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ABU DHABI PORTS

Transport, Handling and Storage of Dangerous Goods

Guidelines For Port Users

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		Section 3.2	Revised Dangerous Goods notification procedure
		Section 6.2	Revised policy for handling IMDG Class 1 goods including maximum quantities permitted on vessels in transit
		Section 8.11	Additional reference to Australian training standards

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1. INTRODUCTION

1.1 Abu Dhabi Ports Company

Abu Dhabi Ports Company (ADPC) has a responsibility under Abu Dhabi legislation to control the conditions under which Dangerous Goods are transported, handled or stored in its ports.

1.2 Purpose

These Transport, Handling and Storage of Dangerous Goods: Guidelines for Port Users ("ADPC Dangerous Goods Guidelines") have been prepared to assist port users implement the requirements of the legislation relating to Dangerous Goods applicable to ADPC Ports. They outline the relevant criteria for Dangerous Goods cargoes either as break-bulk or in freight containers and covers import, export, transhipment and dangerous goods in transit. However, these Guidelines are not intended to be a complete or comprehensive review of all statutory requirements relating to the handling of Dangerous Goods or other hazardous materials in an ADPC port. It is the responsibility of the individual port user to ensure compliance with applicable law as it may apply to its activities.

Port users should note these ADPC Dangerous Goods Guidelines constitute part of the ADPC Port Regulatory framework. Failure to comply may result in enforcement action by ADPC under its Port Management Byelaws.

1.3 Legislation

The United Nations' Model Recommendations for the Transport of Dangerous Goods (the UN Model Regulations) specifies the product testing criteria and associated classification, the packaging specifications and the labelling / marking specifications if transporting Dangerous Goods.

The International Maritime Dangerous Goods (IMDG) Code, published by the International Maritime Organization (IMO), specifies the requirements for transporting Dangerous Goods by sea. Recent amendments to the IMDG Code have extended its scope and application to include port operations, notably in relation to training. In addition, the IMO has published recommendations and Guidelines to facilitate IMDG Code compliance by ports, notably MSC Circular MSC.1/Circ.1216.

The essential requirements of the UN Model Regulations and the IMDG Code are fully harmonized. The variation lies in the need to address, through the IMDG Code, the issues that arise through transporting Dangerous Goods by sea as opposed to land, for example the IMDG Code requires additional labelling on Dangerous Goods entering a port

area to reflect environmental impact whereas this is not specifically required by the UN Model Regulations.

Reference should also be made to the Abu Dhabi Environment Health and Safety Management System (EHSMS) Code of Practice 1.0 – Hazardous Materials.

1.4 Definitions

1.4.1 Dangerous Cargoes

The definition of 'Dangerous Cargoes' for the purposes of shipping is broader than that used for land transport. The formal definition of Dangerous Cargoes includes:

- oils covered by Annex I of the International Convention for the Prevention of Pollution from ships (MARPOL);
- gases covered by the IMO Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk;
- noxious liquid substances or chemicals, including wastes, covered by the IMO Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and Annex II of MARPOL;
- Dangerous Goods, hazardous and harmful substances, materials and articles including environmentally hazardous substances (marine pollutants) and wastes covered by the IMDG Code; and
- solid bulk materials possessing chemical hazards and solid bulk materials hazardous only in bulk (MHBs), including wastes covered by Appendix B of the IMO Code of Safe Practice for Solid Bulk Cargoes (BC Code).

1.4.2 Dangerous Goods

Dangerous Goods as determined by UN criteria are the major subset of Dangerous Cargoes.

1.5 Coming Into Force

These ADPC Dangerous Goods Guidelines come into force on 1 October 2014 and replace all previous guidelines.

2.1 Classification

Dangerous Goods are classified by a specialist committee of the UN. The classification is determined by the type of risk involved although it should be noted that the numerical order of the UN classes is not that of the degree of danger.

The objective of the UN definitions is to indicate which goods are dangerous and in which class, according to their specific characteristics, they should be included. These definitions have been devised so as to provide a common pattern which it should prove possible to follow in the various national and international regulations.

Dangerous Goods (including mixtures and solutions) are assigned to one of nine classes according to the hazard or the most predominant of the hazards they present. Some of these classes are subdivided into divisions. These classes and divisions are described in Table 1 below.

Table 1: Classification of Dangerous Goods

Classification	Description
Class 1:	Explosives
- Division 1.1	Substances and articles which have a mass explosion hazard
- Division 1.2	Substances and articles which have a projection hazard but not a mass explosion hazard
- Division 1.3	Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
- Division 1.4	Substances and articles which present no significant hazard
- Division 1.5	Very insensitive substances which have a mass explosion hazard
- Division 1.6	Extremely insensitive articles which do not have a mass explosion hazard

Classification	Description
Class 2:	Gases
- Division 2.1	Flammable gases
- Division 2.2	Non-flammable, non-toxic gases
- Division 2.3	Toxic gases
Class 3:	Flammable Liquids
Class 4:	Flammable solids; substances liable to spontaneous combustion; substances which, on contact with water, emit flammable gases
- Division 4.1	Flammable solids, self-reactive substances and solid desensitised explosives
- Division 4.2	Substances liable to spontaneous combustion
- Division 4.3	Substances which in contact with water emit flammable gases
Class 5:	Oxidizing substances and organic peroxides
- Division 5.1	Oxidizing substances
- Division 5.2	Organic peroxides
Class 6:	Toxic and infectious substances
- Division 6.1	Toxic substances
- Division 6.2	Infectious substances
Class 7:	Radioactive material
Class 8:	Corrosive substances
Class 9:	Miscellaneous dangerous substances and articles

For packing purposes, substances other than those of Classes 1, 2 and 7, divisions 5.2 and 6.2 and other than self-reactive substances of Division 4.1 are assigned to three Packing Groups in accordance with the degree of danger they present:

- Packing Group I: Substances presenting high danger;
- Packing Group II: Substances presenting medium danger; and
- Packing Group III: Substances presenting low danger.

2.2 UN Numbers and Proper Shipping Numbers

Dangerous Goods are assigned to UN numbers and Proper Shipping Names (PSN) according to their hazard classification and their composition. The precise information is crucial during transport and it ensures the correct handling, stowage and segregation. The PSN is mandatory for transport documentation and labelling and no alternatives or variations are permitted.

Goods commonly carried onboard ships are listed in the IMDG Code. Where an article or substance is specifically listed by name, it is identified in transport by the PSN in the Dangerous Goods List; Volume 2 Part 3 of the IMDG Code. For Dangerous Goods not specifically listed by name "generic" or "not otherwise specified" entries are provided in the IMDG Code to identify the article or substance in transport.

Each entry in the Dangerous Goods List in the IMDG Code is characterized by a UN number. This list also contains relevant information for each entry, such as hazard class, subsidiary risk(s) (if any), Packing Group (where assigned), packing and tank transport requirements, etc.

A mixture or solution containing a single dangerous substance specifically listed by name in the Dangerous Goods List and one or more substances not subject to the IMDG Code is assigned the UN number and PSN of the dangerous substance, unless:

(a) The mixture or solution is specifically identified by name in the IMDG Code;

(b) The entry in the IMDG Code specifically indicates that it applies only to the pure substance;

(c) The hazard class or division, physical state or packing group of the solution or mixture is different from that of the dangerous substances; or

(d) There is significant change in the measures to be taken in emergencies.

In those other cases, except the one described in (a), the mixture or solution is treated as a dangerous substance not specifically listed by name in the Dangerous Goods List.

For a solution or mixture when the hazard class, the physical state or the Packing Group is changed in comparison with the listed substance, the appropriate 'Not Otherwise Specified' (NOS) entry is used including its packaging and labelling provisions.

The PSN is that portion of the entry most accurately describing the goods in the Dangerous Goods List, which is shown in upper case characters (plus any numbers, Greek letters, "sec", "tert", and the letters m, n, o, p, which form an integral part of the name). An alternative PSN may be shown in brackets following the main PSN [e.g., ETHANOL (ETHYL ALCOHOL)]. Portions of an entry appearing in lower case need not be considered as part of the PSN but may be used.

3. GENERAL REQUIREMENTS

3.1 Operational Procedures

As appropriate, each terminal or berth operator is required to develop and implement operational procedures for the transport handling or storage of Dangerous Goods. These procedures must form part of a Safety Management System that enables the identification, assessment and control of risks associated with the handling of Dangerous Goods, and take due account of Best International Practices, in particular IMO recommendations, in relation to safe transport of Dangerous Cargoes and related activities in port areas.

3.2 Notifications

ADPC must be advised of all Dangerous Goods to be imported or exported by vessel, including transhipments and/or goods transiting the ports. In the case of Dangerous Goods arriving by sea, the method of notification is through the Ships Pre-Arrival Security Information Form, which must be submitted not less than 48 hours prior to arrival. In the case of Dangerous Goods arriving by land, for export, notification should be submitted to the terminal operator in accordance with the terminal operator's terms and conditions.

3.3 Reporting of Incidents

Any incident involving Dangerous Goods in a port must immediately be reported to ADPC, initially by telephone on 800 112, and, if appropriate, the terminal operator.

3.4 Packaging and Labelling

All Dangerous Goods delivered to or from a port area must be packaged, marked, labelled and placarded in accordance with the IMDG Code.

3.5 Segregation and Safe Storage of Dangerous Goods

Certain Dangerous Goods are incompatible with other goods. They may also present a risk if exposed to high temperatures, solar radiation or moisture etc.

Each terminal or berth operator handling Dangerous Goods must ensure the required segregation and environmental conditions are maintained at all times, as determined through reference to the IMDG Code or the UN Model Regulations, as appropriate. This includes Dangerous Goods being transported through a port area. The Material Safety Data Sheet (MSDS) for each substance or product provides more detailed information on the conditions for handling. Time limitations on the storage of Dangerous Goods in an ADPC port are defined in Section 5.

3.6 Area for Damaged Dangerous Goods and Disposal

Each terminal or berth operator handling Dangerous Goods must ensure that an area is designated for the storage of any damaged Dangerous Goods Cargo Transport Units (CTU). This area must be with provided with suitable facilities to enable the:

(a) repacking of CTUs; and

(b) the separation and disposal of waste contaminated by Dangerous Goods.

3.7 Dangerous Goods Advisor

Each terminal or berth operator transporting, handling or storing Dangerous Goods must appoint a Dangerous Goods Advisor.

The functions of a Dangerous Goods advisor include:

(a) monitoring compliance with applicable law governing the transport, handling or storage of Dangerous Goods in a port area and these ADPC Dangerous Goods Guidelines;

(b) monitoring the following practices and procedures relating to the activities of the terminal or berth operator which concern Dangerous Goods:

.1 the procedures for compliance with the regulations governing the identification of Dangerous Goods;

.2 the procedures for checking the equipment used in connection with the transport, handling or storage of Dangerous Goods;

.3 proper training of personnel and the maintenance of records of such training (see Section 8);

.4 the implementation of proper emergency procedures in the event of any accident or incident that may affect safety during the transport, handling or storage of Dangerous Goods;

.5 the investigation of and, where appropriate, preparation of reports on serious incidents or infringements recorded during the transport, handling or storage of Dangerous Goods;

.6 the implementation of appropriate measures to avoid the recurrence of incidents or infringements;

.7 the account taken of the legal prescriptions and special requirements associated with the transport, handling or storage of Dangerous Goods in the choice and use of sub-contractors or third parties;

.8 verification that personnel involved in the transport, handling or storage of Dangerous Goods have detailed operational procedures and instructions;

.9 the introduction of measures to increase awareness of the risks inherent in the transport, handling or storage of Dangerous Goods,

.10 the implementation of verification procedures to ensure the presence of the documents and safety equipment that must accompany any vehicle leaving a port area transporting Dangerous Goods;

.11 the compliance of the documents and equipment required to accompany any vehicle transporting Dangerous Goods with health and safety regulations; and

.12 the implementation of verification procedures to ensure compliance with legislation governing loading and unloading of Dangerous Goods from a vessel.

Two or more individuals may be appointed to fulfill the role of the Dangerous Goods Advisor subject to each being appropriately trained and all the functions listed above being addressed.

3.8 Emergency Preparation

Each terminal or berth operator must have a written emergency plan in place for dealing with any dangerous situation arising from the transport or handling of Dangerous Goods.

The emergency plan must be developed in consultation with the emergency services authorities and submitted to ADPC for review.

All persons engaged in transport or handlinging Dangerous Goods in a port area must be aware of the emergency plan, and competent in operating any necessary response equipment that they may be required to use.

Any safety equipment that may be required for an emergency must be readily available.

3.9 Inspections and Audits

ADPC must be granted reasonable access to any terminal or berth established in an ADPC port to undertake inspections and audits to evaluate compliance with these ADPC Dangerous Goods Guidelines.

3.10 Empty, Un-Cleaned Cargo Transport Units

Throughout this ADPC Dangerous Goods Guidelines, empty CTUs retaining residues of Dangerous Goods, or loaded with empty uncleaned packages, or empty uncleaned bulk containers, must comply with the provisions applicable to the goods previously contained in that CTU.

4. SUPPLY OF INFORMATION

4.1 Overview

ADPC must be notified prior to any Dangerous Goods entering a port, by sea or land. This includes Dangerous Goods in transit, or Dangerous Goods to be loaded or unloaded at a terminal not controlled by ADPC. This notification is crucial to the safe management of a port, particularly in the case of an incident.

4.2 Entry of Dangerous Goods by Sea

The notification of Dangerous Goods entering port on board a vessel must be submitted to ADPC at least 48 hours prior to its arrival. A reduced period of notification may be accepted at the discretion of the Harbour Master, for example where a vessel regularly trades to an ADPC port.

4.3 Entry of Dangerous Goods by Land

The notification of Dangerous Goods entering a port area by land must be submitted to ADPC at least 24 hours prior to its arrival; 48 hours for IMDG Class 1 Dangerous Goods.

4.4 Accuracy of Dangerous Goods Notification

The information notified to ADPC in relation to Dangerous Goods must be accurate and in accordance with the IMDG Code. Submission of inaccurate or incomplete information constitutes an offence under the ADPC Port Management Byelaws. It may also lead to delays for the vessel and / or the cargo concerned.

4.5 Documentation

Documentation accompanying Dangerous Goods must be in accordance with the IMDG Code.

In the case of packaged Dangerous Goods, a list must be provided that shows the:

(a) PSN of the Dangerous Goods;

(b) UN number;

(c) Class or, when assigned the division of the goods, including for IMDG Class 1 Dangerous Goods, the compatibility group letter (if applicable);

(d) number and type of Packages;

(e) Packing Group;

(f) flashpoint range (as appropriate); and

(g) quantity.

4.6 Leaking CTUs

In the event that a leaking Dangerous Goods CTU is detected after the submission of a Dangerous Goods notification, the vessel Master and / or his agent must immediately amend the declaration and nominate the leaking container and / or associated issue. In addition, ADPC must be supplied with:

- The MSDS for the product(s);
- The manifest for the CTU;
- The 24 hour contact details of the:
  - Transport company;
  - Storage facility; and
  - Importer.

5. TIME LIMITATIONS

5.1 Introduction

These limitations on the storage of Dangerous Goods apply to all terminals and berths in an ADPC port. They also apply to imports, exports, transhipments and transit cargoes that are being re-stowed. Individual terminal or berth operators may establish their own limitations subject to Dangerous Goods not remaining in a port area beyond the limits defined below.

In pursuit of minimising the risk associated with the handling of Dangerous Cargoes, it is strongly recommended that the time Dangerous Goods are kept within a port area is minimised. The principle of reducing risk as far as reasonably practicable is applied in ADPC ports, and minimising the time the Dangerous Goods are held within a port area will contribute toward minimising the overall risk profile for a port.

5.2 Two Hours Maximum

All IMDG Class 1 and Class 7 Dangerous Goods CTUs, except Class 1.4 and Class 7 Low Specific Activity (LSA) cargo, must:

(a) be removed from a port area within two hours of being unloaded from a vessel; and,

(b) not enter a port area more than two hours prior to the cargo being loaded onto a vessel.

5.3 Twelve Hours Maximum

All Dangerous Goods CTUs specified in Table 2 below must:

(a) be removed from a port area within twelve hours of being unloaded from a vessel; and,

(b) not enter a port area more than twelve hours prior to the cargo being loaded onto a vessel.

Table 2: Cargoes Subject to Twelve Hour Limit

Cargo	Quantity
IMDG Class 1.4 & Class 7	Any
IMDG Class 2.1 (excluding UN 1950-Aerosols)	>500kg
IMDG Class 2.3	>500kg
IMDG Class 3 Packing Group 1	>500kg

Cargo	Quantity
IMDG Class 4 Packing Group 1	>500kg
IMDG Class 5.1 Packing Group 1	>500kg
Ammonium Nitrate (Class 5.1) UN No's 1942, 2067, 2426 and 3375	>500kg
Calcium Hypochlorite (Class 5.1) UN No's 1748,2880,3485 and 3487	>500kg
IMDG Class 6.1 Packing Group 1	>500kg
IMDG Class 8 Packing Group 1	>500kg
Dangerous Goods in break bulk.	Any

5.4 Five Days Maximum

All Dangerous Goods CTUs of IMDG Class 2, 3, 4, 5, 6, 8 or 9 other than those in Table 2 above and cargoes listed in Table 2 not exceeding 500kg mass must:

(a) be removed from a port area within five days of being unloaded from a vessel; and

(b) not enter a port area more than five days prior to the cargo being loaded onto a vessel.

5.5 Time Period

The permitted time periods defined above are calculated from the time the CTU arrives at the berth or port gate, until the time the CTU leaves the port gate, or is loaded on a vessel.

5.6 Storage

The storage of Dangerous Goods CTUs will not normally be permitted in an ADPC port beyond the time limits specified above. All Dangerous Goods CTUs requiring storage must be removed to a suitable facility offsite or suitably cleaned (see Section 3.10).

5.7 Extensions

On application ADPC may grant extensions to the time limits detailed above. Any request for extension must be supported with detailed justification for the delay in removing Dangerous Goods from a port.

6. REQUIREMENTS BY CARGO TYPE

6.1 Overview

As previously introduced, Dangerous Goods are assigned to one of nine classes according to the hazard or the most predominant of the hazards they present. These hazards may require specific measures be taken to manage risk.

6.2 IMDG Class 1 – Explosives

6.2.1 Overview

Explosives are designated as IMDG Class 1. Within IMDG Class 1, there are six Divisions. Within the Divisions, compatibility groups are assigned to define which explosive can be safely stowed and transported together.

The numbers and letters in the classification system relate to the sensitivity, mass explosion hazard and projectile hazard of a particular type of explosive. Typical commercial blasting type explosives are classified as Division 1.1 Compatibility Group D (commonly depicted as 1.1 D); detonators are typically of 1.1B or 1.4B; display fireworks generally fall under a 1.3G or 1.4G classification and shop goods varieties of fireworks are usually classified as 1.4S explosives.

Safety distances to be maintained whilst transporting or handling explosives vary according to their classification, and are based on the distance required to prevent property damage or injury should the total quantity of explosives detonate (see Section 6.2.6 below).

Critical points to note regarding ADPC policy towards Dangerous Goods are:

- the limits for explosives in port apply to and are inclusive of transit cargo;
- notification of IMDG Class 1 onboard should be submitted to ADPC at the earliest practicable opportunity, and in all circumstances at least 48 hours prior to the vessel entering port waters;
- contact the terminal operator and ensure that they have all the necessary documentation and contact details likewise at the earliest practicable opportunity, and not less than 48 hours prior to the vessel berthing.

6.2.2 Explosive Quantity

All references to explosive quantity are references to Net Explosive Quantity (NEQ) which is the actual quantity of explosive in the cargo excluding all packaging materials and non explosive components.

The maximum quantity of explosives permitted onboard a vessel using without securing special permission from ADPC is shown in Table 3.

Table 3: Maximum Quantity of Explosives Permitted on Vessel Without Special Permission

IMDG Class 1 Division	Separation Distance To Protected Place	NEQ Permitted Onboard (kilograms)
Class 1.1	10 metres	25
Class 1.2	10 metres	10
Class 1.3	10 metres	2,000
Class 1.4	10 metres	85,000
Class 1.5	10 metres	25
Class 1.6	10 metres	25

6.2.3 Special Permission for Excess Quantities of Explosives

On a case-by-case basis vessels may be granted consent permission to enter port carrying explosives in excess of the quantities shown in Table 3. This is strictly subject to securing special permission from ADPC Port Health and Safety Division, which will include compliance with the conditions outlined below. Such permission must be requested not less than 5 working days prior to the vessel entering port waters.

Under no circumstances must individual terminal operators or port managers issue any form of direction or guidance to shipping companies, or their agents, in respect of whether an individual vessel carrying excess quantities of explosives may, or may not, be granted permission to berth by ADPC.

6.2.4 Berth Designation and Marking

Explosives must only be handled at a designated berth(s). When designating an explosives berth, terminal or berth operators must take due account of:

(a) the total quantity, type and class of explosives to be transported or handled;

(b) the method of packaging, containment and stowage of the explosives;

(c) the total quantity, type and classification of other Dangerous Goods on the vessel;

(d) the geography of the port and the location of the berth within the port area;

(e) its proximity to:

.1 protected places,

.2 other vessels;

.3 other berths;

.4 main roads;

.5 the construction of the berth;

(f) the type and availability of transport for the immediate removal of explosives from the berth;

(g) the immediate availability of adequate fire-fighting resources at the berth;

(h) re-routing of land or waterborne traffic;.

(i) proximity to tanks and pipelines; and

(j) the separation distances defined in Section 6.2.6 below.

Each berth designated for the handling of explosives must be provided with markings that extend at least 15 metres from the immediate handling area.

6.2.5 Safety Requirements

The following safety requirements apply to the handling and transport of explosives in an ADPC port:

.1 Explosives must not be unloaded from a vessel unless the means of transport, by which they are to be removed from the port area, are on the terminal or berth and ready to receive them.

.2 Explosives must not be handled during the hours of darkness.

.3 Explosives of Divisions other than 1.4 must be taken directly to or from a vessel, and in no circumstances be held on a berth for more than 2 hours.

.4 Explosives of Division 1.4 should be taken directly to or from a vessel, and in no circumstances be held on a berth for more than 12 hours.

.5 Explosives must be unloaded as soon as reasonably practicable (within 2 hours of the vessel being secure at the berth).

.6 Explosives (excluding Division 1.4) must not be brought to a berth for loading onto a vessel unless the vessel is ready to receive them.

.7 Explosives of Division 1.4 must not be brought to a berth for loading onto a vessel unless the vessel is ready to receive them within 12 hours of berthing. In no circumstances are the goods to be held on a berth for more than a total of 12 hours.

.8 The handling of explosives, once commenced, must proceed without delay or interruption, except during an electrical storm.

Operations must be suspended during the storm and not resumed until it has passed.

.9 Explosives must not be handled unless they have been classified in accordance with the IMDG Code.

.10 The vessel must depart from the port area within 2 hours of completion of loading of explosives (excluding Division 1.4).

.11 A vehicle must leave the port area as soon as possible on completion of being loaded with explosives (excluding Division 1.4) and in all circumstances within 2 hours of the explosive being unloaded from the vessel.

.12 On completion of a vehicle being loaded with explosives of Division 1.4, it must leave the port area as soon as possible and within 12 hours of the explosive being unloaded from the vessel.

.13 Where more than 100kg of explosives (other than Division 1.4) are to be loaded or unloaded in the port area, a customer's representative who has immediate access to specialist advice in the case of an emergency, must be contactable by phone and be immediately available while the explosives are being loaded and / or unloaded. The phone contact to the customer representative must be verified prior to commencement of the loading / unloading of the vessel and/or vehicle. The customer's representative role should not involve a command or control position in an incident.

.14 Emergency Procedures for the terminal or berth, developed in conjunction with ADPC and the emergency services, must be in place before any explosives are handled.

.15 All non-essential persons are excluded from the immediate handling area, taking into account the separation distances defined in Section 6.2.6 below.

.16 A traffic management plan for the terminal or berth must be in place for road vehicles carrying explosives.

.17 Road vehicles carrying explosives must be at least 100 meters apart while waiting to load a vessel and/or leaving the port area.

.18 Whilst explosives are being handled, ignition sources must not be permitted in or near handling areas. Smoking must be strictly prohibited on the vessel and on the berth (except in safe areas). Notices must be displayed on the vessel and on the berth bearing the words DANGER-NO SMOKING-NO NAKED LIGHTS.

.19 Adequate and appropriate firefighting facilities and water must be immediately available on the vessel and fire hoses on it laid out ready for use (not applicable to Division 1.4 explosives).

.20 Vessel and shore personnel must receive prior instruction regarding the hazards, handling methods and emergency procedures for explosives.

.21 No bunkering of a vessel must take place whilst explosives are being handled (excluding Division 1.4).

.22 Repairs involving hot work are prohibited on the vessel or on the berth whilst explosives (excluding Division 1.4) are being transported or handled.

.23 Repairs involving engine repairs resulting in the vessel being immobilised are prohibited whilst explosives are onboard the vessel (excluding Division 1.4).

.24 If emulsion precursors are handled on the same vessel or in the same area as explosives, then the total quantity of these materials must be considered as IMDG Class 1 and the relevant separation distances must apply.

.25 Explosives must be segregated from incompatible cargoes, combustibles and other Dangerous Goods at all times.

.26 The engines and ancillary equipment of the vessel must be kept ready at all times, so that the vessel can leave the berth at short notice.

6.2.6 Separation Distances

The separation distances from protected places, including the accommodation blocks of vessels (other than the vessel handling explosives) specified in Table 4 below are to be maintained at all times whilst handling explosives in an ADPC port.

Table 4: Explosives Separation Distances

Net Explosive Quantity (kg)	Separation Distance (Metres)			
	IMDG Class 1 Division			
	1.1, 1.5, 1.6	1.2	1.3	1.4
25	10	50	10	10
50	25	50	10	10
100	33	50	10	10
200	52	52	10	10
300	68	68	10	10
400	82	82	10	10
500	95	95	10	10
1000	150	150	10	10
1500	191	191	10	10
2000	240	210	10	10
2500	257	220	87	10
3000	284	225	92	10
4000	350	235	105	10
5000	380	245	110	10
7500	424	265	125	10
10000	480	280	140	10
15000	546	300	158	10
20000	610	320	175	10
25000	650	340	186	10
30000	689	340	199	10
40000	762	360	218	10
50000	820	375	240	20
75000	940	400	273	20
100000	1040	410	300	20
150000	1300	410	375	20
200000	1400	410	405	20

6.2.7 Radio or Radar Transmitting Equipment

Only radio or radar transmitting equipment approved for this purpose may be used within 50 metres of any handling operation involving explosives.

The terminal or berth operator must satisfy itself through inspection that arrangements are in place to prevent the inadvertent operation of any fixed radio and radar installations on the vessel during the handling of explosives.

6.2.8 Vehicle Operations

Any vehicles used for the handling of explosives must be:

(a) powered using:

.1 electricity;

.2 liquid petroleum gas; or

.3 a diesel engine;

(b) fitted with spark arresters, as appropriate;

(c) inspected prior to use; and

(d) attended at all times while in a cargo compartment or storage area.

6.2.9 Temperature-Controlled Explosives

Where temperature-controlled explosives are to be handled, suitable facilities must be provided to maintain the required temperature. These facilities must be provided with suitable back up to ensure no single-point failure leads to a loss of temperature control of the explosives CTU.

6.2.10 Damaged Packages

Where a explosives CTU, or its seal, appears to be damaged, that CTU must be set aside for examination and repair or other safe disposal.

Should explosives be spilled or escape from a CTU, the spillage must be immediately collected by a competent person and suitable arrangements made for repacking or disposal.

The terminal or berth operator must ensure any incident involving explosives is immediately reported to:

(a) ADPC by telephone on 800 112; and

(b) the relevant authorities.

6.3 IMDG Class 2 – Compressed and Liquefied Gases

6.3.1 Overview

Compressed and liquefied gases are classified as Dangerous Goods due to one or more of the following:

- flammable properties when mixed with air;
- toxic properties;
- displacement of oxygen in the air and potential to cause asphyxiation;
- stored energy from being held under very high pressure; or
- potential to cause freezing when released or vapourised.

Gases are divided into three IMDG sub-classes according to their predominant hazard, namely:

- Class 2.1 Flammable Gases – e.g. LPG, acetylene, natural gas and hydrogen;
- Class 2.2 Compressed Gases (non flammable, non toxic) – e.g. nitrogen, carbon dioxide and argon; and
- Class 2.3 Toxic Gases – e.g. liquefied chlorine, sulfur dioxide and anhydrous ammonia.

It should be noted that IMDG Class 2 Dangerous Goods are not assigned a Packing Group; gases are normally packaged in metal containers for which there are specific standards dependant on the properties of each gas

6.3.2 Quantity Limits

Except in the case of toxic gases, there are no limitations on the quantities of compressed and liquefied gases that may be handled in ADPC ports. Port users must seek guidance from ADPC before bringing any toxic gases into a port area.

6.3.3 Basic Safety Requirements

The basic safety requirements applicable to the handling of gases are those listed in Section 3.

6.4 IMDG Class 3 – Flammable Liquids

6.4.1 Overview

Flammable liquids are classified as Dangerous Goods due to their ability to burn in the presence of oxygen. These are perhaps the most commonly encountered Dangerous Goods, encompassing day-to-day products such as petrol, kerosene, paints, solvents and alcohol.

Some flammable liquids are more hazardous (flammable) than others due to differences in either the temperature at which they ignite, the energy required for ignition or the range of concentrations in air at which they are flammable. For this reason each flammable liquid is assigned a Packing Group (i.e. the PG I, PG II or PG III descriptor) to indicate the relative level of hazard it presents. Packing Group designators are used to describe the relative hazard of a material, for determining the appropriate type of packaging and also to assist emergency responders in the case of incidents to ascertain the magnitude of the hazard. An extremely flammable substance such as carbon disulfide that can be ignited at 100ºC (the temperature of boiling water) is assigned Packing Group I. A lower flammability substance such as kerosene is assigned Packing Group III.

6.4.2 Limits

There are no limitations on the quantities of flammable liquids that may be handled in ADPC ports. However, any packaged flammable liquids of Packing Group I and un-cleaned CTUs are subject to time limitations in a port area (see Section 5).

6.4.3 Basic Safety Requirements

The basic safety requirements applicable to the handling of flammable liquids are those listed in Section 3.

6.5 IMDG Class 4 – Flammable Solids

6.5.1 Overview

Whilst IMDG Class 4 is generally referred to as flammable solids it encompasses the following three sub-classes:

- Class 4.1 – flammable solids (e.g. sulphur, matches);
- Class 4.2 – substances liable to spontaneous combustion (e.g. xanthates);
- Class 4.3 – substances, which in contact with water emit flammable gases (e.g. calcium carbide, iron swarf).

It is sufficient to note that the substances are generally solid and will either burn readily in the presence of oxygen (sometimes without an ignition source) or will release a flammable substance when wet.

Flammable solids are each assigned a Packing Group (i.e. the PG I, PG II or PG III descriptor).

6.5.2 Quantity Limits

There are no limitations on the quantities of packaged flammable solids that may be handled in ADPC ports. However, for flammable solids of Packing Group I, there are time limitations for the keeping of these substances in a port area (see Section 5).

6.5.3 Basic Safety Requirements

The basic safety requirements applicable to the handling of flammable solids are those listed in Section 3.

6.6 IMDG Class 5 – Oxidising Substances

6.6.1 Overview

Oxidising substances obtain their title due to the fact that (generally) when in contact with other substances capable of burning they supply oxygen to enable the other substances to burn (in place of the oxygen normally obtained from the air). Oxidising substances provide a plentiful supply of oxygen exactly where it is needed (in direct contact with the combustible material) hence substances that may burn slowly in air will often burn fiercely or even explode when in contact with an oxidising substance. The combination of oxidising substances with flammable liquids can lead to fire or explosion without the presence of an ignition source hence it is critical that oxidising substances and flammable liquids / gases / solids be separated at all times. Some oxidising substances can ignite and explode when heated or contaminated, due to rapid decomposition (Note: some organic peroxides have an explosive subsidiary risk assigned and must be handled as though they are explosives).

Oxidising Substances are divided into Oxidising Agents (Class 5.1), and Organic Peroxides (Class 5.2), the main difference being that the organic peroxides are generally unstable and require the addition of stabilisers and / or temperature control in order to be stored and handled safely. Typical examples of Oxidising Agents are ammonium nitrate and solid pool chlorine. Methyl Ethyl Ketone Peroxide (MEKP) and benzoyl peroxide are examples of organic peroxides.

Oxidising Agents are each assigned a Packing Group (i.e. the PG I, PG II or PG III descriptor). Organic peroxides are all assigned Packing Group II as they are required to be stabilised and/or temperature controlled to a level no more hazardous than Packing Group II.

6.6.2 Limits

Terminal and berth operators must consult with ADPC for advice on the quantities of oxidising substances permitted on their premises. For oxidising substances of Packing Group I, there are time limitations for the keeping of these substances in a port area (see Section 5).

6.6.3 Basic Safety Requirements

The basic safety requirements applicable to the handling of oxidising substances are those listed in Section 3.

6.6.4 Special Requirements for Ammonium Nitrate and Calcium Hypochlorite

Ammonium nitrate and calcium hypochlorite are oxidising substances that present specific risks. Their ability to decompose rapidly giving off toxic fumes and (under extreme conditions) to explode requires particular attention. The key to safe handling of these substances lies in the avoidance of fire and contamination and a sound knowledge of

their properties should an emergency response be required. To minimize the risk of fire, where possible, ignition sources should not be taken inside the exclusion zone that must be established around any vessel handling these cargoes.

Ammonium nitrate is a major component of many blasting explosives, although it is not itself an explosive. However, when mixed with the appropriate ingredients it forms an explosive. It can also demonstrate explosive properties under the combination of extreme conditions of temperature, pressure and impact.

Calcium hypochlorite is a commonly used form of solid pool chlorine. Calcium hypochlorite decomposes readily when contaminated, in contact with moisture or heated. Decomposition leads to the generation of toxic gases and heat and more rapid decomposition which can lead to explosion.

Any spillage of these materials must not be returned to the original package and / or consignment. All spillages should be recovered separately using dedicated clean, dry containers and disposed of or treated in accordance with the manufacturer's instructions.

6.7 IMDG Class 6 – Toxic Substances

6.7.1 Overview

Toxic substances may be solid or liquid. They can cause harm through inhalation, ingestion or absorption and they can vary significantly in respect to their degree of toxicity.

The use of Packing Groups (i.e. the PG I, PG II or PG III descriptor) plays a significant role for toxic substances in giving an immediate indication of the degree of harm presented by the material. Packing Group I toxic substances such as sodium cyanide are extremely toxic whilst Packing Group III toxic substances such as many of the household pesticides / herbicides present a much lower hazard.

6.7.2 Limits

There are no limitations on the quantities of packaged toxic substances that may be handled in ADPC ports. However, as with all packaged Dangerous Cargoes of Packing Group I, there are time limitations for the keeping of these substances in a port area (see Section 5).

6.7.3 Basic Safety Requirements

The basic safety requirements applicable to the handling of toxic substances are those listed in Section 3.

6.8 IMDG Class 7 – Radioactive Substances

6.8.1 Overview

Any material with a specific activity greater than 70 kBq/kg is declared radioactive.

The International Atomic Energy Agency (IAEA) Regulations for the Safe Transport of Radioactive Materials specify requirements for packages and freight containers for radioactive substances. No radioactive substances may be brought into a port area unless they conform to these requirements.

All radioactive materials are dangerous because they emit invisible radiation that may damage body tissue. This damage arises either from external irradiation or from internal irradiation following the intake of radioactive material into the body. The degree of hazard presented by radioactive materials varies significantly, being a function of the type of material, its specific activity and the duration of exposure.

6.8.2 Limits

Limitations on the quantities of packaged radioactive substances that may be handled in an ADPC port are very dependent on the type of material and how it is packed. Consequently it is not possible to indicate specific quantity limits for a port. Time restrictions relating to the keeping of radioactive substances in a port area are also applicable depending on the specifics of the material.

6.8.3 Basic Safety Requirements

The basic safety requirements applicable to the handling of radioactive substances are those listed in Section 3. Additionally, all precautions must be taken to avoid unnecessary exposure of persons to radioactive substances e.g. persons should be instructed to withdraw to a distance of 5 metres from any CTUs unless required for the handling operation. Cargo operations must be arranged so that persons spend minimal time close to the radioactive substances. Lifting apparatus used to handle CTUs should utilise spreader bars or other means to prevent the possibility of tines puncturing the containers.

6.8.4 Employment of Young Persons

No person under 18 years of age must be employed in the handling of CTUs containing radioactive substances of Class 7 Category II or III, as defined in the IMDG Code, or remain in their vicinity for significant periods.

6.8.5 Damage, Spillage and Leakage

In the event of damage to a CTU containing radioactive substances, the terminal or berth operator must:

(a) take all practicable steps to avoid contact with, or inhalation of, the radioactive substances;

(b) immediately inform ADPC and all other relevant authorities;

(c) ensure the spillage is immediately cleaned up by properly equipped and trained persons; and

(d) ensure unauthorised persons are not allowed to return to the incident

6.8.6 Additional Regulatory Requirements

Port users should note, amongst others, UAE Law No. (20) of 2006 amending Articles (1), (2), (3) and (8) in Federal Law No. (1) of 2002 concerning Regulation and Control of the use of Radioactive Sources and Protection against its hazards.

6.9 IMDG Class 8 – Corrosive Substances

6.9.1 Overview

Corrosive substances may be solid or liquid, acidic or caustic and mildly or extremely corrosive. They range from general household products through to industrial reagents. As the predominant impact of corrosives is on living tissue (organic material) and metals, the criteria upon which they are classified involves skin and metal corrosivity testing.

Some corrosives can cause severe burns to skin, eyes and mucous membranes. Many are sufficiently volatile to evolve vapour and subsequently cause harm. Others are capable of producing toxic gases when decomposed by high temperatures. In addition to a direct destructive action in contact with skin, some substances in this class are toxic and poisoning may result if they are swallowed, or if their vapour is inhaled. Some of them may penetrate the skin.

The use of Packing Groups (i.e. the PG I, PG II or PG III descriptor) plays a significant role for corrosive substances in giving an immediate indication of the degree of harm presented by the material. Packing Group I corrosive substances such as anhydrous hydrofluoric acid are extremely corrosive (small amounts absorbed through the skin can cause death) whilst Packing Group III corrosive substances such as many of the concentrated household products present a much lower hazard.

6.9.2 Limits

There are no limitations on the quantities of packaged corrosive substances that may be handled in ADPC ports. However, as with all packaged Dangerous Cargoes of Packing Group I, there are time limitations for the keeping of these substances in a port area (see Section 5).

6.9.3 Basic Safety Requirements

The basic safety requirements applicable to the handling of corrosive substances are those listed in Section 3.

6.10 IMDG Class 9 – Miscellaneous

6.10.1 Overview

IMDB Class 9 substances and articles (miscellaneous dangerous substances and articles) are substances and articles which, during transport, present a danger not covered by other classes. As such many different products, and consequential potential hazards, fall within the scope of IMDG Class 9. Examples include life saving appliances, lithium batteries and genetically modified organisms GMMOs and GMOs which do not meet the definition of infectious substances but which are capable of altering animals, plants or microbiological substances in a way not normally the result of nature reproduction.

6.10.2 Limits

There are no limitations on the quantities of packaged miscellaneous dangerous substances and articles that may be handled in ADPC ports. However, as with all packaged Dangerous Cargoes of Packing Group I, there are time limitations for the keeping of these substances in a port area (see Section 5).

6.10.3 Basic Safety Requirements

The basic safety requirements applicable to the handling of miscellaneous dangerous substances and articles are those listed in Section 3.

In addition, particular care should be taken to refer to an individual product's MSDS and comply with the requirements specified therein. Under no circumstances must it be assumed that all substances and articles that fall within the scope of IMDG Class 9 are compatible with one another, or that each substance or article so classed has a similar risk profile in respect of, amongst other things, emergency response.

7. SECURITY

7.1 Planning

All terminal or berth operators that transport, handle or store Dangerous Goods must adopt, implement and comply with a security plan. This plan may be separate from or integral to any security plan complying with the IMO International Ship and Port Security (ISPS) Code.

This plan must identify the risks within the terminal or berth, and how these risks will be managed, and cover at least the following elements:

- specific allocations of responsibilities for security to authorised personnel;
- records of Dangerous Goods or types of Dangerous Goods transported;
- review of current operations and assessment of vulnerabilities;
- clear statements of security measures, including training and operating practices;
- effective and up-to-date procedures for reporting and dealing with security threats, breaches or incidents;
- procedures for evaluating and testing security plans and periodically updating them;
- measures to ensure the security of transport information contained in the plan;
- measures to ensure that the distribution of transport documentation is limited as far as possible; and
- measures to confirm information provided to persons who have access to Dangerous Goods covered by the security plan.

7.2 Risk Assessments

Assessing the risks, categorising them, and then deploying appropriate measures to manage them is an important part of improving terminal or berth security.

A risk in the context of security is a measure of the probability that an unlawful act will be attempted and will be successful. The level of risk is affected by a combination of the threat faced and the vulnerability of the terminal or berth (see Section 7.5).

7.3 Dangerous Goods Security Advisor

A Dangerous Goods Security Advisor must be appointed to have overall charge of Dangerous Goods security at each terminal or berth.

This person need not be the Dangerous Goods Advisor (see Section 3.7), or vice versa. The Dangerous Goods Security Advisor must have the authority to secure the co-operation of colleagues and, if need be, to recommend expenditure on protective measures.

The Dangerous Goods Security Advisor must perform the following functions:

- produce the terminal or berth risk assessment, and the consequent defensive measures and planning;
- devise and maintain a search plan;
- devise and maintain evacuation plans;
- decide on the extent and direction of evacuation of a site;
- decide when to re-occupy a site;
- liaise with ADPC, local police and other emergency services; and
- arrange Dangerous Goods security training, communication cascades and drills, including training for deputies.

7.4 Access to Security Plan

Only key personnel must be allowed access to the Dangerous Goods security plan, and any supporting information must be kept secure. The security plan should include a list of people authorised to have access to this information.

7.5 High Consequence Dangerous Goods

7.5.1 Overview

High Consequence Dangerous Goods are those which have the potential for misuse in a terrorist incident and which may, as a result, produce serious consequences such as mass casualties or mass destruction.

7.5.2 Definition

As defined in the IMDG Code, the indicative list of High Consequence Dangerous Goods is shown in Table 5 below.

Table 5: High Consequence Dangerous Goods

IMDG Class	Substance / Articles
1.1	Explosives
1.2	Explosives
1.3	Compatibility group C explosives
1.4	For UN Nos. 0104, 0237, 0255, 0267, 0289, 0361, 0365, 0366, 0440, 0441, 0455, 0456 and 0500
1.5	Explosives
2.1	Flammable gases in quantities greater than 3000 litres in a CTU
2.3	Toxic gases
3	Flammable liquids of packing groups I and II in quantities greater than 3000 litres in a CTU and desensitized liquid explosives
4.1	Desensitized solid explosives
4.2	Goods of Packing Group I in quantities greater than 3000 kg or 3000 litres in a CTU
4.3	Goods of Packing Group I in quantities greater than 3000 kg or 3000 litres in a CTU
5.1	Oxidizing liquids of packing group I in quantities greater than 3000 litres in a CTU
5.1	Perchlorates, ammonium nitrate, ammonium nitrate fertilizers and ammonium nitrate emulsions or suspensions or gels in quantities greater than 3000 kg or 3000 litres in a CTU
6.1	Toxic substances of Packing Group I
6.2	Infectious substances of category A (UN Nos. 2814 and 2900)
7	Radioactive material in quantities greater than 3000 A1 (special form) or 3000 A2, as applicable, in Type B(U) or Type B(M) or Type C packages
8	Corrosive substances of packing group I in quantities greater than 3000 kg or 3000 litres in a CTU

7.5.3 ADPC Approval

Terminal or berth operators must not, under any circumstances, accept High Consequence Dangerous Goods onto their premises without securing prior approval from ADPC and all other relevant authorities, and comply with any additional security or other requirements as may be determined on a case-by-case basis by ADPC or other relevant authority.

7.6 Site Security

7.6.1 General

At terminal or berths where the quantities of Dangerous Goods handled are large enough to warrant larger areas of the site being secured, or even the whole site, the site must be fenced using a weld mesh fence of at least 2 metres high. Access to the site must be restricted to suitably trained, and authorised, persons through use of a photo-pass system.

7.6.2 Lighting

Any area used for the handling or storage of Dangerous Goods must be sufficiently lit to enable persons to read labels, placards and signs where necessary.

7.6.3 Site Access

Because of the hazards, access to any areas used for the transport or handling of Dangerous Goods needs to be controlled and restricted to those persons having a legitimate purpose. The access control system must include the following:

- a means to identify the extent of access to be permitted for each person;
- the means to account for everyone within the area at any given time; and
- the issuing of restricted access passes to visitors, or prohibiting unaccompanied access

8. TRAINING

8.1 Introduction

All shore-based personnel engaged in the transport, handling or storage of Dangerous Goods by sea must comply with the relevant training requirements of the IMDG Code commensurate with their specific job function or functions.

The successful application of international regulations concerning the transport, handling or storage of Dangerous Goods and the achievement of their objectives are greatly dependent on the appreciation by all persons concerned of the risks involved and on a detailed understanding of the regulations. This can only be achieved by properly planned and maintained initial and retraining programmes.

8.2 Shore-Based Personnel Requiring Training

Based on IMDG requirements, all persons undertaking one of the following functions in an ADPC port requires Dangerous Goods training:

- classify Dangerous Goods and identify PSNs of Dangerous Goods;
- pack Dangerous Goods in packages;
- mark, label or placard Dangerous Goods;
- pack and unpack CTUs;
- prepare transport documents for Dangerous Goods;
- offer Dangerous Goods for transport;
- accept Dangerous Goods for transport;
- handle Dangerous Goods in transport;
- prepare Dangerous Goods loading and stowage plans;
- load and unload Dangerous Goods into or from ships;
- carry Dangerous Goods in transport; or
- are otherwise involved in the transport of Dangerous Goods as determined by ADPC

8.3 Scope of Required Dangerous Goods Training

The scope, or depth, of Dangerous Goods training required is broadly dependent on the risk presented by the task performed by the individual. Consequently, any person, or persons, appointed to be a Dangerous Goods Advisor (see Section 3.7) must receive more extensive training than the driver of a truck delivering or collecting Dangerous Goods.

In many cases, workplace training provided under the procedures of a terminal or berth operator would be satisfactory for the purposes of the General Awareness Training required by Section 8.4 below.

8.4 General Awareness / Familiarization Training:

Every person engaged in a function described in Section 8.2 above must receive training designed to provide familiarity with the general provisions of Dangerous Goods transport. Such training must include:

.1 a description of the classes of Dangerous Goods;

.2 labelling, marking, placarding, packing, stowage, segregation and compatibility provisions;

.3 a description of the purpose and content of Dangerous Goods transport documents (such as the Multimodal Dangerous Goods Form and the Container / Vehicle Packing Certificate); and

.4 a description of available emergency response documents.

8.5 Function-Specific Training:

Where function-specific training is required, each person must receive detailed training concerning specific Dangerous Goods transport provisions that are applicable to the function that person performs.

The recommended training needs for Dangerous Goods function-specific training are specified in Table 6 below.

Table 6: Recommended Function-Specific Training

Function	Specific Training Requirements	Numbers in This Column Refer to the List of Related Codes and Publications in Section 8.6
Classify Dangerous Goods and identify PSN	Classification requirements, in particular — the structure of the description of substances • the classes of Dangerous Goods and the principles of their classification — the nature of the dangerous substances and articles transported (their physical, chemical and toxicological properties) • the procedure for classifying solutions and mixtures • identification by PSN • use of Dangerous Goods List	1. 4, 5 and 12
Pack Dangerous Goods in packages	Classes Packaging requirements • type of packages (IBC, large packaging, tank container and bulk packaging) • UN marking for approved packaging • segregation requirements • limited quantities. Marking and labeling First aid measures Emergency response procedures Safe handling procedures	1 and 4
Mark, label or placard Dangerous Goods	Classes Marking, labelling and placarding requirements • primary and subsidiary risk labels • marine pollutants • limited quantities.	1

Function	Specific Training Requirements	Numbers in This Column Refer to the List of Related Codes and Publications in Section 8.6
Pack/unpack cargo transport units*	Documentation Classes Marking, labelling and placarding Stowage requirements, where applicable Segregation requirements Cargo securing requirements (as contained in the IMO/ILO/UN ECE guidelines) Emergency response procedures First aid measures International Convention for Safe Containers (CSC) requirements Safe handling procedures	1,6, 7 and 8
Prepare transport documents for Dangerous Goods	Documentation requirements • transport document • container/vehicle packing certificate • competent authorities' approval • waste transport documentation • special documentation, where appropriate.	1
Offer Dangerous Goods for transport	Thorough knowledge of the IMDG Code Local requirements at loading and discharging ports • ADPC Port Regulation • national transport regulations.	1 to 10, and 12

Function	Specific Training Requirements	Numbers in This Column Refer to the List of Related Codes and Publications in Section 8.6
Accept Dangerous Goods for transport	Thorough knowledge of the IMDG Code Local requirements at loading, transiting and discharging ports • ADPC Port Regulation • national transport regulations.	1 to 12
Handle Dangerous Goods in transport	Classes and their hazards Marking, labelling and placarding Emergency response procedures First aid measures Safe handling procedures such as • use of equipment • appropriate tools • safe working loads. CSC requirements, local requirements at loading, transit and discharge ports ADPC Port Regulation National transport regulations	1, 2, 3, 6, 7, 8 and 10
Prepare Dangerous Goods loading/ stowage plans	Documentation Classes Stowage requirements Segregation requirements Document of compliance Relevant IMDG Code parts, local requirements at loading, transit and discharge ports ADPC Port Regulation	1, 10, 11, and 12

Function	Specific Training Requirements	Numbers in This Column Refer to the List of Related Codes and Publications in Section 8.6
Load/unload Dangerous Goods into/from ships	Classes and their hazards Marking, labelling and placarding Emergency response procedures First aid measures Safe handling procedures such as • use of equipment • appropriate tools • safe working loads Cargo securing requirements CSC requirements, local requirements at loading, transit and discharge ports ADPC Port Regulation	1, 2, 3, 7, 9, 10 and 12
Carry Dangerous Goods	Documentation Classes Marking, labelling and placarding Stowage requirements, where applicable Segregation requirements Local requirements at loading, transit and discharge ports • ADPC Port Regulation • national transport regulations Cargo securing requirements (as contained in the IMO/ILO/UN ECE guidelines) Emergency response procedures First aid measures CSC requirements Safe handling procedures	1, 2, 3, 6, 7, 10, 11 and 12

Function	Specific Training Requirements	Numbers in This Column Refer to the List of Related Codes and Publications in Section 8.6
Are otherwise involved in the transport of Dangerous Goods, as determined by the competent authority	As required by ADPC commensurate with the task assigned	

8.6 Related Codes and Publications for Function-Specific Training

The Codes and Publications referenced in Table 6 above are as follows:

1. International Maritime Dangerous Goods (IMDG) Code, as amended.
2. The EmS Guide: Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS), as amended.
3. Medical First Aid Guide for Use in Accidents involving Dangerous Goods (MFAG), as amended.
4. United Nations Recommendations on the Transport of Dangerous Goods-Model Regulations, as amended.
5. United Nations Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria, as amended.
6. The IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs).
7. Recommendations on the Safe Transport of Dangerous Cargoes and Related Activities in Port Areas.
8. International Convention for Safe Containers (CSC), 1972, as amended.
9. Code of Safe Practice for Cargo Stowage and Securing (CSS Code), as amended.
10. The Recommendations on the Safe Use of Pesticides in Ships, as amended.
11. International Convention for the Safety of Life at Sea (SOLAS) 1974, as amended.

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

8.7 Safety training

Commensurate with the risk of exposure in the event of a release and the functions performed, each person should receive training on:

.1 methods and procedures for accident avoidance, such as proper use of package-handling equipment and appropriate methods of stowage of Dangerous Goods;

.2 available emergency response information and how to use it;

.3 general dangers presented by the various classes of Dangerous Goods and how to prevent exposure to those hazards, including, if appropriate, the use of personal protective clothing and equipment; and

.4 immediate procedures to be followed in the event of an unintentional release of Dangerous Goods, including any emergency response procedures for which the person is responsible and personal protection procedures to be followed.

8.8 Security Training

The IMDG Code requires that port facility personnel engaged in the transport of Dangerous Goods are aware of the security requirements for such goods commensurate with their responsibilities.

Moreover, the IMDG Code states that the training of port facility personnel having specific duties, engaged in the transport of Dangerous Goods, should also include elements of security awareness related to those goods.

Each terminal or berth operator, as appropriate, must ensure the security training requirements outlined above are fulfilled by all relevant persons.

8.9 ADPC Standards and Approval

The Dangerous Goods training programmes of each terminal or berth operator must be in accordance with ADPC standards, as may be adopted from time to time, and approved by ADPC. To secure approval, it must be demonstrated that:

.1 The training program or training system is carried out under controlled conditions regarding all its training aspects;

.2 The defined learning objectives and the aimed level of competencies are met;

.3 The training provider has appropriate resources and technical means available to deliver the training program or training system; and

.4 The training provider has implemented evaluation and assessment schemes to adequately verify the achievement of the targeted standards of competency.

8.10 Maintenance of Training Records

Each terminal or berth operator, as appropriate, must maintain records of all Dangerous Goods training. These records must be made available to the employee and ADPC, if requested.

8.11 Additional Training Resources

There are a number of resources available that may be referenced by terminal or berth operators to develop training packages to comply with the requirements of the ADPC Dangerous Goods regulations. These include:

- IMO Model Course 1.10 (Dangerous, Hazardous and Harmful Cargoes – 2002 edition) - if this publication is used care must be taken to ensure the content is updated to reflect current requirements;
- IMO Model Course 3.18 (Safe packing of Cargo Transport Units – 2001 edition);
- Container Handbook – Cargo Loss Prevention Information, Published by German Marine Insurers (Gesamtverband der Deutschen);
- IMDG – Amendment 34 Training Program: Published by the International Vessel Operators Hazardous Materials Association (VOHMA);
- IMDG – Amendment 34 General Awareness Training Program: Published by VOHMA;
- Dangerous, Hazardous and Harmful Cargoes – Handbook: Published by the Australian Maritime Safety Authority;
- DNV - Standard for Certification No. 3.305, Competence of Shore-Side Personnel Handling Dangerous Goods
- Australian National Training Authority – Transport and Distribution Training Package TDT02 (Stevedoring), Units. TDTD397C Handle Dangerous Goods / Hazardous Substances, TDTD1597B Identify and Label Explosives and Dangerous Goods.