

RESOLUTION A.537(13) adopted on 17 November 1983  
TRAINING OF OFFICERS AND RATINGS RESPONSIBLE FOR CARGO  
HANDLING ON SHIPS CARRYING DANGEROUS AND HAZARDOUS  
SUBSTANCES IN SOLID FORM IN BULK OR IN PACKAGED FORM

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THE ASSEMBLY,

RECALLING Article 16(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations concerning maritime safety,

RECALLING ALSO resolutions 11 and 13 of the International Conference on Training and Certification of Seafarers, 1978, which invite the Organization to consider provisions concerning the handling of hazardous or noxious dry chemicals in bulk and the training of officers and ratings of ships carrying dangerous and hazardous cargoes other than in bulk,

BEING OF THE OPINION that the usefulness of the International Maritime Dangerous Goods Code and the Code of Safe Practice for Solid Bulk Cargoes would be greatly enhanced through pertinent training of officers and ratings,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its forty-eighth session,

1. ADOPTS:

- (a) The Recommendation on Training of Officers and Ratings Responsible for Cargo Handling on Ships Carrying Dangerous and Hazardous Substances in Solid Form in Bulk, set out in Annex 1 to the present resolution; and
- (b) The Recommendation on Training of Officers and Ratings Responsible for Cargo Handling on Ships Carrying Dangerous and Hazardous Substances in Packaged Form, set out in Annex 2 to the present resolution;

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2. RECOMMENDS Member Governments to take account of the guidance contained in Annexes 1 and 2 to the present resolution when considering training of officers and ratings.

## ANNEX 1

### RECOMMENDATION ON TRAINING OF OFFICERS AND RATINGS RESPONSIBLE FOR CARGO HANDLING ON SHIPS CARRYING DANGEROUS AND HAZARDOUS SUBSTANCES IN SOLID FORM IN BULK

#### 1 Preamble

1.1 Training should be divided into two parts, a general part on the principles involved and a part on the application of such principles to ship operation. Any of this training may be given at sea or ashore. Such training should be supplemented by practical instruction at sea and, where appropriate, in a suitable shore-based installation. All training and instruction should be given by properly qualified personnel.

#### 2 Principles

##### 2.1 Elementary science.

2.1.1 The important physical characteristics and chemical properties of dangerous and hazardous substances, sufficient to give a basic understanding of the intrinsic hazards and risks involved.

##### 2.2 Classification of materials possessing chemical hazards.

2.2.1 IMO classes 4-9 and materials hazardous only in bulk (MHB). The hazards associated with each class.

##### 2.3 Health hazards.

2.3.1 Dangers from skin contact, inhalation, ingestion and radiation.

##### 2.4 Conventions, regulations and recommendations.

2.4.1 General familiarization with the relevant requirements of chapters II-2 and VII of the 1974 SOLAS Convention.

2.4.2 General use of and familiarization with the Code of Safe Practice for Solid Bulk Cargoes (BC Code) with particular reference to:

- .1 safety of personnel including safety equipment, measuring instruments, their use and practical application, and interpretation of results;
- .2 hazards from cargoes which may liquefy; and
- .3 materials possessing chemical hazards.

2.4.3 General familiarization with the IMO Recommendations on the Safe Transport, Handling and Storage of Dangerous Substances in Port Areas.

3 Shipboard application

3.1 Handling, stowage and segregation.

3.1.1 Class 4.1 - Flammable solids

Class 4.2 - Flammable solids or substances liable to spontaneous combustion

Class 4.3 - Flammable solids or substances which in contact with water emit flammable gases

Measures used to prevent heating, ignition or the emission of toxic or flammable gases.

3.1.2 Class 5.1 - Oxidizing substances

Reaction with acids.

Sensitivity to heat.

Explosive decomposition.

Separation from combustible materials.

3.1.3 Class 6.1 - Poisonous (toxic) substances

Contamination of foodstuffs.

Working areas and living accommodation.

Ventilation.

3.1.4 Class 7 - Radioactive materials

Types of ores and concentrates.

Full load shipments.

Segregation.

Decontamination

3.1.5 Class 8 - Corrosives

Dangers from wetted substances.

3.1.6 Class 9 - Miscellaneous dangerous substances

Examples and associated hazards.

3.1.7 Materials hazardous only in bulk (MHB)

Emission of flammable or poisonous gases when wet.

Spontaneous heating.

Oxygen depletion.

Anaerobic degradation with methane emission.

3.2 Safety precautions and emergency procedures.

3.2.1 Electrical safety in cargo spaces.

3.2.2 Precautions to be taken for entry into enclosed spaces that may contain oxygen-depleted, poisonous or flammable atmospheres.

3.2.3 The possible effects of fire in shipments of substances of each class.

3.2.4 Emergency Procedures for Ships Carrying Dangerous Goods.

Emergency plans and procedures to be followed in case of incidents involving dangerous and hazardous substances. The use of individual entries in the Code of Safe Practice for Solid Bulk Cargoes in this respect.

3.3 Medical first aid.

3.3.1 The IMO Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG).

Use and application in association with other guides.

Medical advice by radio.



## ANNEX 2

### RECOMMENDATION ON TRAINING OF OFFICERS AND RATINGS RESPONSIBLE FOR CARGO HANDLING ON SHIPS CARRYING DANGEROUS AND HAZARDOUS SUBSTANCES IN PACKAGED FORM

#### 1 Preamble

1.1 Training should be divided into two parts, a general part on the principles involved and a part on the application of such principles to ship operation. Any of this training may be given at sea or ashore. Such training should be supplemented by practical instruction at sea and, where appropriate in a suitable shore-based installation. All training and instruction should be given by properly qualified personnel.

#### 2 Principles

##### 2.1 Elementary science.

2.1.1 The important physical characteristics and chemical properties of dangerous and hazardous substances, sufficient to give a basic understanding of the intrinsic hazards and risks involved.

##### 2.2 Classification of dangerous and hazardous substances and materials possessing chemical hazards.

2.2.1 IMO classes 1-9 and the hazards associated with each class. Materials hazardous only in bulk (MHB)

##### 2.3 Health hazards.

Dangers from skin contact, inhalation, ingestion and radiation.

##### 2.4 Conventions, regulations and recommendations.

2.4.1 General familiarization with the relevant requirements of Chapters II-2 and VII of the 1974 SOLAS Convention and of Annex III of the 1973/78 MARPOL instrument.

2.4.2 General familiarization with the IMO Recommendations on the Safe Transport, Handling and Storage of Dangerous Substances in Port Areas.

##### 2.5 General use of and familiarization with the International Maritime Dangerous Goods (IMDG) Code.

2.5.1 Declaration, documentation, packing, labelling and placarding. Freight container and vehicle packing. Portable tanks, tank containers and road tank vehicles, and other transport units for dangerous substances.

2.5.2 General requirements for stowage, securing, separation and segregation in different ship types.

General cargo ships.

Ro-ro ships.

Container ships.

Shipborne barges on barge-carrying ships.

Combination carriers.

2.5.3 Safety of personnel including safety equipment, measuring instruments, their use and practical application and interpretation of results.

3 Shipboard application

3.1 Handling, stowage and segregation.

3.1.1 Class 1 - Explosives

Hazard divisions, compatibility groups and stowage categories.

Suitability of cargo spaces.

Magazines.

Security.

Segregation within class 1.

3.1.2 Class 2 - Gases (compressed, liquefied or dissolved under pressure)  
flammable, non-flammable and toxic

Types of pressure vessels and portable tanks.

Relief and closing devices.

3.1.3 Class 3 - Flammable liquids

Classes.

Receptacles, tank containers and portable tanks.

Road tank vehicles.

Empty receptacles.

Ventilation and drainage of compartments.

3.1.4 Class 4.1 - Flammable solids

Class 4.2 - Flammable solids or substances liable to spontaneous  
combustion

Class 4.3 - Flammable solids or substances which in contact with water  
emit flammable gases

Measures used to prevent heating, ignition, or the emission of toxic or  
flammable gases.



3.1.5 Class 5 - Oxidizing substances (agents) and organic peroxides

Reaction with acids.

Sensitivity to heat.

Explosive decomposition.

Prevention of spillage.

Separation from combustible materials.

3.1.6 Class 6 - Poisonous (toxic) and infectious substances

Prevention of leakage.

Contamination of foodstuffs.

Working areas and living accommodation.

Ventilation.

3.1.7 Class 7 - Radioactive substances

Types of packages.

Full load shipments.

Segregation.

Decontamination.

Transport index.

Stowage limitations.

3.1.8 Class 8 - Corrosives

Dangers from leakage and spillage.

Dangers from wetted substances.

3.1.9 Class 9 - Miscellaneous dangerous substances

Examples and associated hazards.

3.1.10 Materials hazardous only in bulk (MHB)

Examples and associated hazards.

3.2 Safety precautions and emergency procedures.

3.2.1 Electrical safety in cargo spaces.

3.2.2 Precautions to be taken for entry into enclosed spaces that may contain oxygen-depleted, poisonous or flammable atmospheres.

3.2.3 The possible effects of spillage or fire in shipments of substances of each class.

3.2.4 Consideration of events on deck or below deck.

3.2.5 IMO Emergency Procedures for Ships Carrying Dangerous Goods.

Emergency plans and procedures to be followed in case of incidents involving dangerous substances.

3.3 Medical first aid

3.3.1 The IMO Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG).

Use and application in association with other guides.

Medical advice by radio.

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