)	6.2		
General	6.2.1	4.4.3	Resource Management, Training and Awareness
Competence, awareness and training	6.2.2	4.4.3	Resource Management, Training and Awareness
Infrastructure	6.3	4.4.3	Resource Management, Training and Awareness
Work environment	6.4	4.4.3	Resource Management, Training and Awareness
Product realization (title only)	7	4.4	Implementation and Operational Control

ISO 9001:2008		PSHEMS Code	
Planning for product realization	7.1	4.4.6	Operational Control
Customer related processes (title only)	7.2		
Determination of requirements related to the product	7.2.1	4.3.1 4.3.2 4.4.6	Hazard Identification, Risk Assessment and Control Measures Legal and Other Requirements Operational Control
Review of requirements related to the products	7.2.2	4.3.1 4.3.2 4.4.6	Hazard Identification, Risk Assessment and Control Measures Legal and Other Requirements Operational Control
Customer communication	7.2.3	3.4 4.4.3	Awareness and Communication Resource Management, Training and Awareness
Design and development	7.3	4.4.6	Operational Control
Purchasing	7.4	4.4.6	Operational Control
Production and service provision (title only)	7.5		
Control of production and service provision	7.5.1	4.4.6	Operational Control
Validation of processes for production and service provision	7.5.2	4.4.6	Operational Control
Identification and traceability	7.5.3		
Customer property	7.5.4	4.4.6	Operational Control
Preservation of product	7.5.5	4.4.6	Operational Control
Control of monitoring and measuring devices	7.6	4.5.1	Monitoring and Measurement
Measurement, analysis, and improvement (title only)	8		
General	8.1	4.5.1	Monitoring and Measurement
Monitoring and measurement (title only)	8.2		
Customer satisfaction	8.2.1		
Internal Audit	8.2.2	4.5.4	PSHEMS Audit
Monitoring and measurement of process	8.2.3	4.5.1	Monitoring and Measurement
Monitoring and measurement of product	8.2.4	4.5.1	Monitoring and Measurement
Control of nonconforming product	8.2.4	4.5.2	Nonconformity, Corrective Action and Preventive Action
Analysis of data	8.4	4.5.1	Monitoring and Measurement
Improvement (title only)	8.5		
Continual improvement	8.5.1	4.6	Management Review and Continual Improvement
Corrective action	8.5.2	4.5.2	Nonconformity, Corrective Action and Preventive Action
Preventive action	8.5.3	4.5.2	Nonconformity, Corrective Action and Preventive Action

## ISO 14001:2004 – Environmental Management Systems

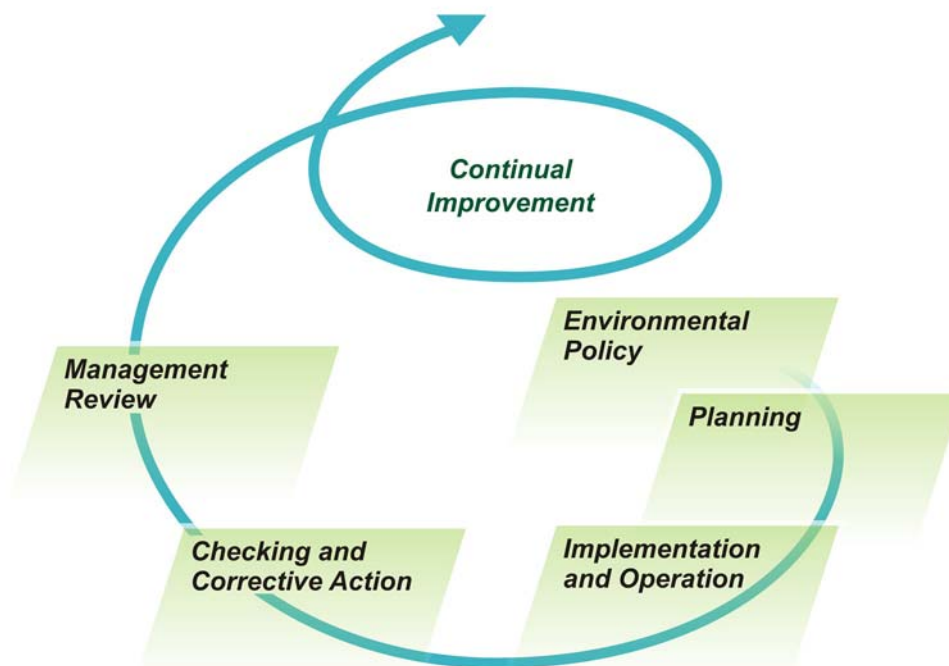
While the ISO 9000 series is used by organizations as a model for a Quality Management System, the ISO 14000 series of standards is the model for an Environmental Management System (EMS).

The ISO 14001:2004 – Environmental Management Systems—Specifications with Guidance for Use contains the compliance standards.

ISO 14001:2004 is the international specification for an environmental management system (EMS). It specifies requirements for establishing an environmental policy, determining environmental aspects and impacts of products/activities/services, planning environmental objectives and measurable targets, implementation and operation of programs to meet objectives and targets, checking and corrective action, and management review. ISO 14000 is similar to ISO 9001. The overall idea is to establish an organized approach to systematically reduce the impact of the environmental aspects which an organization can control.

The ISO 14001 specifies requirements for an environmental management system to enable an organization to develop and implement environmental policy and objectives, which take into account the legal requirements and the organization's significant aspects. The basis of the approach of ISO 14001 is the continual improvement cycle “Plan-Do-Check-Act” as shown in **Figure B**.

**Figure B.** Environmental Management System Model for ISO 1400: 2004.



Organizations implementing an EMS have to demonstrate commitment to their policy by determining the significant environmental aspects of the organization and developing objectives, targets and program to address the significant aspects.

Furthermore, they have to set and implement controls in their processes to manage its operation and continuously improve its environmental performance.

This process is similar to the process that the Port Operator should take in implementing the PSHEM system.

**Table B. Correspondence between ISO 14001:2004 and the PSHEM Code.**

ISO 14001:2004		PSHEMS Code	
Environmental management system requirement (title only)	4		
General requirements	4.1	3.1 4.1	Port Authority Commitment General Requirements
Environmental policy	4.2	3.1.1 3.1.2 4.2	SHE Governance Policy Vision and Mission Port Operation Safety, Health and Environmental Management System Policy Statement
Planning (title only)	4.3		
Environmental aspects	4.3.1	4.3.1	Hazard Identification, Risk Assessment and Control Measures
Legal and other requirements	4.3.2	4.3.2	Legal and Other Requirements
Objectives, targets and programs	4.3.3	3.1.3 4.3.3	Objectives and Targets PSHEMS Objectives and Targets
Implementation and operation (title only)	4.4	4.4	Implementation and Operational Control
Resources, roles, responsibility and authority	4.4.1	4.4.1 4.4.2	Responsibility and Authority Management Representative(s)
Competence, training and awareness	4.4.2	4.4.3	Resource Management, Training and Awareness
Communication	4.4.3	3.4 4.4.3	Awareness and Communication Resource Management, Training and Awareness
Documentation	4.4.4	4.4.4	PSHEMS Documentation
Control of documents	4.4.5	4.4.5	Control of Documents
Operational Control	4.4.6	4.4.6	Operational Control
Emergency preparedness and response	4.4.7	4.4.7	Emergency Preparedness and Response
Checking (title only)	4.5		
Monitoring and measurement	4.5.1	4.5.1	Monitoring and Measurement
Evaluation of compliance	4.5.2	4.5.1	Monitoring and Measurement
Nonconformity, corrective action and preventive action	4.5.3	4.5.2	Nonconformity, Corrective Action and Preventive Action
Control of record	4.5.4	4.5.3	Control of Records
Internal audit	4.5.5	4.5.4	PSHEMS Audit
Management review	4.6	4.6	Management Review and Continual Improvement

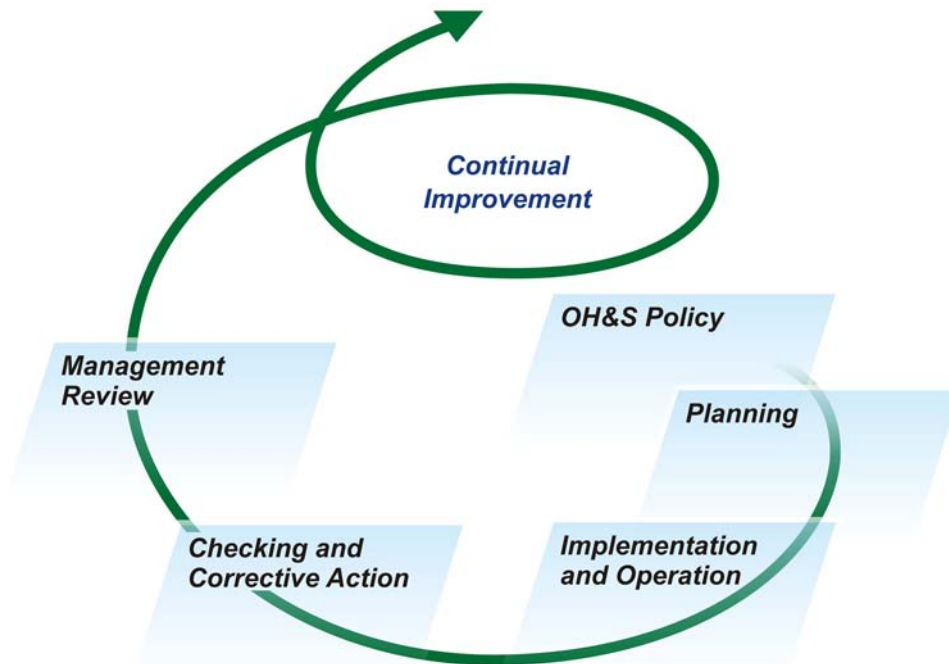
## OHSAS 18001:2007

The OHSAS 18001:2007 – Occupational Health and Safety Management System Requirements is very similar to ISO 9001 and ISO 14001 but dedicated to occupational health and safety.

The OHSAS specifications are intended to address occupational health and safety. OHSAS 18001 requires the development and implementation of a Management System aimed at meeting the mandatory requirements for safety and health with a focus on prevention of accidents and incidents and continuous improvements of the operations.

The OHSAS 18001 model is very similar to the EMS model “Plan-Do-Check-Act” (**Figure C**).

**Figure C.** Occupational Health and Safety Management Model for OHSAS 18001:2007.





**Table C. Correspondence between OHSAS 18001: 2007 and the PSHEM Code.**

OHSAS 18001:2007		PSHEMS Code	
OH&S management system elements (title only)	4		
General requirements	4.1	3.1 4.1	Port Authority Commitment General Requirements
OH&S policy	4.2	3.1.1 3.1.2 4.2	SHE Governance Policy Vision and Mission Port Operation Safety, Health and Environmental Management System Policy Statement
Planning (title only)	4.3		
Hazard identification, risk assessment and determining controls	4.3.1	4.3.1	Hazard Identification, Risk Assessment and Control Measures
Legal and other requirements	4.3.2	4.3.2	Legal and Other Requirements
Objectives and programmes	4.3.3	3.1.4 4.3.3 4.3.4	Objectives and Targets PSHEMS Objectives and Targets PSHEMS Programs
Implementation and operation (title only)	4.4	4.4	Implementation and Operational Control
Resources, roles, responsibility, accountability and authority	4.4.1	4.4.1 4.4.2	Responsibility and Authority Management Representative(s)
Competence, training and awareness	4.4.2	4.4.3	Resource Management, Training and Awareness
Communication, participation and consultation	4.4.3	3.4 4.4.3	Awareness and Communication Resource Management, Training and Awareness
Documentation	4.4.4	4.4.4	PSHEMS Documentation
Control of documents	4.4.5	4.4.5	Control of Documents
Operational control	4.4.6	4.4.6	Operational Control
Emergency preparedness and response	4.4.7	4.4.7	Emergency Preparedness and Response
Checking (title only)	4.5		
Performance measurement and monitoring	4.5.1	4.5.1	Monitoring and Measurement
Evaluation of compliance	4.5.2	4.5.1	Monitoring and Measurement
Incident investigation, nonconformity, corrective action and preventive action	4.5.3	4.5.2	Nonconformity, Corrective Action and Preventive Action
Control of records	4.5.4	4.5.3	Control of Records
Internal audit	4.5.4	4.5.4	PSHEMS Audit
Management review	4.6	4.6	Management Review and Continual Improvement

## **Annex C (Informative)**

### **PSHEM Code Relationship with International Conventions, Codes and Guidelines**

#### **General Comments**

International conventions for environment and safety contain global standards by which the port operations may be managed. These conventions present principles and frameworks to manage the environment and safety in the port.

This annex is provided to help the Port Authority/Operator relate the different international conventions with the controls and processes employed in the PSHEMS. This document identifies correspondence between international conventions and the PSHEM Code.

The objective of the correspondence is to demonstrate that the effective development and implementation of a PSHEMS requires knowledge of and adherence to international conventions, and that implementation of the PSHEMS consistent with the PSHEM Code can also address the requirements or guidelines specified in international instruments.

#### **International Conventions**

The International conventions covered in the comparison are:

1. ILO Code of Practice: Safety and Health in Ports;
2. International Safety Management Code;
3. International Convention for the Prevention of Pollution From Ships (MARPOL);
4. International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC);
5. Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code);
6. International Convention for the Safety of Life at Sea (SOLAS);
7. Ballast Water Management;
8. Recommendation on the Safe Transport of Dangerous Goods;
9. Awareness and Preparedness for Emergencies at Local Level (UNEP/IMO APELL); and
10. Basel Convention.

		International Conventions									
		ILO Code of Practice	ISM Code	MARPOL	OPRC HNS	BLU Code	SOLAS	Safe Transport of DG	UNEP-IMO/APELL	Basel Convention	Ballast Water
PSHEMS Code											
3	GOVERNANCE (title only)	✓									
3.1	Port Authority Commitment	✓	✓								
3.1.2	SHE Governance Policy	✓	✓								
3.1.3	Vision and Mission	✓	✓								
3.1.4	Objectives and Targets	✓	✓								
3.2	Safety, Health and Environmental Management Regulations	✓	✓								
3.3	Management Arrangements	✓	✓								
3.3.1	PSHEM Control	✓	✓								
3.3.2	Monitoring and Measurement	✓	✓								
3.3.3	Review and Improvement	✓	✓								
3.4	Awareness and Communication	✓	✓		✓	✓	✓				
3.5	Port Resources Management	✓	✓								
4.	PORT OPERATION SAFETY HEALTH AND ENVIRONMENTAL MANAGEMENT SYSTEM REQUIREMENTS (title only)	✓	✓								
4.1	General Requirements	✓	✓								
4.2	Port Operation Safety, Health and Environmental Management System Policy Statement	✓	✓								
4.3	PLANNING	✓	✓								
4.3.1	Hazard Identification, Risk Assessment and Control Measures	✓	✓	✓							
4.3.2	Legal and Other Requirements	✓	✓	✓							
4.3.3	PSHEMS Objectives and Targets	✓	✓	✓							
4.3.4	PSHEMS Programs	✓	✓	✓			✓				
4.3.4.1	Safety Programs	✓	✓	✓			✓				
4.3.4.2	Health Programs	✓	✓	✓			✓				
4.3.4.3	Environmental Programs	✓	✓	✓			✓				
4.4	IMPLEMENTATION AND OPERATIONAL CONTROL (title only)	✓	✓								
4.4.1	Responsibility and Authority	✓	✓							✓	
4.4.2	Management Representative(s)	✓	✓								
4.4.3	Resource Management, Training and Awareness	✓	✓								
4.4.4	PSHEMS Documentation	✓	✓			✓	✓				
4.4.5	Control of Documents	✓	✓								
4.4.6	Operational Control	✓	✓	✓		✓	✓	✓	✓	✓	✓
4.4.6.1	For Safety; procedures related but not limited to the control of the following processes:	✓	✓	✓		✓	✓	✓	✓	✓	✓
4.4.6.2	For Health	✓	✓	✓		✓	✓	✓	✓	✓	✓
4.4.6.3	For Environment	✓	✓	✓		✓	✓	✓	✓	✓	✓
4.4.7	Emergency Preparedness and Response	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4.5	MEASUREMENT, ANALYSIS AND IMPROVEMENT (title only)										
4.5.1	Monitoring and Measurement	✓	✓								
4.5.2	Nonconformity, Corrective Action and Preventive Action	✓	✓				✓				
4.5.3	Control of Records	✓	✓								
4.5.4	PSHEMS Audit	✓	✓								
4.6	Management Review and Continual Improvement	✓	✓								

## **Annex D (Informative)**

### **Process for Development and Approval of PEMSEA Codes, Guidelines and Good Practices**

#### **Introduction**

1. In its pursuit of excellence, PEMSEA will continually assess and improve its secretariat and technical services to the Partners, cutting-edge policies and tools to help countries achieve their SDS-SEA objectives and targets, and comprehensive training, capacity development and knowledge-sharing programs that encourage interaction and cross-learning among local, national, regional and global initiatives. These efforts will enhance PEMSEA's ability to deliver the quality of services required by its Partners.
2. One important aspect of PEMSEA's work is the development and dissemination of value-added informative documents and materials that provide guidance to countries and other stakeholders for planning, development, implementation, monitoring and evaluation of ICM programs. At present, a number of informative documents, including the ICM Code 2010; the Port Safety, Health and Environmental Management Code; the State of the Coasts (SOC) Guideline; ICM post-graduate degree curriculum; and ICM model training courses are being prepared and/or field-tested by the PEMSEA Resource Facility (PRF) in collaboration with various experts, institutions and organizations. In addition to the PRF, PEMSEA Partners are also developing good practices, guidelines and codes, based on their experiences, which may be recognized and shared as significant contributions to SDS-SEA implementation.
3. The purpose of this paper is to outline a standard procedure whereby such informative documents are developed, reviewed and adopted by PEMSEA, and eventually disseminated and put into use as "PEMSEA certified" codes, guidelines, good practices and training/education materials.

#### **Detailed Stages of the Development of PEMSEA's Informative Documents**

4. There are a number of guidelines available for the development of international standards, industry codes of practice, educational materials and curriculums, and so on. Each of these employ a step-wise process that provides: (a) a clearly established need for the material; (b) the definition of the technical scope of the material by the eventual users; (c) preparation and writing of the material by qualified individuals and concerned stakeholders; (d) an approval process; and (e) a copyright and reviewing and updating procedure.

5. These main requirements for developing, approving and publishing PEMSEA informative documents could be covered through the application of a seven-stage process, namely:

- Stage 1: Proposal stage
- Stage 2: Scoping stage
- Stage 3: Preparatory stage
- Stage 4: Enquiry stage
- Stage 5: Approval stage
- Stage 6: Publication stage
- Stage 7: Review stage

6. The following is an outline of the seven-stage process.

#### **Stage 1: Proposal stage**

The first step in the development of a PEMSEA informative document would be to confirm that the particular document is needed. A proposal for the development of a PEMSEA informative document would be submitted to the Technical Session of the East Asian Seas Partnership Council by the Executive Committee, a PEMSEA Partner, a PEMSEA Sponsoring Organization, a collaborating regional organization or institution, any Technical Committee or Subcommittee duly established by PEMSEA, or the PEMSEA Resource Facility. The Technical Session would review the objective and rationale for the document and determine the inclusion of the item in the PEMSEA work programme. If accepted, the Technical Session would recommend PEMSEA's commitment to the activity, as well as a proposed project team to undertake the work.

The recommendation would be forwarded to the Intergovernmental Session for review and consideration as part of PEMSEA's overall annual work programme and budget.

#### **Stage 2: Scoping stage**

A working group of qualified individuals and concerned stakeholders, the chair of which is the project leader, would be set up by the PEMSEA Resource Facility in consultation with the Executive Committee. Working groups would consist of five to ten individuals. Other experts may be invited to participate in the working group, as required, to cover specific issues. The PEMSEA Resource Facility would serve as secretariat to the working group.

Scoping of the proposed information document by the working group would entail a review of situations/subject areas to be covered, and an assessment of existing documents, good practices and standards that may guide the working group. In situations where the subject area is covered by available material, either nationally or internationally, the working group would need to decide whether to adopt that document rather than introduce a new one, or adopt and modify the existing material to regional conditions and usage.

Other matters to be considered during the scoping stage would include:

- conformity of the proposed document with existing national regulations and international instruments;
- an outline of the proposed document;
- the work schedule, assignments and timeframe to complete the document; and
- production, dissemination and promotion of the document to potential users.

It is important that copies of every PEMSEA informative document would be available and accessible to countries, organizations and individuals who require them, and that the distribution would not be restricted to PEMSEA Partners only.

### **Stage 3: Preparatory stage**

The working group would be responsible for the preparation of a working draft. Successive working drafts may be considered until the working group is satisfied that it has developed the best technical solution to the issue/problem being addressed.

Depending on the scope of the document, the size of the working group, and the available budget, the working group would meet face-to-face during key stages of the document preparation only (e.g., scoping; final draft), but would otherwise interact through online means.

Once the working group is satisfied with its product, the draft would be forwarded to the Executive Director of the PEMSEA Resource Facility.

### **Stage 4: Enquiry stage**

At this stage, the draft document would be circulated by the Executive Director to the Executive Committee, all PEMSEA Partners and Sponsoring Organizations, and key national and international organizations and institutions with special interests/experience in the subject area, for review and comment within a period of three months.

The comments would be received and collated by the PEMSEA Resource Facility and evaluated in collaboration with the chair of the working group. If substantive technical issues have been raised, the working group would be requested to revisit the document to consider the comments. In such cases, the working group would further study the text and prepare the necessary revisions. The revised document would again be circulated for comment among the original group of reviewers, for a period of one month.

If there are no substantive technical issues raised during the enquiry stage, the PEMSEA Resource Facility will finalize the document in collaboration with the chair of the working group.

### **Stage 5: Approval stage**

The final draft of the informative document would be submitted to the Executive Committee for endorsement to Council, accompanied by a summary report of the developmental and review process. The document would be submitted to the next meeting of the EAS Partnership Council, along with an advocacy plan for publishing, disseminating and promoting the document.

If technical comments are received during this period, they are no longer considered at this stage, but registered for consideration during a future revision of the document.

If the document is approved by the Council, the document is considered to be ‘PEMSEA certified’ and proceeds to publication and dissemination in accordance with the advocacy plan.

If the Council cannot reach consensus on the approval of the document, the document is referred back to the originating source (as identified in Stage 1) for reconsideration in light of the reasons cited by the Council.

### **Stage 6: Publication stage**

Once a final document has been approved by Council, only minor editorial changes, if and when necessary, would be introduced into the final text. The final text would be prepared by the PEMSEA Resource Facility, which would also be responsible for publishing the document and for the implementation of the approved advocacy plan.

Copyright of the PEMSEA informative document would remain with PEMSEA. The exception would be when:

- The final document is adopted in entirety from an existing document of another organization, in which case the copyright would remain with that organization; or
- The final document adopts or adapts portions of an existing document, in which case the copyright of the final document would be shared with the original authors.

### **Stage 7: Review stage**

All PEMSEA-certified documents would be reviewed at least three years after publication, and every five years after the first review, by the Technical Session of the EAS Partnership Council. The Technical Session would make recommendations concerning confirmation, revision or withdrawal of the PEMSEA-certified document.

The entire cycle (i.e., from Stage 1 to Stage 6) would take up to two years to complete.

## Fast-tracking PEMSEA Informative Documents

7. If a document with a certain degree of maturity is already available, and is proposed as a PEMSEA informative document, for example, a good practice developed by a Partner or another organization. It would be possible to omit certain stages in the proposed step-wise procedure. In a so-called “fast-track procedure,” consideration may be given for such documents to be submitted as draft PEMSEA informative documents (Stage 4), without passing through previous stages. A recommendation would be made by the Technical Session of the EAS Partnership Council to employ a fast-track procedure.

## International Workshop Products

8. Another possible means of generating a priority document in a short period of time would be for an interested party to propose an International Workshop Product (IWP) with PEMSEA. An IWP would produce a PEMSEA-certified document through an international workshop, without going through the seven-stage technical process identified above. A PEMSEA Partner, Sponsoring Organization or collaborating organization/stakeholder would propose to co-organize an international workshop resulting in an IWP. Partners, international experts and other stakeholders would directly participate in the workshop, and would contribute to the completion of the IWP. The advantages of this approach would be:
  - An IWP would be developed rapidly (e.g., published in less than 12 months) to address critical emerging environmental needs or public policy requirements in the region;
  - The PEMSEA brand would give international recognition and credibility to the IWP; and
  - IWPs could be precursors to PEMSEA-certified informative documents, and could be pre-tested prior to going through the technical process.

This process may be particularly suitable for training and education materials and model training courses.

## Reference:

PEMSEA. 2010. Third EAS Partnership Council Meeting Agenda Item 13.0: Technical Session: Process for Development and Approval of PEMSEA Codes, Guidelines and Good Practices (PC/10/DOC/13). The Third East Asian Seas Partnership Council Meeting, Dandong, Liaoning Province, People's Republic of China, 26-29 July 2010.





