

# The IMO instruments for ensure safety transportation of dangerous goods

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**ABSTRACT:** International Maritime Organization and Governments should have the possibility to establish permanent arrangements in order to ensure the safe transportation of dangerous goods. The successful application of regulations concerning the transport of dangerous goods is greatly depend on the appreciation by all persons concerned of the risks involved and on a detailed understanding of the regulations.

## 1 INTRODUCTION

The International Maritime Organization (IMO) is a technical organization established in 1958. The International Maritime Organization plays an important role in the promotion of maritime safety and the prevention of marine pollution from ships. The organization has dealing with the following subjects: ship design and equipment, safety of navigation, carriage of dangerous goods, solid cargoes and containers, bulk liquids and gases, radiocommunication, search and rescue, fire protection, standards of training, documentation and formalities required in international shipping.

To have the greatest effect on safety of life, prevention of serious injury, protection of the marine environment the following items are taken into account as higher priority: measures to promote the widest possible implementation and enforcement of IMO instruments by the shipping community, measures aimed at substantially preventing maritime casualties or marine pollution incidents, measures following a series of incidents causing or indicating risk of loss of life, significant injuries to persons, measures aimed at improving the safety and health of ship's crews and personnel, measures to correct significant inadequacies identified in existing instruments.

Some goods transported by sea can present a hazard during transport because of their chemical nature. There are classified as dangerous goods in the International Maritime Dangerous Goods Code

(IMDG Code) (International Maritime Organization 2004).

The term "dangerous goods" includes any empty uncleanness packaging (such as tank-containers, receptacles, intermediate bulk containers (IBC's), bulk packaging, portable tanks or tank vehicles) which previously contained dangerous goods, unless the packaging have been sufficiently cleaned of residue of the dangerous cargoes and purged of vapours so as to nullify any hazard or has been filled with a substances not classified as being dangerous.

The transport of dangerous goods by sea is regulated in order to prevent injury to persons or damage to ships and their cargoes.

The science and technology has led to improve ship's construction, better ventilation, and fire-fighting equipment. The specific requirements pertaining to the carriage of dangerous goods contribute to the enhancement of the safe and efficient of these cargoes.

The majority of shipping accidents is attributable to human or organisational error; generally the human elements play important role of all accidents.

## 2 IMO INSTRUMENTS

### 2.1 *Conventions and Codes*

The main task of IMO is to develop a comprehensive body of international conventions, codes and recommendations. The most important conventions are accepted and implemented by

countries whose combined merchant fleets represent 98% of the world. The International Maritime Organization has adopted over the years a number of internationally recognised codes and guides, which are of direct relevance to the safe and secure transport and handling of dangerous cargoes in port areas, and which may serve as valuable source of information in the development of national legal requirements.

In 1929 International Conference for the Safety of Life at Sea recognised the need for international regulation for the transport of dangerous goods. A lot of countries have taken measures to regulate the transport of dangerous goods. The various recommendations, rules and codes used in the identification and labelling of dangerous goods, the provision for packaging and stowage varied from country to country created difficulties for all concerned with the transport of such goods. The classification of dangerous goods and general provisions concerning listing, labelling were adopted in 1948. The International Convention for the Safety of Life at Sea (SOLAS Convention) is the most important international convention dealing with maritime safety. SOLAS in a present version was adopted in 1974 and entered in force in 1980 (International Maritime Organization 2004). The provisions of Chapter VII of the Convention "Carriage of dangerous goods in packed form or in solid form in bulk" contain the main regulations concerning the transport the dangerous goods by sea.

To minimising the risk of negligent or incidental release of marine pollutants transported by sea The International Convention for the Prevention of Pollution from ships (MARPOL 73/78) was adopted and entered into force on 2 October 1983 (International Maritime Organization 2005). As a further step to regulate the carriage of dangerous goods by sea was approval by Maritime Safety Committee the International Maritime Dangerous Goods (IMDG Code) in 1965. The IMDG Code amplifies the requirements of both conventions and has become the authoritative text on all aspects of handling packed dangerous goods and marine pollutants by sea. Since 1 January 2004, the IMDG Code has attained mandatory status. It is necessary to continue work on the amendments to the IMDG Code, taking into account technological developments, changes to the chemical classifications, practices and procedures of maritime countries.

However, the present periodicity of amendments to the Code cause problems of implementation in some countries which had difficulties in updating their national regulation every two years.

## 2.2 *Training of personnel*

The cargoes received on the ship equally govern the safety of the ship and crew. The successful application of regulation concerning the transport of dangerous goods is greatly depend on the appreciation by all persons concerned of the risks involved and on a detailed understanding of the regulations.

The shore-side operations often take place inland, many miles from the ship. The personnel loading the containers may unaware of the more extreme condition and force to which the content of Cargo Transport Units (CTU's) may be subject its sea voyage. The shore-based personnel engaged in the preparation of dangerous goods for sea transport must receive training in the contents of dangerous goods provision of the IMDG Code commensurate with their responsibilities. The current system of training shore staff is voluntary.

At the time of reformatting the IMDG Code the decision was taken not to make IMDG training mandatory for shore side personnel. It is believed from feedback from industry that the time is right for making such training mandatory.

## 2.3 *Container inspection programme*

Container inspection programme carried out is an important aspect of the control measures to ensure compliance with the IMDG Code and it is also recognised that shipping lines carry out inspections.

Equally, to propose that every CTU's is inspected prior to loading on to a ship is not an option with current shipping operational practices. The main purpose of an inspection is as part of the control measures of a safety management system to determine if the system in place is effective. The activities of professional staff include the handling of dangerous goods: a control of stowage and segregation instructions, a control of packing, marking and labelling of packages, documentation and operational responsibility for incidents involving dangerous goods.

Governments are urged to implement inspection programmes on Cargo Transport Units carrying dangerous goods and report the results to IMO. In order to obtain an accurate reflection of degree of such inspection taking place, IMO decided to carry out a survey to ascertainment the full extent of such inspection. Member Governments were urged to provide the information requested in the questionnaire and forward completed questionnaires to Secretariat by 1 June 2005. Only nineteen Member Governments had submitted the information.

The result of inspection programmes is reported every year. Most of the deficiencies such as detachment or improper affixation are in relation

with “placarding and marking of CTU’s” and “labelling and marking of the packages.

According to the 2004 IMO consolidated report on container inspection programmes, a total 7300 cargo transport units had been inspected and 1928 cargo units were found with deficiencies, that is about 26,4% of cargo transport units had deficiencies. The most of the non-compliance is due to lack of training (International Maritime Organization 2005).

#### 2.4 *Incidents reports and analysis*

Every years several accidents involving dangerous goods are reported. The SOLAS Convention and IMDG Code required that the shipper provides the master with appropriate information on the cargo sufficiently in advance of loading to enable the precautions, which may be necessary for a proper stowage and safe carriage of the cargo.

The analysis of incidents show that there is a lack of safety information for master, shippers and other persons involved in transport of dangerous goods. The investigations of accidents caused by cargoes demonstrated that the danger is induced by different impurities in the cargo that could react with water or products of such reactions. Sometimes the cargo was non declared as hazardous.

The accidents due to inadequate stowage and carriage for the rigour of a sea voyage were not only costly in terms of life, environment and property but also tarnished the image of shipping.

#### 2.5 *Harmonisation of international regulations*

The IMDG Code was introduced more than 40 years ago and the new concept for cargo and passenger ships were established for the carriage of dangerous goods. It was used for ships with dangerous goods stowed in conventional way. Ro-Ro traffic was not regulated with the Code. Currently CTU’s have been introduced where the dangerous goods are loaded. The short lead-time for storage and quick deliveries require harmonised regulations. The IMDG Code does not distinguish between ocean crossing and transport in smooth sea areas for dangerous goods. This situation takes place in large parts of the Baltic Sea area.

The IMDG Code contains provisions, which are appropriate and adequate to most types of transport of dangerous goods. Due to the differences between the transport modes, sea and land there are severe difficulties for the multimodal transport. Even if progress has been made during recent years with regards to harmonisation between International Carriage of Dangerous Goods by Road (ADR), International Carriage of Dangerous Goods by Train (RID) and IMDG Code there are still a lot of

problems in an area where full harmonisation is essential. The lack of harmonisation at that time related to marking, placarding, mixed loading and documentation and there are still obstacles preventing a smooth crossing between the two modes of the transport.

#### 2.6 *IMO Courses*

IMO has designed the programme of model training course “Dangerous, hazardous and harmful cargoes” to help implement dangerous goods transport regulations. The course includes, but no limited to the classification, packaging, consignment procedures, loading and segregation. The course is intended for seafaring personnel responsible for the handling of packaged dangerous, hazardous and harmful cargoes aboard ships. This course provides training for shore-based personnel responsible dealing with the transport of dangerous goods by a mode of transport (national or international).

Under the Organization’s programme on enhancement of maritime safety, since April 2002, eleven regional and nine courses on implementation of the IMDG Code have been delivered. Several regional seminars on proper stowage and securing of cargoes inside cargo transport units have held. The seminars have enhanced the capabilities of personnel involved in the packing of cargoes in cargo transport units on matters pertaining to basic principles on safe transport and packing of cargoes, legal requirements and magnitude of forces which act on cargoes during road, rail and sea transport.

### 3 CONCLUSION

Certain IMO activities are dictated by the need to take action on specific areas of maritime safety and protection of the marine environment: amendments to the IMDG Code, evaluation of safety and environmental hazards of chemicals, analysis of maritime casualties and marine incidents reported.

The safety requirements set out in SOLAS Convention, MARPOL Convention and in the IMDG Code ensure the safety of ships carrying dangerous goods and of their crews. Amendments to the IMDG Code contribute to the enhancement of the safe, secure, efficient carriage of dangerous goods. Adoption of the amendments had a key role to play in harmonisation the provisions of the IMDG Code with those of the UN Recommendations on the transport of dangerous goods. While the commitment to harmonisation is important for multi-modal transport and the efficiency of world trade, it is equally important that sight is not lost of the unique and specific

requirements pertaining to the carriage of dangerous goods by sea.

The results of container inspection programmes need to be analysed and evaluated with care and caution.

The inspections of cargo transport units contributed towards the safety of the ship and endorsed the need for improved training of shore-based personnel associated with the handling of dangerous goods.

The mandatory training of shore-based personnel involved in the handling of dangerous goods is desirable in the interest of maritime safety.

The courses and seminars have a significant impact on how to identify and solve problems of safety and security by addressing the importance and need for proper stowage and securing of dangerous cargoes.

## REFERENCES

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