General Distribution **OCDE/GD(96)39**

OECD Environment Monograph No. 118

GUIDANCE CONCERNING CHEMICAL SAFETY IN PORT AREAS

Guidance for the Establishment of Programmes and Policies Related to Prevention of, Preparedness for, and Response to Accidents Involving Hazardous Substances

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Paris 1996

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Prepared as a Joint Effort of the OECD and the International Maritime Organization (IMO)

Environment Directorate

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Paris 1996

IMO

The International Maritime Organization (IMO) is the United Nations specialized agency responsible for the improvement of maritime safety and the prevention and control of marine pollution. There are currently 152 member states and over 50 non-governmental organizations (NGOs) participating in its work, which has led to the adoption of some 30 conventions and protocols, and numerous codes and recommendations, concerning maritime safety and marine pollution. One of the most important goals of IMO's Strategy for the Protection of the Marine Environment is to strengthen the capacity for national and regional action to prevent, control, combat and mitigate marine pollution and to promote technical co-operation to this end.

OECD

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organization in which representatives of 27 industrialized countries in North America, Europe and the Pacific, as well as the European Commission, meet to co-ordinate and harmonize policies, discuss issues of mutual concern, and work together to respond to international problems. Most of the OECD's work is carried out by more than 200 specialized Committees and subsidiary groups composed of Member country delegates. Observers from several countries with special status at the OECD, as well as from interested international organizations, attend many of the OECD's Workshops and other meetings. Committees and subsidiary groups are served by the OECD Secretariat, located in Paris, France, which is organized into Directorates and Divisions.

The work of the OECD related to chemical accident prevention, preparedness and response is carried out by the Expert Group on Chemical Accidents, with Secretariat support from the Environmental Health and Safety Division of the Environment Directorate. As part of the work on chemical accidents, the OECD has issued several Council Decisions and Recommendations (the former legally binding on Member countries), as well as numerous Guidance Documents and technical reports including the *Guiding Principles for Chemical Accident Prevention, Preparedness and Response*; the joint IPCS/OECD/UNEP/WHO *Health Aspects of Chemical Accidents* (a Guidance Document derived from this widely distributed publication is now in preparation); users' guides to hazardous substance data banks and to information systems useful to emergency planners and responders; and the OECD/UNEP *International Directory of Emergency Response Centres*.

Derestriction of this Guidance Document was recommended by the OECD's Expert Group on Chemical Accidents and by the Joint Meeting of the Chemicals Group and Management Committee of the Special Programme on the Control of Chemicals. It is being translated into Spanish and French. This document is published on the responsibility of the Secretary-General of the OECD.

For a list of OECD Environmental Health and Safety publications, see page 57.

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To Assist the Reader

The **Glossary** in **Section K** provides definitions for purposes of this text. These definitions have been taken, for the most part, from IMO texts. This Glossary is intended to supplement that found in the OECD *Guiding Principles for Chemical Accident Prevention, Preparedness and Response*.

Some of the terms defined in the Glossary may not be well known, or the meaning of some terms may not always be clear in the particular context in which they are used. Furthermore, while an attempt has been made throughout the text to use words in a manner consistent with their common meanings, some words are understood differently in different countries and contexts.

In this regard, special attention should be paid to the use of the term "hazardous substances". It is recognized that many international documents related to transportation address "dangerous cargo" or "dangerous goods". A decision was made to use the term "hazardous substances", for purposes of this text, to deal with cargo or goods containing hazardous substances. The term "hazardous substances" has been defined in the Glossary to be equivalent to the terms "dangerous cargo" and "dangerous goods", as they are used in IMO (and other international) texts, but would not include radioactive materials.

The **Key Word Index** in **Section M** will help the reader locate paragraphs that concern a particular subject or party. The paragraph references in this section are to related, but not necessarily identical, words or concepts.

I. INTRODUCTION

Background

1. This guidance provides an overview of the roles and responsibilities of the various parties concerned with chemical accident prevention, preparedness and response in port areas. It was prepared to complement existing guidance materials from the Organisation for Economic Co-operation and Development (OECD) and the International Maritime Organization (IMO), and to encourage and facilitate their implementation. These materials include, in particular, the OECD *Guiding Principles for Chemical Accident Prevention, Preparedness and Response* (1992) and the IMO Recommendations on the Safe Transport of Dangerous Cargoes and Related Activities in Port Areas (1995*)*, which are referred to throughout the text as the *Guiding Principles* and IMO Recommendations.

2 The guidance in this document addresses issues related to the ship-port interface, as well as the interface with other transport modes serving the port area which carry cargoes that may be hazardous/dangerous. The guidance also addresses other aspects of the handling and storage of such cargoes in port areas.

3. IT IS RECOGNIZED THAT DIFFERENT TERMS ARE USED TO DESCRIBE SUCH CARGOES, INCLUDING "DANGEROUS CARGOES", "DANGEROUS GOODS" OR "HAZARDOUS SUBSTANCES". FOR PURPOSES OF THIS DOCUMENT, THE TERM "HAZARDOUS SUBSTANCES" WILL BE USED. THIS TERM HAS BEEN DEFINED IN THE GLOSSARY TO BE EQUIVALENT TO THE TERMS "DANGEROUS CARGO" AND "DANGEROUS GOODS" AS USED IN IMO AND OTHER INTERNATIONAL TEXTS, BUT WOULD NOT INCLUDE RADIOACTIVE MATERIALS.

4. While this guidance does not provide the level of detail on some subjects that exists in IMO materials, it addresses the subject in a more comprehensive way. It takes into account a broader range of issues than can be found in existing IMO and OECD documents alone including, for example, the economic dimension of safety in ports, planning, construction, and land use planning.

5. This guidance has been prepared as a joint effort of the OECD and IMO. As such, it provides a means of reaching the full range of stakeholders in port areas, including sectors of the transportation network not normally reached by either of the two organisations individually. By working together, the OECD and IMO have made every effort to ensure consistency in the work being done in the international community relative to chemical safety in port areas.

6. To develop this guidance, the two organisations joined with the United Nations Environment Programme (UNEP) to sponsor a workshop with over 100 experts from port authorities, public authorities, industry, labour and other interested parties. Utilising the conclusions and materials from that workshop, as well as IMO and other international guidance materials, draft guidance was prepared which was reviewed and revised by a wide range of international experts. Before publication, the guidance was approved by the relevant OECD and IMO committees.

7. This guidance should be read in conjunction with the OECD *Guiding Principles*. While the *Guiding Principles* focus on fixed installations, they also apply for the most part to chemical safety in port areas and at other transport interfaces. This guidance focuses on those aspects of chemical safety which are relatively unique to port areas, and does not repeat all the relevant provisions of the *Guiding Principles*. It is also important to refer to the IMO Recommendations and to other relevant IMO texts, as identified in the Bibliography. These texts include the *Manual on Chemical Pollution* (Section I, Problem Assessment and Response Arrangements).

8. Recognizing that ports have a number of characteristics that are different from those of fixed installations in relation to chemical safety, the OECD decided to develop supplemental guidance in relation to port areas, as well as guidance related to other transport interfaces. Port areas are being treated separately from other interfaces due to the extensive work of IMO in this field, and due to the nature of the risks of accidents in port areas, in particular the potential risks posed to the marine environment. Furthermore, ports differ from other interfaces because of the inherently international nature of port operations.

9. The following characteristics of ports differentiate them from fixed installations, for purposes of chemical safety, and have provided the impetus for developing this guidance:

   - Ports are part of the transportation chain, where different modes of transport meet. Each mode may be subject to various legislative/regulatory requirements, safety practices and supervisory bodies. Thus, in a port there may be overlapping jurisdictions/standards as well as the potential for gaps in jurisdictions/standards.

   - Ports are inherently international in nature, with operators, ships and cargoes coming from different countries.

   - Ports are large, complex entities involving sea-going traffic and inland (river, rail and highway) transport of hazardous substances. They may contain a number of fixed installations including terminals, warehouses, and repair/maintenance facilities where hazardous substances are transferred, used, handled or stored.

   - The complexity of port areas complicates land use planning decisions relative to developments both within and outside these areas.

   - For historical reasons, ports tend to be located near large, densely populated areas and sensitive environments. Moreover, waterfront locations often attract housing and other developments.

- Ports handle continuously changing amounts and types of hazardous substances, including packaged substances in transport units such as freight containers and portable tanks and bulk cargo loaded directly into shipboard cargo holds or tanks.

- Packaging, labelling and documentation of the hazardous substances handled in port areas, as well as the packing and placarding or marking of cargo transport units containing such substances, are likely to be carried out in remote locations by parties outside the control of those responsible for safety in the port areas.

- Cargo transfer and handling operations continuously take place in ports.

- In ports there is a greater likelihood of the use of casual labour than at fixed installations.

- There are a variety of employers in ports, with differing management structures and attitudes towards safety.

- The ship-shore interface creates the potential, on an operational level, for a conflict of interest between environmental protection and marine safety.

10. This guidance recognizes that different safety standards exist worldwide and that different levels of safety exist with regard to cargo, the modes of transport, and transport interfaces.

11. This guidance also recognizes that certain substances are inherently more hazardous in one environment or given situation than in another. For example, a water-reactive substance transported by ship, especially in bulk, may need to be more stringently controlled than the same substance stored in a warehouse or being transported by road or rail. Furthermore, a substance may be much more hazardous to the environment than to human health, so that different approaches are needed for handling it.

Use of the Guidance Document

12. One basic assumption of this document is that safety in the operation of port areas may benefit from some degree of commonality in approach, due to the inherently international nature of ports. This could include common criteria or guidelines for various aspects of port development and operation including, for example, port design and layout; risk assessment; operational procedures or limits; access to information; advance notification; reporting; documentation; and training.

13. Thus this Guidance Document should be used, along with other IMO and OECD guidance in this field, as a basis for establishing a common framework for legislation and regulations, as well as for developing and implementing policies and practices by all concerned parties. This guidance is not meant to supersede existing legislation/regulations or more detailed guidance.

14. Since many transport modes (including ships, inland barges, trains, trucks and pipelines) meet in port areas, it is important that there is consistency among the various rules, regulations and policies relating to the transport, packaging and

handling of hazardous substances. The Recommendations of the United Nations Committee of Experts on Transport of Dangerous Goods provide the basis for harmonization of requirements for various modes involved with the transport of packaged cargoes. The International Maritime Dangerous Goods Code (IMDG), which amplifies the requirements of Chapter VII of the International Convention for the Safety of Life at Sea (SOLAS), has already achieved a high degree of consistency with the United Nations Recommendations.

15. It should be recognized that the UNEP programme, Awareness and Planning for Emergencies at Local Level (APELL), also provides important guidance relative to chemical safety in port areas. "APELL for Port Areas", developed jointly by IMO and UNEP, sets out a procedure to enable decision-makers and technical personnel to improve community awareness of activities involving hazardous substances in port areas and to improve or create co-ordinated emergency response plans.

Premises

16. For purposes of this text, hazardous substances may be in port areas in order to be loaded or unloaded from ships, inland barges, trains, trucks or pipelines, or to be held as cargo in ships without being handled in the port; or they may be packaged goods handled for consolidation or dispersal. The cargo containing hazardous substances may be solids, liquids or gases, and may be packaged goods contained in cargo transport units, such as freight containers and portable tanks, or bulk goods directly contained in tanks or holds of a ship.

17. This text does not differentiate between cargo carried in bulk and cargo carried as packaged goods. However, the specific actions needed to implement certain of these provisions may differ depending on how the hazardous substances are being handled. In addition, distinctions may need to be made among procedures for gases, liquids and solids.

18. This text takes into account that an essential prerequisite for the safe transport and handling of cargoes containing hazardous substances is the proper identification of their hazards, as well as proper containment, packaging, packing, cargo segregation and separation, securing, marking, labelling, placarding and documentation. Often these operations take place at premises remote from the port area. For safety and protection of the environment in the port area, it is essential that every care is taken by those responsible for such actions, and that all relevant information is passed to those involved in the transport chain, including inland, port and marine elements, and to the final consignee.

19. Another premise of this text is that port areas represent strategic economic assets. Any action which reduces the competitive position of a port can have far-reaching economic impacts, not only for the port but also for the country and region where the port is located. All stakeholders should recognize that safety should be an integrated part of the management of port areas, rather than an "add-on". Safety is an essential and necessary element of the sustained economic activity of port areas. Ports should not compete on the basis of low prices attained at the cost of safety or environmental protection.

20. This guidance was drafted with the recognition that ports in different countries are subject to differing legal structures and cultures. For example, a port authority may be a public authority, private entity, or some combination of the two. Furthermore, there are differences among ports in their levels of technological development and their systems for cargo handling and monitoring. In this regard, it cannot be assumed that all ports can utilise sophisticated means for monitoring cargo movement, for handling hazardous substances, or for communications. Thus, this guidance should be read with the understanding that there is a need for flexibility in its application.

21. It should also be noted that many of the provisions describe actions which should be taken for the safe operation of a port, without indicating which party should be responsible for that action. This has been done in the recognition that the allocation of responsibilities will differ among countries and sometimes even within a country. In any case, the assignment of responsibilities should be clearly defined for each port area and should be understood by all relevant parties.

II. PROVISIONS

A. Executive Summary

A.1 Overview

A.1.1 With respect to chemical accidents, the primary objective of stakeholders in port areas should be to develop and implement an efficient accident prevention system to minimize the risks of accidents, with a continuous effort to improve safety.

A.1.2 There should be a clear commitment to safety by the most senior level of management of various port operations, as well as a "bottom-up" commitment through the active application of safety policies and practices by all relevant employees.

A.1.3 There should be an identification of all parties involved in the safe operation of a port, with a clear indication of their roles and responsibilities. A mechanism should exist to help ensure co-ordination and consistency of safety policies among all parties involved in chemical safety. Lines of control and responsibility should be clearly defined and communicated to all parties.

A.1.4 Stakeholders in port areas should share information and experience related to chemical safety.

A.1.5 The boundaries of a port area should be clearly defined, by legislation, for purposes of chemical safety and should include areas where hazardous substances are handled, transported, or kept temporarily.

A.1.6 All parties in the transport chain should ensure the availability of easily accessible information systems, to track the location of cargo containing hazardous substances and to provide information concerning each of the hazardous substances.

A.1.7 Parameters should be developed for the safe operation of ships entering and manoeuvring in ports, adapted to the circumstances of individual ports

A.1.8 An international standard should be established for the mandatory reporting of ship deficiencies affecting accident potential. Procedures for the dissemination of these reports to port authorities should be established.

A.2 Prevention: Public Authorities/Port Authorities

A.2.1 Public authorities should consult with port authorities, as well as other stakeholders, in the establishment of safety objectives and a control framework related to chemical safety in port areas. Laws, regulations, policies and practices should take into account the large number of parties involved and should be consistent with international agreements and recommendations.

A.2.2 Public authorities should determine the classes and quantities of hazardous substances which may be permitted to be handled in, or transit, a port area and the conditions under which they are to be handled.

A.2.3 Public authorities should establish systems whereby a port authority is notified in a timely manner of the arrival and departure of hazardous substances in the port area.

A.2.4 Public authorities should require regular hazard identification and risk assessments addressing all aspects of port operations and emergency response, recognizing that there may be a need for more frequent assessments than in the case of fixed installations in light of the changing nature and types of risks in port areas.

A.2.5 Public authorities should establish land use planning arrangements to ensure that new facilities in port areas are appropriately sited to protect health and environment, including property, in the event of an accident and to prevent inappropriate developments near port areas.

A.2.6 Public authorities should continue to co-operate to further efforts towards the harmonization of international requirements for different modes of transport.

A.2.7 Public authorities should support international efforts to establish reasonable levels of insurance, as well as to establish uniform rules for determining liability and providing for adequate compensation to victims of accidents involving hazardous substances.

A.2.8 Efforts should be made to conduct risk analyses by ship class and type, and to share this information internationally among ports, with a view towards the development of standard procedures to deal with risks.

A.2.9 Port authorities should develop and enforce local port rules, where appropriate, to address the safety of hazardous substances in port areas.

A.2.10 Port authorities should establish procedures for the transport and handling of hazardous substances within the port area, and for proper maintenance and repair operations on ships. Port authorities should be empowered to refuse cargo involving hazardous substances if it is considered to endanger health and environment, including property.

A.2.11 Port authorities should make available special facilities for handling damaged cargoes containing hazardous substances.

A.2.12 Port authorities should ensure that all users of their ports (such as berth operators) establish operational procedures for activities and events which could affect the risk of an accident involving hazardous substances.

A.2.13 Port authorities should maintain within their organisations expertise relating to the safe handling of hazardous substances.

A.2.14 Port authorities should establish control and monitoring systems to gain reasonable assurance that there is compliance with national law and with port requirements related to chemical safety, and that tampering with containers has not occurred in transit.

A.2.15 Port authorities should make regular inspections to ensure the safe transport and handling of hazardous substances in their ports.

A.2.16 An international reporting system of the results of port state control monitoring functions should be established to share safety information among port authorities, including information on the safety status of ships.

A.3 Prevention: Industry

A.3.1 Port management and berth operators, as well as owners/operators of transport modes entering a port area, should develop and implement safety policies and practices consistent with the safety objectives established by public authorities. Management of each organisation should strive to ensure that the intent of the safety policy is understood and appreciated by all relevant employees.

A.3.2 Efforts should be made by shippers, port authorities, insurance companies and others to establish financial or other incentives to improve safety.

A.3.3 Prior to entering a port area, a master of a ship carrying hazardous substances should check the material condition of the ship and cargo for their readiness to safely enter the port and engage in cargo handling operations.

A.3.4 The master should inform the port authority of any relevant deficiency of the ship, its machinery, equipment or appliances, or any leakage of hazardous substances or damage to their containment which may present a risk of an accident which could endanger health and environment, including property.

A.3.5 The master should ensure that, upon entering the port area, proper communications are maintained with the port authority and that any safety requirements, including those pertaining to the proper stowage, packaging and segregation of hazardous substances, are carefully followed.

A.3.6 Berth operators should establish safe operating limits.

A.3.7 Berth operators should ensure that adequate and safe mooring facilities are provided and that adequate safe access is provided between the ship and the shore. Areas where hazardous substances are kept should be clearly marked, properly supervised, and regularly inspected for leakage or damage.

A.3.8 Berth operators should co-ordinate with ship's masters and the individuals responsible for other transport modes to ensure that all relevant regulations and codes are followed for the proper cargo transfer and stowage of hazardous substances.

A.3.9 Berth operators should ensure that hazardous substances entering their premises have been duly certified or declared by the relevant cargo interests as being properly identified, packed, marked, labelled or placarded.

A.3.10 Berth operators should ensure that no person, without reasonable cause, opens or otherwise interferes with any container, tank or vehicle containing hazardous substances.

A.3.11 Berth operators should ensure the ready availability of a list of all hazardous substances in their facilities, with safety-related information.

A.3.12 Cargo interests should ensure that all documents and certificates concerning hazardous substances are issued, and that cargoes containing hazardous substances are properly identified, packaged, placarded, marked and labelled.

A.3.13 Cargo interests should ensure that containers, tanks and vehicles used for carrying hazardous substances have a current safety approval.

A.3.14 Cargo interests should ensure that the physical condition of each freight container, tank-container, portable tank or vehicle is checked for obvious damage potentially affecting safety.

A.3.15 Cargo interests and berth operators should ensure that every necessary support will be given to the port authority or any other person or institution entitled to carry out inspections or audits.

A.3.16 Safety committees, with worker-elected representatives, should be established in port areas.

A.4 Education and Training

A.4.1 Education and training programmes should be established for all employees in the port area, including management, to provide an understanding of chemical safety, personal protection, and actions to be taken in the event of an emergency.

A.4.2 Systems should be established to ensure that employees understand and properly execute their duties in a manner consistent with chemical safety.

A.5 Community Awareness

A.5.1 Port authorities and local authorities should make a concerted effort to ensure that information concerning potential hazards, and the appropriate behaviour to be taken in the event of an accident, is provided on a continuing basis to the potentially affected public. Recognizing that ports present a significant challenge in this respect, innovative approaches may be needed to ensure that the public is appropriately informed.

A.6 Emergency Preparedness

A.6.1 On-site and off-site emergency plans should be prepared which address, among other items, access for emergency responders, staging and command/control areas, and integration of other relevant plans. These plans should be supported by the necessary equipment, information, and trained personnel.

A.6.2 Emergency plans should take into account that port operations typically involve a large number of diverse public and private entities.

A.6.3 Public authorities should ensure that all emergency plans in the port area are mutually consistent and are operationally controlled by a designated party or authority.

A.6.4 Whenever possible, port emergency planners should use internationally recognized and accepted methodologies and guidelines to ensure compatibility of approach and commonality of terms.

A.6.5 Ship’s masters should be informed of how the port emergency response is organised and how their ships and crew fit into this system. The port authority should be informed of a ship's response plan, so that actions can be co-ordinated.

A.6.6 At each cargo transfer site, the ship's master and the berth operator should agree upon appropriate emergency procedures.

A.6.7 Systems should be established for ready access to chemical information needed to support emergency response and clean-up efforts.

A.6.8 Public authorities should establish a programme for testing emergency plans through exercises, bringing together all parties involved in port operations.

A.6.9 Public authorities should establish the necessary legal framework and financial arrangements to ensure that adequate funds are available to conduct response and clean-up activities.

A.6.10 Public authorities should establish mechanisms for national and international mutual aid.

A.7 Emergency Response

A.7.1 Port emergency response forces should be available and ready to respond to accidents wherever they occur in the port area.

A.7.2 During a response, emergency responders should prepare periodic operational reports describing major response activities.

A.8 Accident Reporting, Investigation and Follow-up

A.8.1 Any person in charge of a hazardous substance should inform the port authority immediately of any incident that occurs within the port area which may endanger health and environment, including property.

A.8.2 Reports should be prepared for accidents and significant near misses in port areas to enhance learning from experience.

A.8.3 Efforts should be undertaken to build an international system for collecting and disseminating data related to emergency response in ports.

A.9 Bilateral and Multilateral Assistance

A.9.1 Assistance for improving port safety should be provided to countries, upon request, recognizing that to be effective such assistance should include a long-term commitment. Assistance should be provided by regional and international organisations and multilateral banks, as well as on a bilateral basis.

B. Prevention of Accidents Involving Hazardous Substances[1]

B.1 Prevention: General Principles

B.1.1 The primary objective of chemical accident prevention, preparedness and response activities in port areas should be to develop and implement an efficient accident prevention system which will minimize risks to health (of people on- and off-site) and environment, including property, with a continuous effort towards improvement of safety. To achieve this objective, there is a need for co-ordination and consistency of safety policies among the various parties involved in port activities.

B.1.2 There should be a clear commitment to safety by the most senior level of management of various port operations. In addition to a "top-down" commitment to safety, there should be a "bottom-up" commitment through the active application of safety policies and practices by all relevant employees, including management, in a port area.

B.1.3 There should be an identification of all parties involved in the safe operation of a port (including those located in places remote from the port area), with a clear indication of their roles, authority and responsibilities.

(i) In this regard, responsibility for each activity critical to chemical accident prevention, preparedness and response should be assigned to a particular party [identified by job title(s) or name(s)].

(ii) A co-ordinator should be identified, responsible for the co-ordination of the various parties responsible in the port area for activities related to chemical accident prevention, preparedness and response. This co-ordinator could be, for example, the party with overall management responsibility for the port area or a safety specialist.

(iii) All parties involved should communicate and co-operate closely to agree on the division of roles and responsibilities. A mechanism should exist to help ensure co-ordination among all parties involved with chemical safety. Communication and co-operation help ensure that there are no gaps in responsibility relative to the handling, use and storage of hazardous substances, and that all administrative requirements for the handover of such substances are satisfied.

(iv) It should be kept in mind that there could be problems in communication due to the differing languages or cultures of the various parties.

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[1] The term "hazardous substances", as used in this guidance, should be considered equivalent to the terms "dangerous cargo" and "dangerous goods" but does not include radioactive materials.

(v) Responsible parties in the port area should work together with public authorities and other stakeholders in order to avoid gaps in safety relative to the handling, use and storage of hazardous substances, including operation of all modes of transport active in the port area.

(vi) A list of stakeholders concerned with accident prevention, preparedness and response in port areas would typically include:

- public authorities at all levels (for example, authorities exercising port state control, other regulatory/maritime authorities, and emergency response organisations);
- port authorities and operators/managers;
- ship agents;
- cargo interests (for example, cargo manufacturers or owners, shippers, forwarders, consolidators, packers, brokers and traders);
- ship owners, operators and charters;
- flag state administrations of ships using the port;
- representatives of land-based transport modes (train, truck, inland barge, and pipeline owners/operators);
- workers in the port area and their representatives;
- ship crews and their representatives;
- berth operators and other employers;
- ship and cargo surveying agents;
- companies providing storage services;
- companies involved with accident/environmental clean-up;
- the public potentially affected in the event of an accident;
- other shipping interests (those not involved in the transport of hazardous substances); and
- international organisations (including intergovernmental, industry and labour).

B.1.4 The boundaries of a port area should be clearly defined by legislation for purposes of chemical safety. The physical boundaries should include areas where hazardous substances are handled, transported, or temporarily kept for the purpose of changing the mode or means of transport in connection with the transport of these substances from their

origin to their final destination, taking into account the areas which may be affected in the event of an accident involving hazardous substances.

B.1.5 Stakeholders should share information and experience related to chemical safety.

(i) Free and open communication concerning inspections, procedures, accidents and near misses should be sought with the objective of improving accident prevention, preparedness and response in port areas.

(ii) This open communication should involve not only parties located within the boundary of a port, but also those parties outside to the extent that they have potential to affect the quality of cargo coming in.

B.1.6 All parties in the transport chain should ensure the availability of easily accessible information systems, to track the location of cargo containing hazardous substances and to provide information concerning the nature and hazards of each of the hazardous substances in the cargo.

(i) Complete and up-to-date information concerning the hazards, location and quantity of cargo is critical for chemical accident prevention, preparedness and response in port areas.

(ii) There should be Information available to determine: separation/segregation requirements; first aid measures in the event of an accident; and personal protection equipment needed.

(iii) All parties in the transport chain should have accurate information about the classification of the cargo under their care and should ensure that proper documentation is passed to the next responsible party in the transport chain. This is of particular concern with regard to the transport of packaged goods.

B.1.7 Port authorities should establish control and monitoring systems to obtain reasonable assurance that there is compliance with national law and port requirements related to chemical safety, and that tampering with containers, which might affect chemical safety, has not occurred in transit.

(i) This is particularly important since packing, identification, marking, labelling and placarding of cargo is often done in locations off-site from the port and the cargo often passes through several parties before reaching the port.

(ii) It should be noted that while port authorities cannot be held responsible for the compliance of those transporting goods with national transport laws, they can have a role in monitoring compliance with permits by firms in the port who hold the permits.

(iii) Port authorities should ensure the development and implementation of systems to track and control cargo coming into the ports from land-based sources and to supervise those persons working in port areas.

(iv) Port control and monitoring systems may include: periodic audits of the originators of the cargo and forwarding companies; random inspections of the cargo once it reaches the port area; and establishment of requirements to minimize tampering, such as sealing of containers with numbered seals.

(v) Control and monitoring systems should ensure that all individuals handling hazardous substances are closely supervised by qualified individuals.

(vi) Control and monitoring systems are particularly important in light of the widespread use of casual labour and the number of small companies that may operate in a port area.

B.2 Prevention: Establishment of Safety Objectives and a Control Framework by Public Authorities

B.2.1 Public authorities should consult with port authorities, as well as other stakeholders, in the establishment of safety objectives and a control framework related to chemical safety in port areas.

B.2.2 Laws, regulations, policies and practices related to safety in port areas should take into account the large number of parties involved. They should also be consistent with international agreements and recommendations.[2]

(I) Lines of control and responsibility for each activity of the port should be clearly defined and communicated to all members of the port community. A responsible individual should be empowered to control the resources and personnel necessary to accomplish each procedure or operation.

(ii) All parties involved in the safe operation of the port should strive for co-ordination and consistency of laws, regulations, policies and practices within a port area. Public authorities should also strive towards co-ordination and compatibility of monitoring and enforcement activities.

(iii) Legislative bodies should strive to avoid laws that are duplicative, overlapping or contradictory. Where possible, transport laws should be applicable in designated port areas.

B.2.3 Public authorities should continue to co-operate to further efforts towards the harmonization of international requirements for different modes of transport. While every effort should be made to prevent national and local laws or regulations from conflicting with established international guidance and standards, nothing should preclude public or port authorities from establishing standards which are more stringent than those established by international organisations.

[2] On a number of related subjects, IMO has developed and continues to work on international agreements and recommendations.

B.2.4 In light of the dynamic and complex nature of the legal/regulatory regimes applicable in port areas, including those related to land use planning, the relevant public authorities should continuously review these regimes and update them as appropriate. The review and updating process should include consultation with all relevant authorities, as well as with other stakeholders in the port area.

B.2.5 Public authorities should determine the classes and quantities of hazardous substances which may be permitted to be handled in, or transit, a port area by any mode of transport and the conditions under which they are to be handled.

(i) In so doing, public authorities should take into account the facilities available for the reception and keeping of hazardous substances and the location of the port in relation to nearby installations and population centres.

(ii) Public authorities should make information concerning such determinations available in the national and (if different) English languages.

B.2.6 Public authorities should establish systems whereby a port authority is notified in a timely manner of the arrival of hazardous substances in the port area from either marine or land-based transport modes.

(i) Public authorities should establish and make available information on the various categories and minimum quantities of those categories of hazardous substances for which prior notification of arrival is required, and the time frame for such notification.

(ii) This advance notification requirement should also apply to carriers of hazardous substances which intend to transit through the port area.

(iii) The advance notification should include information concerning any deficiency of the ship, its equipment, and/or the containment of hazardous substances which may affect the safety of the port area or ship.

(iv) Public authorities should also establish a system whereby the port authority is notified, prior to the departure of a ship, of the hazardous substances on board.

B.2.7 Public authorities should support international efforts to establish reasonable levels of insurance, as well as to establish uniform rules for determining liability and providing for adequate compensation to victims of accidents involving hazardous substances, consistent with the "Polluter-Pays Principle".

(i) Shippers, cargo interests and carriers should carry sufficient insurance (or other means of financial responsibility) to cover their potential liabilities in the event of an accident involving hazardous substances.

(ii) It should be recognized that while national laws may adequately address land-based modes of transport, adequate insurance or financial responsibility schemes related to damage to health or environment as a consequence of hazardous substances carried by ships can only be realized if a policy on such schemes is addressed at the international level.

B.2.8 Port authorities should develop and enforce local port rules, where appropriate, to address the safety of hazardous substances in port areas. These rules should be consistent with, but not duplicate, national and local laws and the port state control provisions of international law.

B.2.9 Port authorities should be empowered to refuse cargo involving hazardous substances intended for keeping within, or transit through, port areas if it is considered that the presence of such cargo would endanger health and environment, including property, because of its condition, the condition of its containment, the condition of its mode of conveyance, or conditions in the port area.

(i) If any cargo containing hazardous substances within the port area constitutes an unacceptable hazard, the relevant port authority should be empowered to remove, or order the removal of, any such cargo or any ship, package, freight container, tank-container, portable tank, vehicle or other cargo transport unit containing it.

(ii) Notwithstanding the above, all reasonable effort should be made to aid a ship in distress, particularly when the lives of its crew are in danger. [See also the IMO International Convention on Salvage (1989).]

B.2.10 Port authorities should maintain within their organisations expertise relating to the safe handling of hazardous substances. This expertise should cover: ship operations; cargo operations; proper documentation and labelling; risk assessment; and emergency response procedures.

B.2.11 Port authorities should establish procedures for proper maintenance and repair operations on ships and other transport modes entering port areas. Particular attention should be paid to repairs involving welding, cutting of metal, or any other activity which generates heat or sparks. Procedures should also be established for fumigation and for collection of bilge water, wastes, ballast or slops contaminated with hazardous substances.

B.2.12 Port authorities should make available special facilities for handling damaged cargoes containing hazardous substances. Port or other authorities should also make available reception facilities to enable a ship to fulfill its international obligation to prevent pollution of the marine environment. Such facilities could receive the water used to clean tanks that previously contained hazardous substances.

B.2.13 Port authorities should ensure that all relevant national and international legal requirements, guidelines, recommendations and related documents are readily available for reference and are updated, as appropriate.

B.3 Prevention: Establishment of Safety Policies by Industry

General

B.3.1 Port management and berth operators, as well as owners/operators of transport modes entering a port area (including ships, barges, trucks, trains and pipelines), should develop and implement safety policies and practices promulgated at the highest levels in the organisation, consistent with safety objectives established by public authorities. Management of each organisation should strive to ensure that the intent of the safety policy is understood and appreciated by all relevant employees.

B.3.2 Efforts should be made by shippers, port authorities, insurance companies, and others to establish financial or other incentives to improve safety.

(i) Such incentives could include: lower insurance premiums and reduced fees for a higher level of safety performance and/or safety features; awards; and increased premiums and fees for a minimum standard of performance and/or equipment.

(ii) Cargo owners should avoid using marine and inland carriers, ports or terminals with marginal or substandard performance or equipment and should be willing to pay higher rates for improved safety features and higher standards of operation.

Ship's Masters

B.3.3 Prior to entering a port area, a master of a ship carrying hazardous substances should check the material condition of the ship and cargo for their readiness to safely enter the port and engage in cargo handling operations.

(i) The master should be guided in this regard by international guidelines, the requirements of the flag state administration, and the specific requirements of the port.

(ii) The master should inform the port authority of any relevant deficiency of the ship, its machinery, equipment or appliances, or any leakage of hazardous substances or damage to their containment which may present a risk of an accident which could endanger health and environment, including property.

(iii) The master should ensure that, upon entering the port area, proper communications are maintained with the port authority, and that any safety requirements, including the display of appropriate flag or light signals, are being followed.

(iv) The master should ensure that relevant codes and regulations pertaining to the proper stowage, packaging and segregation of hazardous substances are carefully followed. Co-ordination with the berth operator is essential in this regard.

(v) The master should ensure that navigational information concerning the port area is up-to-date prior to transitting the area.

Berth Operators

B.3.4 Berth operators should ensure that adequate and safe mooring facilities are provided and that adequate safe access is provided between the ship and the shore. Areas where packages and other containers containing hazardous substances are kept should be clearly marked, properly supervised, and regularly inspected for leakage or damage.

B.3.5 Berth operators should establish safe operating limits based upon, for example, the capacities of the berth equipment, weather conditions, the type of ship, and the type of hazardous substance to be (un)loaded.

B.3.6 Berth operators should co-ordinate with ship's masters and the individuals responsible for other transport modes to ensure that all relevant regulations and codes are followed for the proper cargo transfer and stowage of hazardous substances.

B.3.7 Berth operators should ensure that hazardous substances entering their premises have been duly certified or declared by the relevant cargo interests as being properly identified, packed, marked, labelled or placarded.

B.3.8 Berth operators should ensure that no person, without reasonable cause, opens or otherwise interferes with any freight container, tank-container, portable tank, or vehicle containing hazardous substances.

B.3.9 Berth operators should ensure the ready availability of a list of all hazardous substances in their warehouses, sheds or other areas, including quantities, correct technical names, UN numbers, classifications and exact locations, for the use of the port authority and for emergency response teams in the event of an accident.

B.3.10 Berth operators should ensure that every necessary support will be given to the port authority or any other person or institution entitled to carry out inspections or audits.

Cargo Interests

B.3.11 Cargo interests should ensure that all documents and certificates concerning hazardous substances are issued, and that cargoes containing hazardous substances are properly identified, packaged, placarded, marked and labelled, so as to comply with appropriate national and international requirements relating to all relevant modes of transport involved in the transport chain.

(i) Required shipping papers with the related certificates, where applicable, should always be with the party having the hazardous substances at each stage while in the port area.

(ii) Upon departure of a vessel carrying cargo that contains hazardous substances, a copy of all relevant documentation should be left with a person or organisation designated by the port/state authority.

B.3.12 Cargo interests should ensure that freight containers, portable tanks, tank-containers, and vehicles used for carrying hazardous substances have a current safety approval issued by an appropriate authority.

B.3.13 Cargo interests should ensure that the physical condition of each freight container, portable tank, tank-container or vehicle is checked, by external examination, for obvious damage affecting its strength or packaging integrity and for the presence of any sign of leakage of contents.

B.3.14 Cargo interests should ensure that every necessary support will be given to the port authority, the berth operator, or any other person or institution entitled to carry out inspections or audits.

B.4 Prevention: Hazard Identification and Risk Assessment

B.4.1 Public authorities should require regular hazard identification and risk assessments in port areas, in a manner consistent with the provisions of the *Guiding Principles*, recognizing that there may be a need for undertaking such assessments more frequently than in the case of fixed installations in light of the changing nature and types of risks in port areas.

(i) It is recognized that requirements related to risk assessments for new facilities, and for significant modifications, will differ from those for existing facilities.

(ii) Risk assessments are useful for, *inter alia*, decision-making concerning planning, siting and design of port areas; helping to identify port-specific risks and procedures to address them; and helping to determine the efficacy of established procedures, practices and requirements. Risk assessments should also be used in the development and updating of appropriate emergency plans.

(iii) Due to the nature of ports, risk assessments should be carried out on a routine basis as well as when proposed developments, changes in procedures, or changes in cargo types might affect the level of risk.

(iv) Risk assessments for port areas should address all aspects of port operations and emergency response. While individual ports vary widely in their operations, the following broad topics should be addressed for all port areas:

- transportation of hazardous substances into and within the port area by all modes of transport;

- repairs, both routine and emergency, to all relevant modes of transport and to port facilities. Particular attention should be given to repairs

involving welding, cutting, and other hot work, whether or not the ship contains hazardous substances or residues;

- cleaning and fumigation operations;
- refuelling and bunkering;
- discharge of wastes, and reception facilities for cargo tank washings and residues;
- the possibility of unidentified or misdeclared cargo, from any mode of transport or in warehouses, as well as improper packaging, labelling, documentation or inhibiting; and
- the possibility of substandard transport carriers, including the material condition of ships, trains and trucks as well as the quality of their operating personnel.

B.4.2 Planning for new and expanded port facilities or terminals should also take into account the need for prevention of, and response to, accidents involving hazardous substances. In this regard, there should be a rational approach to the design and layout of a port.

(i) For example, if it would increase safety, cargo handling operations involving packaged goods should be separated from those for tankers and for gas and other bulk carriers, to the maximum extent possible.

(ii) Factors which should be taken into account when planning for new and expanded port facilities include:

- the types of hazardous substances to be present in the port area;
- the hazards posed by existing ports and/or facilities;
- provision for proper access by all relevant modes of transport;
- the capacity of the port to deal with surges in traffic;
- the availability of cleaning and repair facilities;
- the need for segregation of certain commodities;
- the (re)assessment of risks;
- the need for an evacuation of the port area and of any surrounding population in the event of an accident;
- the needs of emergency services, including access for emergency response as well as staging areas and command/control areas;
- emergency storage facilities for damaged cargo;

- the need for survivability of essential services in an emergency;

- the means for environmental protection in the event of an accident, including facilities for drainage and collection of contaminated run-off; and

- compatibility with land use planning/zoning requirements and objectives.

B.4.3 The planning process for new and expanded port facilities or terminals should include an assessment of risks to determine the probability of accidents, their possible effects on health and the environment, and appropriate safety features and equipment. This could take the form of a "safety case". The risk assessment should include:

- the types of hazardous substances to be present in the port area and their hazardous features;

- experience-related feedback (accidents and incidents experienced by similar ports);

- scenarios of possible accidents within the port, taking into account all relevant transport modes;

- descriptions and evaluations of safety measures, for example: survivability of essential services in an emergency; emergency storage facilities for damaged cargo; and means for environmental protection in the event of an accident, including facilities for drainage and collection of contaminated run-off.

B.4.4 Efforts should be made to conduct risk analyses by ship class and type, and to share this information internationally among ports, with a view towards the development of standard procedures to deal with risks and for port emergency plans. The international community, through IMO, should be encouraged to collaborate in developing procedures for, and conducting, these analyses. For other transport modes, similar national and, if necessary, international information exchange schemes should be established. In this regard, efforts should be made to share information available on this subject through established databases.

B.5 Prevention: Operations

B.5.1 Port authorities should establish procedures for the transport and handling of hazardous substances within the port area.

B.5.2 Public authorities should decide if and when a ship engaged in the transport or handling of certain specified hazardous substances should exhibit any special visual signals, as referenced in para 6.1.18 of the IMO Recommendations and compatible with the Convention on the International Regulations for Preventing Collisions at Sea (1972) (COLREG).

(I) Port authorities should ensure that constant communications are maintained concerning every shipment of hazardous substances.

(ii) Port authorities should decide if and when a ship engaged in the transport of hazardous substances should take a pilot on board or have tug assistance while entering, leaving or moving in the port area. This decision should take into account, for example: the type of ship and its manoeuvrability; the traffic situation; the layout of the port area; tidal and weather conditions; and the categories and quantities of hazardous substances being carried on board.

B.5.3 Port authorities should ensure that all users of their ports (such as berth operators) establish operational procedures for activities and events which can affect the risk of an accident involving hazardous substances.

(i) These procedures should address, for example: safe handling, keeping and storage of cargo; traffic management; services; dock labour; security; emergency services; berth operations; and health/personal protective measures.

(ii) The port authority should ensure that up-to-date information concerning port procedures is available to users of the port in the local and (if different) English languages. For example, information should be available to ships and ships' agents, in advance of arrival, on relevant procedures including those related to traffic management, anchorage, berth mooring, restricted commodities, documentation, contact points for the reporting of emergencies, and other aspects which may affect safety. Checklists and special arrangements needed for cargo transfer, such as vapour emission control, should be highlighted within this information package. Similar considerations should be given to other modes of transport.

B.5.4 Parameters should be developed for the safe operation of ships entering and manoeuvring in ports, and should be adapted to the particular circumstances of individual ports.

(i) Procedures should be established to facilitate the movement of cargo through a port. For example, unnecessary administrative delays should be avoided to reduce the total quantity of hazardous substances kept in the port, resulting in a reduction of the risk of an accident. In this regard, customs and other formalities should be streamlined, consistent with legitimate monitoring needs.

(ii) Any port-specific limitations for transit or cargo operations, such as weather conditions and pilotage or tug requirements, should be communicated to all relevant carriers.

B.5.5 An international standard should be established for the mandatory reporting of ship deficiencies affecting accident potential, in accordance with Protocol I of MARPOL 73/78. Procedures should be established for the dissemination of these reports to port authorities.

B.5.6 Safety committees with worker-elected representatives, as described in paragraph B.5.19 of the *Guiding Principles*, should be established in port areas.

B.5.7 Public authorities should make appropriate arrangements to limit the risks of certain particularly hazardous substances (for example, explosives, poison gases). This could involve, for example, requirements for early notification or specific authorization prior to entering the port area, and use of vessel traffic systems (VTS) when available. Provision should be made for suitable sites for such substances, in order to: limit the risks to workers and the surrounding population; segregate them from incompatible cargo; and prevent the entry of unauthorised personnel.

B.5.8 Public authorities or port authorities should establish clear procedures for refuelling/bunkering to the extent that this may create a risk of an accident involving hazardous substances, for example when refuelling/bunkering is carried out simultaneously with the handling of hazardous substances.

B.6 Prevention: Safety Performance Review and Evaluation

B.6.1 Port authorities should make regular inspections to ensure the safe transport and handling of hazardous substances in their ports.

(i) In this regard, port authorities should be empowered to inspect documents and certificates concerning the safe transport and handling of hazardous substances in the port area.

(ii) Port authorities should also be empowered to check, by external examination, the physical condition of the transport vehicles and containers carrying hazardous substances for obvious damage which could affect strength or packaging integrity and for the presence of any sign of leakage of contents.

B.6.2 An international system for reporting the results of port state control monitoring functions should be established to share information that would assist port authorities concerning the safety status of ships and other related safety information. This system would provide the means for more efficient use of inspection resources, by enabling authorities to target resources where they are most needed and avoid unnecessary delays with respect to ships which have been recently inspected.

B.6.3 Public authorities, in concert with international organisations and agreements, should establish a system for port safety/accident reporting and information sharing. International conferences and symposia on the safety of ports and protection of the marine environment should be organised, and their findings should be given the widest possible dissemination.

C. Land Use Planning

C.1 Public authorities should establish land use planning arrangements to ensure that new facilities in port areas are appropriately sited with respect to protection of health and environment, including property, in the event of an accident involving hazardous substances. These arrangements should also prevent inappropriate developments near port areas and control inappropriate changes to existing facilities. (See Section C of the *Guiding Principles*.)

(i) Safety should be a key consideration in the development and application of land use planning policies. In this regard, safety requires consideration not only of protecting the public from the activities of the port, but also of protecting the port from increased risk posed by people/organisations from outside the normal port functions.

(ii) The development and application of land use planning policies should take account of, *inter alia*, port infrastructures; buildings in port areas; land and water resources needed for different port activities; the impact of handling hazardous substances on local populations; availability and needs of emergency services; visual impacts of port developments; strategic land use plans; health and safety issues; social and economic concerns; local flora and fauna; surrounding land use; soil and drainage; transport and traffic concerns; community input; air quality; and cultural impacts of ports.

(iii) Land use planning decisions should take into account the possibility of a "domino effect" and the need for "separation distances" to provide a buffer zone between potentially hazardous areas and populated areas, in order to reduce the risks of adverse effects in the event of an accident.

D. Education and Training

D.1 Education and training programmes should be established for all employees in the port area, including management, to provide them with a general awareness and understanding of chemical safety, personal protection, and actions to be taken in the event of an emergency, as well as to provide specific information related to potentially hazardous operations.

(i) An important goal of training and education programmes should be to increase the awareness of safety and environmental issues and of the potential impact of hazardous substances on the marine and coastal environment.

(ii) Education and training programmes should provide for a high level of understanding by appropriate employees of: the classes of hazardous substances; marking, labelling and placarding, packing, segregation and compatibility requirements; proper stowage and securing of cargo on board the transport means (for example, ships, barges, trucks, rail wagons, etc.) and in cargo transport units (for example, containers); a description of the purpose and content of the transport documents; and a description of available emergency response documents.

(iii) Possible consequences of inattention to such matters should be made clear.

(iv) The level of education and training should be function-specific, and commensurate with the nature and extent of the duties of the employees and their level of sophistication.

(v) The Safety Committee should be involved in the development and implementation of education and training programmes.

D.2 Education and training should be continuous and, in particular, should be provided to employees when entering a work environment, at a change of jobs, when there is the use of new materials or new methods, and when new hazards are identified.

D.3 Systems should be established to ensure that employees understand and properly execute their duties in a manner consistent with chemical safety.

D.4 Education and training programmes should take into account applicable international guidance and the work of relevant international organisations. For example, consideration should be given to the UN Recommendations on the Transport of Dangerous Goods (current edition), chapter on "Training of Dangerous Goods Workers", and the related instruments of the International Labour Organisation (ILO) as reflected in the ILO Conventions on Safety in the Use of Chemicals at Work (adopted 1990) and Prevention of Major Industrial Accidents (adopted 1993).

E. Community Awareness

E.1 Port authorities and local authorities, in co-operation with other relevant stakeholders, should make a concerted effort to ensure that specific information is provided on a continuing basis to the public potentially affected in the event of an accident.

(I) This information should address the nature of port activities, including potential hazards, and the appropriate behaviour and safety measures to be taken in the event of an accident. [See the OECD Council Decision-Recommendation C(88)85(Final), and Section D of the *Guiding Principles*.]

(ii) Recognizing that ports present a significant challenge with respect to the identification of, and communication with, the potentially affected public (for example, with respect to passengers using the port), innovative approaches may be needed to ensure that the public is appropriately informed.

F. Emergency Preparedness

F.1 On-site and off-site emergency plans should be prepared which address, among other items, access for emergency responders, staging areas and command/control areas, and integration of other relevant plans. (See related sections of the *Guiding Principles* and the IMO Recommendations.)

(i) Emergency plans should clearly describe: the organisation of the response efforts; reporting and communication procedures; and response procedures for the entire spectrum of possible accident scenarios, taking into account various risks to safety.

(ii) Emergency plans should provide for a level of response commensurate with the severity of an incident. For example, the foreman of a work crew may be the appropriate level of supervision for response to a minor incident involving limited spillage on the dock of a relatively low-hazard cargo.

(iii) Emergency plans should incorporate response methodologies that protect the marine environment, consistent with health and safety considerations. In this regard, public authorities should require the availability of equipment to contain minor leaks (for example, overpack drums).

(iv) Emergency plans should provide for a system for ready contact with technical experts.

(v) Emergency plans should provide clear guidance related to entry into confined, contaminated or hazardous areas and use of personal protective equipment. Procedures for perimeter control and decontamination of entry teams should be described and responsibilities assigned.

(vi) Emergency plans should cover response actions on land, on board ships, and at sea. Emergency plans for ports should be co-ordinated with the local and national emergency plans for the marine environment.[3]

[3] This principle is generally applicable to fixed installations as well as ports, but is not contained in the *Guiding Principles*.

F.2 Emergency plans should take into account the fact that port operations typically involve a large number of diverse public and private entities.

(i) The meeting of various modes of transport brings together individuals and organisations with different operational procedures and constraints, historical developments, and regulatory considerations. The involvement of ships and shipping interests adds additional complications such as multiple languages and differences of approach due to cultural heritage.

(ii) Public authorities reviewing emergency plans should ensure that they reflect the complexity of the port infrastructure.

F.3 Public authorities should ensure that all emergency plans in the port area are mutually consistent, are compatible with national plans, and are all operationally controlled by a designated party or authority.

(i) Each of the public and private entities using the port facilities, and having responsibility for activities in the port area, should be required to formulate its own emergency action plan. These plans should clearly identify and facilitate the entity's role in the overall port emergency plan. They should not be developed in a vacuum and then patched together in the event of an incident.

(ii) All emergency plans should establish the person or persons (identified by title or name) in charge of all response activities. The designation of one party as being overall-in-charge is particularly critical for ports, due to the large number of public and private entities involved.

(iii) The emergency plans should set out procedures for providing timely operational reports to a central response organisation, and for receiving operational direction from this same organisation.

(iv) Representatives of the relevant national authority(ies) should be involved at all stages of response policy development, planning and training. The designated authority should be empowered to exercise control of all, or certain, aspects of an accident response.

F.4 Whenever possible, port emergency planners should use internationally recognized and accepted methodologies and guidelines to ensure compatibility of approach and commonality of terms.

(i) Since the port area, by its very nature, involves the international community, responding to accidents involving ships and ports needs an international perspective, with direction and assistance from the national authority(ies) involved with international maritime issues.

(ii) Public authorities should require that ships using port facilities utilise appropriate IMO guidelines related to chemical accidents and chemical pollution emergency plans. Since compatibility of port and ship response plans is more likely if both use internationally accepted guidelines for plan

development, guidelines published by IMO should be used to the maximum extent possible.

F.5 Ship's masters should be informed of the organisation of the port emergency response and how their ships and crew fit into this system. In particular, emergency notification and alarm procedures should be clearly described before cargo transfer operations begin. Procedures for an emergency escape from the berth and dispersal to a safe area should be understood by ship's masters, berth operators and port authorities.

F.6 At each cargo transfer site, the ship's master and the berth operator should agree upon appropriate emergency procedures.

F.7 The port authority should be informed of a ship's response plan so actions can be co-ordinated. For example, a rapid means of stopping cargo transfer should be agreed upon by the ship's master and the berth operator.

F.8 Clear access lanes for emergency services should be designated, and observing them should be made mandatory for all port users. The arrangement of port facilities and the nature of cargo handling operations can make access difficult or impossible.

F.9 Emergency response planning should be more than a paper exercise. Emergency plans should be supported by the necessary equipment and trained personnel. Information should be readily available concerning the availability and location of response equipment.

F.10 Public authorities should require response organisations to provide a system for ready access to a wide range of chemical information needed to support emergency response and clean-up efforts.

(i) The range of hazardous substances present in the port area requires an extensive database of information concerning the substances, including their behaviour during non-routine events.

(ii) Chemical information systems used to support emergency response activities should contain information on the chemicals' effects if released to the marine environment. This information should highlight recommended response procedures that would minimize damage to the marine environment, consistent with health and safety considerations.

(iii) Information on cargo types and locations, within the port area and on board ships, should be immediately available for support of emergency response activities.

F.11 Port emergency plans should take into account that hazardous substances may be carried into the port area by ships and other modes, even if they are not to be (un)loaded there.

(i) Many transport modes will (un)load cargo at more than one port and may carry into a port hazardous substances not intended to be handled by any facility at that particular port. Emergency response plans should account for this by ensuring that information systems, personal protective equipment, and

response strategies are capable of dealing with all cargoes routinely present in the port area. Issues to be addressed include potential personnel exposure, fire, hazardous vapours, reaction/explosion, and pollution of the water or air.

(ii) Emergency plans should also take into account the possibility of shipboard emergencies (for example, fire in the machinery spaces, structural failures) involving hazardous substances posing a threat to the port or the marine environment.

F.12 Port emergency plans should provide procedures to deal with unusual situations, for example when ships seeking refuge are of a type not normally handled by the port.

(i) Such procedures would normally involve designation of a safe anchorage and a roster of experts to call in case of such an incident.

(ii) Port authorities should also provide a safe haven for ships carrying hazardous substances and seeking refuge. This haven should be sited well away from densely populated areas. It may not be necessary for each port in a region to provide such a safe haven; one commonly shared in the region may be sufficient.

(iii) Unanticipated entries, although rare, may result from bad weather, equipment failures, or injuries to the crew.

(iv) It may be that the port authority cannot allow entry of certain ships due to the nature or extent of the hazard posed. The type of situation in which a ship may not be allowed to enter a port should be made generally known in the maritime community.

F.13 Public authorities should establish the necessary legal framework and financial arrangements to ensure that adequate funds are available to conduct response and clean-up activities.

(i) The international nature of shipping requires that national authorities take steps to ensure that responders are provided with adequate resources to carry out their duties.

(ii) Where possible, national authorities should become party to international conventions regarding liability for damages and clean-up costs (for example, IMO's CLC and Fund Conventions for oil) and should support efforts to have international conventions address spills of all hazardous substances (for example, IMO's proposed HNS Convention).

F.14 Public authorities should establish mechanisms for national and international mutual aid.

(i) Ships carry large quantities of a variety of hazardous substances that, in the event of an accident, can quickly overwhelm the port response organisation. An emergency response requiring extensive personal protective and

decontamination equipment may require more human and other resources than are commonly available in a single port.

(ii) In order to maintain preparedness, national authorities should therefore seek mutual assistance arrangements with neighbouring countries through regional arrangements or bilateral agreements. Such international efforts are best co-ordinated and supported by becoming party to the appropriate international conventions (for example, the OPRC Convention).

(iii) The efficient receipt and co-ordination of assistance from outside the regular port community should be addressed during emergency planning, since response organisations can be overwhelmed by the demands of co-ordinating equipment and personnel provided through mutual aid arrangements.

F.15 Public authorities should establish a programme for testing emergency plans through exercises, bringing together all parties involved in the operation of the port.

G. Emergency Response

G.1 Port emergency response forces should be available and ready to respond to accidents wherever they occur in the port area. In this regard, forces should be able to effectively respond and support operations from quayside to ship; on the quay; on land (for trains and trucks); and ship-to-ship.

G.2 During an emergency response, responders should prepare periodic operational reports describing major response activities. Such reports provide a valuable tool to track events as they occur, and to direct operations, and can be used as a learning tool to improve prevention, preparedness and response. Appropriate portions of the reports should be made publicly available.[4]

H. Accident Reporting, Investigation and Follow-up

H.1 Any person in charge of a hazardous substance should inform the port authority immediately of any incident that occurs within the port area which may endanger health and environment, including property.

[4] This principle is generally applicable to fixed installations as well as to ports, but it is not contained in the *Guiding Principles*.

(i) The operator of a transport mode (for example, ship's master, truck driver, etc.) who has hazardous substances on board in damaged packages, unit loads, or cargo transport units should ensure that all necessary measures are taken to avoid accidental spillage of such substances.

(ii) Any spillage should be reported immediately to the berth operator and/or port authority and suitable remedial action should be initiated.

H.2 Accidents and significant near misses in port areas should be reported, as in fixed installations, to enhance learning from experience.

(i) Investigations should be undertaken to identify the causes of accidents or incidents in port areas.

(ii) Relevant information should be shared among interested parties in order to provide the feedback necessary for improvement of prevention and response systems in port areas.

H.3 Efforts should be undertaken to build an international system for collecting and disseminating data related to emergency response in ports. To help ensure support for such a system, the purposes of the system need to be clearly defined and known, and the system should be useful to those supplying the data.

I. Bilateral and Multilateral Assistance

I.1 Assistance for improving port safety should be provided to countries, upon request, recognizing that to be effective such assistance should include a long-term commitment. Assistance should be provided by regional and international organisations and multilateral banks, as well as on a bilateral basis.

(i) Development of a safe, environmentally sound port is a step-by-step process, and priorities for assistance should be established based on a risk assessment with due regard to the priorities of the developing country.

(ii) In establishing assistance programmes, issues of training are particularly important. In this regard, core/priority groups should be established for training. To facilitate the training process, emphasis should be on "training the trainers".

J. Acronyms

APELL	Awareness and Preparedness for Emergencies at Local Level (a UNEP Programme)
BCH	Dangerous Chemicals in Bulk
CLC	International Convention on Civil Liability for Oil Pollution Damage
CSC	International Convention for Safe Containers
EmS	Group Emergency Schedules (an IMO publication)
HNS	Hazardous and Noxious Substances
IAPH	International Association of Ports and Harbors
IBC	International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk
ICS	International Chamber of Shipping
IGC	International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk
ISGOTT	International Safety Guide for Oil Tankers and Terminals
ILO	International Labour Organisation
IMDG	International Maritime Dangerous Goods Code
IMGS	International Medical Guide for Ships
IMO	International Maritime Organization
INF	Irradiated Nuclear Fuel
LNG	Liquefied Natural Gas
MARPOL	International Convention for the Prevention of Pollution from Ships
MFAG	Medical First Aid Guide (IMO/WHO/ILO joint publications)
OCIMF	Oil Companies International Marine Forum
OECD	Organisation for Economic Co-operation and Development

OPRC International Convention on Oil Pollution Preparedness, Response and Co-operation (1990)

PIANC Permanent International Association of Navigation Congress

SOLAS International Convention for the Safety of Life at Sea

SIGTTO Society of International Gas Tanker and Terminal Operators Limited

UNEP United Nations Environment Programme

K. Glossary

Note: The Glossary of the OECD Guiding Principles (Section J) also applies to this Guidance Document.

Accident: Any unplanned, sudden event which causes or is liable to cause injury to people or damage to buildings, plant, material or the environment.

Berth: Any dock, pier, jetty, quay, wharf, marine terminal or similar structure (whether floating or not) at which a ship may tie up. It includes any plant or premises, other than a ship, used for purposes ancillary or incidental to the loading or unloading of hazardous substances.

Berth operator: Any person or body of persons who has for the time being the day-to-day control of the operation of a berth.

Bulk: Cargoes which are intended to be carried without any intermediate form of containment in a cargo space which is a structural part of a ship or in a tank permanently fixed in or on a ship.

Cargo interests: A shipper, carrier, forwarder, consolidator, packing centre or any person, company or institution involved in any of the following activities: identification, containment, packaging, packing, securing, marking, labelling, placarding or documentation, as appropriate, of cargoes involving hazardous substances for receipt by a port and transport by sea and having control over the cargo at any time.

Dangerous goods: For purposes of this document, the term “hazardous substances” has been used in lieu of “dangerous goods”. See the definition of hazardous substances.

Hazardous substance:

An element, compound, mixture or preparation which, by virtue of its chemical, physical or (eco)toxicological properties, constitutes a hazard. However, for purposes of this text, radioactive materials are not included. Cargoes containing hazardous substances include the following cargoes whether packaged, or carried in bulk packagings or in bulk, within the scope of the following regulations:

- oils covered by Annex I of MARPOL 73/78;
- gases covered by the Codes for the Construction and equipment of Ships Carrying Liquefied Gases in Bulk;
- noxious liquid substances/chemicals, including wastes covered by the Codes for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and Annex II of Marpol 73/78;
- dangerous, hazardous and harmful substances, materials and articles including environmentally hazardous substances (marine pollutants) and wastes, covered by the International Maritime Dangerous Goods Code; and
- solid bulk materials possessing chemical hazards and solid bulk materials hazardous only in bulk, including wastes, covered by Appendix B of the Code of Safe Practice for Solid Bulk Cargoes.

Such cargoes include any empty uncleaned packagings [such as tank-containers, receptacles, intermediate bulk containers (IBCs), bulk packagings, portable tanks or tank vehicles] which previously contained hazardous substances, unless the packagings have been sufficiently cleaned of residue of the hazardous substances and purged of vapours so as to nullify any hazard or have been filled with a non-hazardous substance.

Hot work:

The use of open fires and flames, power tools or hot rivets, grinding, soldering, burning, cutting, welding, or any other repair work involving heat or creating sparks which may lead to a hazard because of the presence or proximity of dangerous cargoes.

Master:

Any person, other than a pilot or a watchman, having charge of a ship.

Port area: The land and sea area established by legislation. *(Note: Some port areas may overlap. Legal requirements should take account of this possibility.)*

Port authority: Any person or body of persons empowered to exercise effective control in a port area.

Public authority: The national, regional, or local authority empowered to make legal requirements in respect of a port area and having powers to enforce the legal requirements.

Safety: A situation without unacceptable risks. For purposes of this text, "safety" embraces health, safety and environmental protection, including protection of property.

Ship: Any seagoing or non-seagoing water craft, including those used on inland waters, used for the transport of hazardous substances.

Stake-holder: Any organisation or individual involved with the operation of the port, affected by port activity, or potentially affected by an accident in the port area.

L. Bibliography

OECD *Guiding Principles for Chemical Accident Prevention, Preparedness and Response: Guidance for Public Authorities, Industry, Labour and Others for the Establishment of Programmes and Policies related to Prevention of, Preparedness for, and Response to Accidents Involving Hazardous Substances* (OECD Environment Monograph No. 51, Paris, 1992).

[In particular, see Section L, References, for the bibliography therein. The *Guiding Principles* are also available in French and Russian. There are plans to publish a Spanish translation, and possibly translations into other languages. For more information, contact the OECD's Environmental Health and Safety Division.]

Health Aspects of Chemical Accidents: Guidance on Chemical Accident Awareness, Preparedness and Response for Health Professionals and Emergency Responders (Paris, 1994).

[Four international organisations collaborated in the preparation of this publication: the International Programme on Chemical Safety (IPCS), the OECD, the UNEP Industry and Environment centre (UNEP IE), and the World Health Organization - European Centre for Environment and Health (WHO-ECEH). Draft versions of the Guidance Documents it contains were presented at the Workshop on Health Aspects of Chemical Accidents, organised by the four collaborating organisations in Utrecht, the Netherlands, in 1993 and hosted by the Dutch authorities. Copies of this publication can be obtained from any of the four collaborating organisations. It is No. 19 in the UNEP IE Technical Report series and No. 81 in the OECD Environment Monograph series. A Spanish translation is planned.]

Guidance Concerning Health Aspects of Chemical Accidents (1996) (in preparation)

Guidance Concerning Accident Prevention, Preparation and Response at Transport Interfaces (in preparation)

Report of the OECD/UN-ECE Workshop on Chemical Accidents (in preparation)

Report of the OECD Workshop on Small and Medium-sized Enterprises in Relation to Chemical Accident Prevention, Preparedness and Response (hosted jointly by Canada and the United States and held in Toronto, 1994; published as OECD Environment Monograph No. 95, Paris, 1955).

Report of the Special Session on Chemical Accident Prevention, Preparedness and Response at Transport Interfaces (held in Paris, 1993; published as OECD Environment Monograph No. 94, Paris, 1995).

Report of the OECD Workshop on Chemical Safety in Port Areas (hosted by Finland, co-sponsored by the OECD, the International Maritime Organization (IMO) and UNEP, and held in Naantali, Finland, 1993; published as OECD Environment Monograph No. 93, Paris, 1994).

Report of the OECD Workshop on Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection (organised by the Swedish authorities, in co-operation with the OECD Road Transport Research Programme and the OECD Environment Directorate, and held in Karlstad, Sweden, 1992; published as Environment Monograph No. 66, Paris, 1993).

[This report contains an introduction, the workshop conclusions, and the revised discussion document. The workshop proceedings were also published in 1993 by the Swedish Road and Transport Research Institute, with the title *Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection*.]

Users Guide to Hazardous Substance Data Banks Available in OECD Member Countries, OCDE/GD(91)102 (Paris, 1991).

Users Guide to Information Systems Useful to Emergency Planners and Responders Available in OECD Member Countries, OCDE/GD(91)103 (Paris, 1991).

[The two Users Guides have been translated into Spanish by the UNEP Industry and Environment centre (UNEP IE).]

UNEP

Awareness and Preparedness for Emergencies at Local Level (APELL): A Process for Responding to Technological Accidents (the APELL Handbook) (Paris, 1988)

IMO/UNEP Consultative Version - APELL for Port Areas 1995

IMO Conventions, Codes, Guidelines and Recommendations

Recommendations for the Safe Transport of Dangerous Cargoes and Related Activities in Port Areas including Guidance on Implementation (1995).

International Convention for the Safety of Life at Sea (SOLAS) (consolidated edition, 1992).

The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78), as amended (1991).

International Maritime Dangerous Goods Code (IMDG Code) and IMDG Code Supplement (includes EmS, MFAG, BC Code, IMO/ILO Guidelines for Packing Cargo in Freight Containers or Vehicles and Recommendations on the Safe Use of Pesticides in Ships) (1995).

International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) (1994), and earlier Code (BCH Code) (1993) where applicable.

International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) (1993).

Manual on Oil Pollution:

Section I	Prevention (1983)
Section II	Contingency Planning (1995)
Section III	Salvage (1996)
Section IV	Combating Oil Spills (1988)
Section V	Administrative Aspects of Oil Pollution Response (1996)

Manual on Chemical Pollution:

Section 1	Problem Assessment and Response Arrangements (under revision)
Section 2	Search and Recovery of Packaged Goods at Sea (1991)

Guidelines for the Provision of Adequate Reception Facilities in Ports

Part I Oily Wastes (1974)

Part II Residues and Mixtures Containing Noxious Liquid Substances (1986)

International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990 (1991).

Index of Dangerous Chemical Carried in Bulk (1990).

International Convention for Safe Containers (CSC), 1972, as amended.

Code of Safety for Nuclear Merchant Ships (1982).

Code of Safe Practice for Cargo Stowage and Securing (1992).

International Code for the Safe Carriage of Grain in Bulk (1991).

Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High Level Radioactive Wastes in Flasks on Board Ships (INF Code, 1994).

Ship Safety and Pollution Prevention: Ship Management and Port State Control (1992).

Selected list of internationally recognized codes and guides, relevant to the transport and handling of hazardous substances in port areas:

PIANC: Dangerous Goods in Ports - Recommendations for port designers and port operators.

ILO: Code of Practice on Safety and Health in Dock Work.

Guide to Safety and Health in Dock Work.

ICS/OCIMF/ IAPH: International Safety Guide for Oil Tankers and Terminals (ISGOTT)

ICS/OCIMF: Ship to Ship Transfers Guide (Liquefied Gases) - 980.

Prevention of Oil Spillages through Cargo Pumproom Sea Valves (1991). Ship to Ship Transfer Guide (Petroleum) - 1988.

ICS/OCIMF/ SIGTTO: A Guide to Contingency Planning for the Gas Carrier Alongside and within Port Limits - 1989.

A Guide to Contingency Planning for Marine Terminals Handling

Liquefied Gases in Bulk - 1989.

OCIMF/ SIGTTO: Inspection Guidelines for Ships Carrying Liquefied Gases in Bulk - 1990.

ICS: Tanker Safety Guide (Chemicals).

Tanker Safety Guide (Liquefied Gas).

OCIMF: Safety Guide for Terminals Handling Ships Carrying Liquefied Gases in Bulk - 1993.

Effective Mooring - 1989.

Guide on Marine Terminal Fire Protection and Emergency

Evacuation 1987.

Inspection Guidelines for Bulk Oil Carriers - 1994.

Marine and Terminal Operations Survey Guidelines - 1983.

Mooring Equipment Guidelines - 1992.

Recommendations for Equipment Employed in the Mooring of Ships at Single Point Moorings - 1993.

Recommendations for Oil Tanker Manifolds and Associated Equipment 1991.

Ship Information Questionnaire for Bulk Oil Carriers - 1989.

Recommendations for Manifolds for Refrigerated Liquefied Gas Carriers for Cargoes for 0°C to minus 104°C - 1987.

Recommendations for Manifolds for Refrigerated Liquefied Gas Carriers (LNG) - 1994.

SIGTTO: Guidelines for Hazard Analysis as an Aid to Management of Safe Operations - 1992.

Safe Havens for Disabled Gas Carriers - 1982.

Liquefied Gas Handling Principles on Ships and in Terminals - 1986.

M. Key Word Index

ENVIRONMENTAL HEALTH AND SAFETY PUBLICATIONS

As of Spring 1996

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For more information, and the full text of some of these publications, consult the OECD's World Wide Web site (http://www.oecd.org/ehs/)

***Please note*:**

[F] indicates that the entire publication is available from the OECD in a separate French translation. The other publications listed are available in English only, but they often include a French summary.

[GLP] indicates that the publication is part of the OECD Series on Principles of Good Laboratory Practice and Compliance Monitoring. Translations of this series into German, Russian, Polish, Czech, Slovak, Hebrew, Spanish and Italian exist or are planned. For more information, please contact the Environmental Health and Safety Division.

[BIO] indicates that the publication is part of the OECD Series on the Harmonization of Regulatory Oversight in Biotechnology.

OECD Environment Monograph Series:

The Environment Monograph Series makes technical documents prepared by the OECD Environment Directorate available to the public. The Environment Monographs on this list were prepared by the Environmental Health and Safety Division. Copies are available upon request at no charge, in limited quantities.

No. 14, *Final Report of the Expert Group on Model Forms of Agreement for the Exchange of Confidential Data on Chemicals* (1988)[F]

No. 15, *Final Report of the Working Group on Mutual Recognition of Compliance with Good Laboratory Practice* (1988)[F]

No. 17, *The Use of Industry Category Documents in Source Assessment of Chemicals* (1989)[F]

No. 24, *Accidents Involving Hazardous Substances* (1989)[F]

No. 26, *Report of the OECD Workshop on Ecological Effects Assessment* (1989)[F]

No. 27, *Compendium of Environmental Exposure Assessment Methods for Chemicals* (1989)[F]

No. 28, *Workshop on Prevention of Accidents Involving Hazardous Substances: Good Management Practice* (1990)[F]

No. 29, *Workshop on the Provision of Information to the Public and on the Role of Workers in Accident Prevention and Response* (1990)[F]

No. 30, *Workshop on the Role of Public Authorities in Preventing Major Accidents and in Major Accident Land-Use Planning* (1990)[F]

No. 31, *Workshop on Emergency Preparedness and Response and on Research in Accident Prevention, Preparedness and Response* (1990)[F]

No. 35, *A Survey of New Chemicals Notification Procedures in OECD Member Countries* (1990)[F]

No. 36, *Scientific Criteria for Validation of In Vitro Toxicity Tests* (1990)[F]

No. 39, *International Survey on Biotechnology Use and Regulations* (1990)[F]

Users Guide to Hazardous Substance Data Banks Available in OECD Member Countries, OCDE/GD(91)102 (1991)[F]

Users Guide to Information Systems Useful to Emergency Planners and Responders Available in OECD Member Countries, OCDE/GD(91)103 (1991)[F]

[The two Users Guides have been translated into Spanish by the United Nations Environment Programme's Industry and Environment centre (UNEP IE).]

No. 43, *International Directory of Emergency Response Centres* (1992)[F]

[The International Directory is a co-operative project of OECD and UNEP IE, which plan to publish a second edition. The emergency response centres listed in this Directory are located in both OECD and non-OECD countries.]

No. 44, *Workshop on Prevention of Accidents Involving Hazardous Substances: The Role of the Human Factor in Plant Operations* (1992)

No. 45, *The OECD Principles of Good Laboratory Practice* (1992)[F, GLP]

No. 46, *Guides for Compliance Monitoring Procedures for Good Laboratory Practice* (1992)[F, GLP]

[superseded by No. 110, *Revised Guides for Compliance Monitoring Procedures for Good Laboratory Practice* (1995)]

No. 47, *Guidance for the Conduct of Laboratory Inspections and Study Audits* (1992)[F, GLP]

[superseded by No. 111, *Revised Guidance for the Conduct of Laboratory Inspections and Study Audits* (1995)]

No. 48, *Quality Assurance and GLP* (1992)[F, GLP]

No. 49, *Compliance of Laboratory Suppliers with GLP Principles* (1992)[F, GLP]

No. 50, *The Application of the GLP Principles to Field Studies* (1992)[F, GLP]

No. 51, *Guiding Principles for Chemical Accident Prevention, Preparedness and Response: Guidance for Public Authorities, Industry, Labour and Others for the Establishment of Programmes and Policies related to Prevention of, Preparedness for, and Response to Accidents Involving Hazardous Substances* (1992)[F]

[The Guiding Principles are also available in Russian. They are being translated into Spanish, and may also be translated into other languages. For more information, please contact the Environmental Health and Safety Division.]

No. 52, *Report of the OECD Workshop on Monitoring of Organisms Introduced into the Environment* (1992)

No. 58, *Report of the OECD Workshop on Quantitative Structure Activity Relationships (QSARS) in Aquatic Effects Assessment* (1992)

No. 59, *Report of the OECD Workshop on the Extrapolation of Laboratory Aquatic Toxicity Data to the Real Environment* (1992)

No. 60, *Report of the OECD Workshop on Effects Assessment of Chemicals in Sediment* (1992)

No. 65, *Risk Reduction Monograph No. 1: Lead* (1993)

No. 66, *Report of the OECD Workshop on Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection* (1993)

[The OECD's Chemical Accidents Programme and Road Transport Research Programme co-operated in organising this workshop.]

No. 67, *Application of Structure-Activity Relationships to the Estimation of Properties Important in Exposure Assessment* (1993)

No. 68, *Structure-Activity Relationships for Biodegradation* (1993)

No. 69, *Report of the OECD Workshop on the Application of Simple Models for Exposure Assessment* (1993)

No. 70, *Occupational and Consumer Exposure Assessments* (1993)

No. 73, *The Application of the GLP Principles to Short-term Studies* (1993)[F, GLP]

No. 74, *The Role and Responsibilities of the Study Director in GLP Studies* (1993)[F, GLP]

No. 76, *OECD Series on the Test Guidelines Programme No. 1: Guidance Document for the Development of OECD Guidelines for Testing of Chemicals* (1993; reformatted 1995)[F]

No. 77, *Data Requirements for Pesticide Registration in OECD Member Countries: Survey Results* (1993)

No. 81, *Health Aspects of Chemical Accidents: Guidance on Chemical Accident Awareness, Preparedness and Response for Health Professionals and Emergency Responders* (1994)[F]

[Four international organisations collaborated in the preparation of this publication: the International Programme on Chemical Safety (IPCS), OECD, UNEP IE, and the World Health Organization - European Centre for Environment and Health (WHO-ECEH).]

No. 88, *US EPA/EC Joint Project on the Evaluation of (Quantitative) Structure Activity Relationships* (1994)

No. 90: *Ottawa '92: The OECD Workshop on Methods for Monitoring Organisms in the Environment* (1994)*****

No. 91: *Compendium of Methods for Monitoring Organisms in the Environment* (1994)*****

[*****Monographs No. 90 and 91 are companion documents.]

No. 92, *Guidance Document for Aquatic Effects Assessment* (1995)

No. 93, *Report of the OECD Workshop on Chemical Safety in Port Areas* (1994)

[This Workshop was co-sponsored by OECD, the International Maritime Organization (IMO) and UNEP.]

No. 94, *Report of the OECD Special Session on Chemical Accident Prevention, Preparedness and Response at Transport Interfaces* (1995)

No. 95, *Report of the OECD Workshop on Small and Medium-sized Enterprises in Relation to Chemical Accident Prevention, Preparedness and Response* (1995)

No. 98, *OECD Series on the Test Guidelines Programme No. 2: Detailed Review Paper on Biodegradability Testing* (1995)

No. 99, *Commercialisation of Agricultural Products Derived through Modern Biotechnology: Survey Results* (1995)[BIO]

No. 100, *Analysis of Information Elements Used in the Assessment of Certain Products of Modern Biotechnology* (1995)[BIO]

No. 101, *Risk Reduction Monograph No. 2: Methylene Chloride* (1994)

No. 102, *Risk Reduction Monograph No. 3: Selected Brominated Flame Retardants* (1994)

No. 103, *Risk Reduction Monograph No. 4: Mercury* (1994)

No. 104, *Risk Reduction Monograph No. 5: Cadmium* (1994)

No. 105, *Report of the OECD Workshop on Environmental Hazard/Risk Assessment* (1995)

No. 106, *Data Requirements for Biological Pesticides* (1996)

No. 107, *Report of the OECD Workshop on the Commercialisation of Agricultural Products Derived through Modern Biotechnology* (1995)[BIO]

No. 108, *Final Report on the OECD Pilot Project to Compare Pesticide Data Reviews* (1995)

No. 110, *Revised Guides for Compliance Monitoring Procedures for Good Laboratory Practice* (1995)[F, GLP]

No. 111, *Revised Guidance for the Conduct of Laboratory Inspections and Study Audits* (1995)[F, GLP]

No. 115, *Guidance for the Preparation of GLP Inspection Reports* (1995)[F, GLP]

No. 116, *The Application of the Principles of GLP to Computerised Systems* (1995)[F, GLP]

No. 117, *Industrial Products of Modern Biotechnology Intended for Release to the Environment: The Proceedings of the Fribourg Workshop* (1996)[BIO]

No. 118, *Guidance Concerning Chemical Safety in Port Areas*

[Prepared as a joint effort by the OECD and the International Maritime Organization (IMO)]

No. 120, *Consensus Document on the Biology of* Brassica Napus L *(Oilseed Rape)*
(in preparation)

No. 121, *Consensus Document on Virus Resistance through Coat Protein-Mediated Protection* (in preparation)

Priced Publications:

OECD Guidelines for Testing of Chemicals (updated 1995)[F]
(OECD No. 97 93 50 1) ISBN 92-64-14018-2 992 pages
Price in France: FF 800
Price in other countries: FF 1040 US$ 178.00 DM 300

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Safety Evaluation of Foods Derived by Modern Biotechnology: Concepts and Principles (1993)[F]
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Environmental Impacts of Aquatic Biotechnology (1995)
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Also in Preparation by the Environmental Health and Safety Division:

Activities to Reduce Pesticide Risks in OECD and FAO Member Countries

Guidance Document for the Conduct of Field Studies of Exposure of Pesticides in Use

Comparison of Ecological Hazard/Risk Assessment Schemes

Report of the SETAC/OECD Workshop on Avian Toxicology

The OECD Guidelines for the Testing of Chemicals (7th addendum)

Guidance Document on Dose Level Selection in Carcinogenicity Studies

Detailed Review Paper on Aquatic Toxicity Testing Methods

Report of the Final Ring Test of the Daphnia magna *Reproduction Study*

Report of the OECD Workshop on Risk Assessment and Risk Communication in the Context of Accident Prevention, Preparedness and Response

Report of the OECD/UN-ECE Workshop on Chemical Accidents

Guidance Concerning Health Aspects of Chemical Accidents

Guidance Concerning Accident Prevention, Preparation and Response at Transport Interfaces

Proceedings of the OECD Cadmium Workshop[*]

Consensus Document on Information Used in the Assessment of Environmental Applications Involving Pseudomonas

Consensus Document on Information Used in the Assessment of Environmental Applications Involving Rhizobiacea

Consensus Document on Information Used in the Assessment of Environmental Applications Involving Bacillus

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* Proposed for publication in the "OECD Documents" series.