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Hazardous Cargo
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## HAZARDOUS CARGO

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INTRODUCTION

The report is directed towards those Saudi Companies that export products, which may be classified as 'hazardous and/or dangerous cargo' by international shipping regulations, and covering road, seas, air or road/rail transportation - with sea being the most utilised. It is necessary that the Exporter is aware of the measures that give international regulations governing the carriage of 'hazardous cargo' the force of law worldwide. The report reviews the causes and effects of non-compliance and identifies areas where shipping operators need to tighten procedures and for Exporters to be aware of the regulations regulating to the shipment of hazardous cargo.

Internationally, ignorance is no defence in law. Lack of knowledge of any of the laws can bring Exporters fines and the excuse 'the freight forwarder accepted it' cannot work, when operating in an international market. The local Exporter and shippers must be aware of what are classed as dangerous goods, what safety regulations apply to them, and how they are required to be ship from one place to another.

The abbreviations used in this report are detailed in the APPENDIX to the report.

General Definition of Hazardous Cargo

There are a great many categories of cargo which are regarded as hazardous for one reason or another. These include, amongst others, products that are:- explosive, flammable, corrosive, noxious, poisonous, radioactive and irritative substances, commodities which emit poisonous vapour and are dangerous when wet, bio-medical material, substances liable to spontaneous combustion, pressurised gases and magnetised metal.

Some Common Hazardous Materials

A hazardous material is a substance or material which has been determined by the laws of a government to be capable of posing an unreasonable risk to health, safety, and/or property when being transported. The following is a list of some goods (but not all) which are commonly classified as hazardous material:-
Dangers of Hazardous Cargos

If not properly managed, the poor handling or storage of hazardous cargoes may cause leaks and spillage, which could lead to either a series of minor impacts with a cumulative impact over the long-term (e.g. on the environment), or involve a single, catastrophic event of short duration but with potentially profound effects (e.g. explosion). It is, therefore, essential to understand the type of hazardous cargo being handled and to handle it in the proper and prescribed way, as determined by international laws, rules and regulations.

Hazardous Cargo Disclosure Requirements

The quantity and type of cargo involved, and the exact nature of the hazard and of the manner of protection and packing must be fully declared by the shipper at the time of booking space on the ship or aircraft. The bill of lading or airway bill must bear a full written disclosure. Any failure on the part of the supplier to make full disclosure of all the relevant details may have serious consequences not only for the supplier but also for the importer.

GENERAL INFORMATION

The following general information has been provided to familiarise the Exporter with data that will assist in understanding hazardous cargo requirements and some of the main legislation relating to it:-

Hazard:
Potential for spills, leaks, fire, explosion, discharges and emissions. Danger of injury, illness, accident, and death. Risk to air, soil, sediment, water, groundwater and habitats within local port area and wider environment.

Activities Effected:
Include the following sectors:-

- Transport.
- Transhipments.
- Storage.
- Processing.
Relevant Legislation: The following relevant legislation provide additional details:-

- International Convention for the Safety of Life at Sea (SOLAS 74), including:
  - International Maritime Dangerous goods (IMDG) Code.
- Control of Substances Hazardous to Health (COSHH) Regulations 1999.
- Environmental Protection Act 1990.
- Council Regulation 259/93 EEC on the Supervision and Control of Shipments of waste within into and out of the European Community.
- Directive 96/82/EC on the Control of Major Accident Hazards Involving Dangerous Substances (SEVESCO II Directive).

Guidance Available: The following appropriate guidance can provide additional clarifications:-

- International Maritime Organization (IMO), 1995, 'Recommendations on the Safe Transport of Dangerous Goods in Port Areas'.
- International Chamber of Shipping (ICS), the Oil Companies International Marine Forum
(OCIMF), and the International Association of Ports and Harbours (IAPH), 1996, 'International Safety Guide for Oil Tankers and Terminals (ISGOTT).

- Circular 13/94 on Council Regulation 259/93 EEC on the Supervision and Control of Shipments of Waste within into and out of the European Community.

REGULATIONS

Due to the nature of the goods being shipped, the Exporter (manufacturer or trader) must comply with the United Nation's decree that the UN Committee’s list of dangerous goods, and the relevant modal laws and regulations, be adhered to as more than good practice, but as a requirement. As an example, the initial UN laws are now codified into EU, USA, Canadian, Australian, and South African regulations, to name some countries primarily adherent to the regulations. Any country with a national airline, which is a member of IATA, is also an adherent of these regulations. It should be noted that the above list of countries is non-exhaustive and only provided as a guide and example.

Modal laws, which superimpose over national regulation, such as IMDG (International Maritime Dangerous Goods Code) for sea-borne goods, are invariably embodied, as are IATA/ICAO rules for air transportation. Finally, many countries recognise that such legislation is pertinent to their safety and thus ADR (relating to road transportation) is accepted in such countries as South Africa, Turkey, Iran and all the former CIS republics and Eastern European nations.

Acids & Alkalies

These products are generally transported by road and sea, with the longest journey being by sea - road transport is normally only used to get the goods to port.

Acid and alkali are both classified as Class 8, and under IMDG rules, it is 100% clear that they must not be loaded in the same shipment together. It is, therefore, extremely important for the Exporter and the shippers to abide by the IMDG rules in this instance. Most country authorities generally tend to act only
when accidents occur and safety incidents happen, so that an unwitting or merely non-compliant shipper need to be aware and up to date with the relevant regulations.

**Minimising Risk of Disaster**

Putting aside the issue of deliberate mis-declaration, it is incumbent on every organisation within the transport chain, in order to minimise the likelihood of a disaster, to exercise their best endeavours to ensure proper adherence to the IMDG requirements within their own operation. They should also promote observance of the Code and national safety standards by their exporting customers. This can never be achieved without continually remaining alert to the possibility of:- (a) non-declaration, (b) emphasis on supervision, (c) staff training, and (d) a good system to check and appraise local exporting clients.

All shipping operators must consider their liabilities for the consequences of acts or omissions on the part not only of themselves but also their customers. These apply to the correct declaration, packaging, container stuffing, labelling and shipboard stowage of all dangerous goods. It should be noted that the risks of non-compliance can be minimised through rigorous risk management analysis. Many of the leading liability insurers will either offer risk management advice themselves or recommend independent consultants who can provide such a service. In the current climate, sound risk management advice and a comprehensive ‘liability’ cover are more important than ever to protect the honest operator from the hazards of dangerous cargo. The simplest form of risk management is to know the shippers and to question any seemingly inconsistent shipments.

**Packing & Labelling**

Minimum standards of packing are laid down by the IMO for all hazardous cargo and these must be strictly observed. These standards are very detailed and the publication in which they may be found consists of thirteen volumes of just over a thousand pages. The importers of hazardous cargo are advised to consult very closely not only with their supplier but also with the responsible officials of the shipping company or airline which they proposes to use - so as to obtain proper advice concerning the packing and the form of declaration necessary for the goods being imported.

**Global Harmonisation of Hazard Classification & Labelling Systems**

The purpose of the Globally Harmonized System for the Classification and Labelling of Chemicals (GHS) is to promote common, consistent criteria for classifying
chemicals according to their health, physical and environmental hazards, and to encourage the use of compatible hazard labels, material safety data sheets for workers, and other hazard communication information based on the resulting classifications. Many other countries throughout the world have been involved in the development of GHS and it is the culmination of more than a decade of work. After ten years of technical work and negotiation, a United Nations Economic and Social Council Subcommittee have adopted the GHS and recommended that it be disseminated throughout the world. By promoting common, consistent criteria for classifying chemicals and developing compatible labelling and safety data sheets, the GHS is intended to enhance public health and environmental protection, as well as reduce barriers to trade. Countries lacking systems for hazard classification and labelling are to adopt the GHS as the fundamental basis for national policies for the sound management of chemicals - countries that already have systems will align them with GHS.

The GHS covers a wide range of topics, from toxicology to fire protection. While criteria for classifying and labelling dangerous goods have been internationally harmonized through the United Nations Recommendations on the Transport of Dangerous Goods for purposes of transportation, harmonized requirements have not been established for purposes of environmental, worker or consumer safety regulations. Furthermore, a number of countries currently operate their own systems for classification and labelling, and companies must comply with differing requirements depending on where they do business. A harmonized system for all regulatory purposes will lead to greater regulatory consistency among countries and thereby promote safer transportation, handling and use of chemicals. Harmonized criteria, symbols and warnings will promote improved understanding of hazards and help to protect workers, consumers, and other potentially exposed populations. A more uniform, 'harmonized' system will also enhance safety, improve the level of compliance and reduce costs for companies involved in developing, manufacturing, distributing, and transporting chemicals both internationally and domestically since it is envisioned that international and domestic regulations will be harmonized on the basis of the GHS in the future.

GHS hazard classification criteria cover physical hazards and key health and environmental classes. For each of these hazard classes, standardised label elements - including symbols, signal words and hazard statements - have been developed, with a standard format and approach to how GHS information appears on safety datasheets.
SHIPMENTS BY SEA

With new laws and regulations that came into force across the world last year, the international carriage of dangerous goods has come under greater scrutiny than ever. Not only have there been many incidents at sea over recent years, but many governments have realised the potential for disaster during pre-shipment or post-shipment when goods are in the landside logistics chain.

Since the beginning of 1998 at least 10 large container ships have been seriously damaged by major fires or explosions. Apart from the loss of life and injury to sailors, each accident caused millions of dollars worth of damage. Experts attribute most of these incidents to hazardous materials that were loaded into containers but not declared to the carriers. As the volume of goods carried in containers by sea continues to soar, insurance companies for the industry watched with apprehension and have welcomed the tightening of international regulations governing the shipment of dangerous goods, or hazardous and noxious substances (HNS).

Regulations for the carriage of dangerous goods by sea fall within the remit of the International Maritime Organisation (IMO), the United Nations agency responsible for improving the maritime safety and preventing pollution from ships. More specifically, as a provision of the 1974 International Convention for the Safety of Life at Sea (Solas), all HNS shipments are, and have been for many years, required to be carried in accordance with the stipulations of the IMO's International Maritime Dangerous Goods (IMDG) Code. Up to the beginning of 2004, compliance has been mandatory under the national laws or regulations of only some countries - although, of course, all responsible shippers and carriers have taken care to make sure their movements of hazardous goods are packed, loaded, marked and declared in accordance with the Code. Now these 'good practice guidelines' have been given statutory force worldwide. In May 2002, the IMO adopted both the IMDG Code in a mandatory form, known as Amendment 31, and Amendments to Solas Chapter VII (Carriage of Dangerous Goods) that makes the IMDG Code mandatory from January 1, 2004. The IMO reports that over 95% of HNS being carried by the world's ships is carried in accordance with the IMDG Code. However, there is still some small proportion of cargo which is not being shipped in accordance with the IMDG Code.

Safety Issues

Four major safety problems have been identified as being the main cause for concern and are listed below:-
The deliberate non-declaration or mis-declaration in order to secure a freight rate advantage or reduction.

Ignorance resulting in negligent non-declaration.

Lack of properly trained and experienced staff.

Improper stowage and/or defective segregation in order to maximise vessel capacity and, thus, commercial gain.

In terms of the above points - in an ideal situation - instances of deliberately improper stowage or segregation should be extremely rare. However, concentrating on the effects of the other three safety issues identified, it is regrettable that some shippers put sailors' lives at risk, and endanger others in the transport chain, by failing to properly pack, secure, stow, label or declare hazardous cargoes in accordance with the regulations.

If the shipper does not advise the carrier what has been loaded, the carrier will not be able to take the appropriate precautions in stowing the box properly. The consequences are obvious - a ship at sea cannot jettison a burning container if it is located deep down in the stow. Worse still, cargoes in other containers stowed nearby can also catch fire and, if they also happen to be undeclared hazardous material, the consequences can be very serious indeed.

There are sure to be many instances where consignments have been undeclared or mis-declared. With highly flammable cargoes being loaded inadvertently below deck, it is extremely fortunate that there have not been more major ship casualties. If undeclared HNS creates a problem, the vessel operator is likely to hold its client responsible as the latter is under a strict legal duty to warrant that cargo is fit for carriage. If a forwarder or non-vessel operating carrier (NVOC) is the shipper of record, it is no defence to say that it was the client's fault - as far as the ship owner is concerned, the contractual liability stops with the NVOC's. It is then down to the NVOC's to try to recover the costs from the shipper who was ultimately responsible.

Unfortunately, if the shipper is the type of company willing to save money by hiding the hazardous nature of its products, it is also unlikely to have any 'third-party liability cover'. All of which rather leaves the NVOC exposed to a potential multi-million dollar claim. It would be hoped that the NVOC has arranged sufficient liability insurance cover with a liability insurer.

Even if undeclared, HNS can reach their destination port without accident, when they could again still cause complications. In today's increased state of alarm
about the potential for terrorists to misuse ordinary commercial container traffic, the arrival of an undeclared (and, therefore, also unidentified) consignment of hazardous material could well trigger a major alert. If the ship and its containers are consequently delayed for rigorous searches by the enforcement authorities, who will pay for the additional costs incurred?

All transport operators should be alert to the possibility that both FCL (full container load) and LCL (less than a container load) shipments may contain hazardous materials, and that the shipper may either deliberately, mistakenly, or even innocently mask the true nature identity, and condition of the contents.

It has been suggested that the 'ocean carriers' could do more to encourage compliance with the Code. If hazardous cargo is declared properly, it will often be subject to a surcharge. There is, therefore, an incentive for unscrupulous shippers, anxious to achieve the lowest freight rate possible, to avoid the surcharges by not declaring the true nature of the cargo. For a forwarder, shipping a small consignment of hazardous material as part of a consolidation container, the lump-sum surcharge can often be disproportionate to the freight earned on the consignment. Removing the surcharges would mean that there was no longer any financial incentive to mis-declare cargo.

**IMO Classification of Hazardous Goods**

The chart below provides some details of how the IMO classify hazardous cargo in their documentation:-

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<tr>
<td>Class 1</td>
<td>Explosives</td>
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<tr>
<td>Division 1.1</td>
<td>Substances and articles which have a mass explosion hazard.</td>
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<tr>
<td>Division 1.2</td>
<td>Substances and articles which have a projection hazard but not a mass explosion hazard.</td>
</tr>
<tr>
<td>Division 1.3</td>
<td>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.</td>
</tr>
<tr>
<td>Division 1.4</td>
<td>Substances and articles which present no significant hazard.</td>
</tr>
<tr>
<td>Division 1.5</td>
<td>Very insensitive substances which have mass explosion hazard.</td>
</tr>
<tr>
<td>Division 1.6</td>
<td>Extremely insensitive articles which do not have a mass explosion hazard. Ammunition, Fireworks, Blasting Explosives</td>
</tr>
<tr>
<td>Class 2</td>
<td>Flammable gases</td>
</tr>
<tr>
<td>Division 2.1</td>
<td>Low flash-point group of liquids (Flash-Point Below -18°C).</td>
</tr>
<tr>
<td>Division 2.2</td>
<td>Intermediate flash-point group of liquids (Flash-Point Of -18°C Up to but not include +23°C).</td>
</tr>
<tr>
<td>Division 2.3</td>
<td>Toxic gases</td>
</tr>
<tr>
<td>Class 3</td>
<td>Flammable liquids</td>
</tr>
<tr>
<td>Division 3.1</td>
<td>Low flash-point group of liquids (Flash-Point Below -18°C).</td>
</tr>
<tr>
<td>Division 3.2</td>
<td>Intermediate flash-point group of liquids (Flash-Point Of -18°C Up to but not include +23°C).</td>
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</table>
Division 3.3
High flash-point group of liquids (Flash-Point Of +23°C. Up to and include +61°C).
Examples:
Petrol, Kerosene, Paints, Car Lacquers, Chemical Solvents (Petroleum Derivatives), Varnishes.

Class 4
Flammable solids or substances.
Division 4.1
Flammable solids.
Division 4.2
Substances liable to spontaneous combustion.
Division 4.3
Substances which in contact with water emit flammable gases.
Examples:
Matches and Sulphur Powder.
Division 4.3- Calcium Carbide - Used to produce Acetylene Gas.

Class 5
Oxidizing substances (agents) and Organic Peroxides.
Division 5.1
Oxidizing Substances (agents) Yielding Oxygen increases the risk and intensity of fire.
Division 5.2
Organic Peroxides - Most will burn rapidly and are sensitive to impact or friction.
Examples:
Division 5.1 - Pool Chlorine, some Fertilisers.
Division 5.2 - Calcium Carbide - Used to produce Acetylene Gas.

Class 6
Toxic and infectious substances.
Division 6.1
Toxic substances.
Division 6.2
Infectious substances.
Examples:
Division 6.1 - Some Pesticides, industry products such as Cyanide products.
Division 6.2 - Waste medical products for example.

Class 7
Radioactive substances.
Examples:
Substances used in industrial, medical or scientific purposes.

Class 8
Corrosives.
Examples:
Acids as Glacial Acetic Acid, Hydrochloric, Sulphuric and Nitric Acid, Caustic Soda and Caustic Potash.

Class 9
Miscellaneous dangerous substances and articles.
Examples:
A wide range of substances as Asbestos, some Fertilisers and environmentally hazardous products.

MHB
Materials Hazardous Only In Bulk.

**SHIPMENTS BY AIR**

The air shipping rules are very similar in most countries, and if the Exporting company uses the same shipping/freight organisation to and from their markets, it can usually assume the same shipping process both ways. However, it is essential for the company to always consider the laws of both the shipping and receiving country. It should be noted that not all hazardous cargo can be shipped by air and many can only be sent by seafreight.

For airfreight, international dangerous goods shipping (packing, labelling, shipping papers, loading, transport, etc) is regulated by International Air Transport Association (IATA). Air carriers will usually only accept shipments that are packed and labelled according to IATA rules, and meet the following:-

- Are from shippers/freight companies that are a so-called 'known shipper' (trusted customers with a 'dangerous goods' contract, which enables them to ship hazardous cargo). Shippers/freight companies need to obtain 'know shipper' status with all air carriers that they deal with in the normal course of their business.
- The dangerous goods are packed only by the 'known shipper'. This means that it is necessary for the 'known shipper' to employ IATA certified hazardous material packers, who must do the necessary packing of the dangerous cargo - either at the customers or shippers location. To obtain these certificates, it is necessary to attend a hazardous materials IATA
course at a recognised IATA course centre. A normal university chemical safety and hazardous waste handling course is not enough.

- The materials used for the packing of the hazardous cargo must comply with IATA and other international regulations in force at the time.
- Labelling must meet IATA and international requirements.
- Marking requirements need to meet IATA and international regulations.

This provides a very general view of the requirements for airfreighting hazardous cargo from one location to another.

**SHIPMENTS BY ROAD**

In various countries there are laws governing transportation of dangerous goods, which in some instances require new vehicles designed to carry and transport (by road) dangerous goods. Many countries now recognise that such legislation is needed to ensure road safety and the International Carriage of Dangerous Goods by Road (ADR) regulations (relating to road transportation) are now accepted in several countries around the world, including South Africa, Turkey, Iran and all the former CIS republics/Eastern European countries.

ADR are the initials of a French phrase meaning 'International agreement concerning the carriage of dangerous goods by road'. The agreement already applies to the transport of dangerous goods through and between those European countries that have signed up to it. The agreement requires that detailed technical requirements have to be met before a certificate allowing bulk carriage of liquid, gaseous or explosive dangerous goods is issued to a vehicle.

ADR vehicle certificates are renewable annually and certification is required to cover the following types of road vehicles:-

- Vehicles or trailers to be used for transportation of liquid or gaseous dangerous goods in fixed or demountable tanks or fixed batteries of pressure vessels over one cubic metre capacity.
- Vehicles or trailers transporting liquid or gaseous dangerous goods in tank containers or portable tanks of over three cubic metres capacity.
- Vehicle tractor units or rigid vehicles to be used to tow trailers of which transport liquid or gaseous dangerous goods in fixed or demountable tanks or fixed batteries of pressure vessels over one cubic metre capacity.
- Vehicle trailers that transport containers or portable tanks of over three cubic metres capacity for liquid or gaseous dangerous goods.
- Vehicles used in the bulk transport of explosives.
The original ADR regulations came into force in Europe on 29 January, 1968 under the auspices of the United Nations Economic Commission for Europe, and a number of amendments have since been undertaken to ADR. The Agreement itself is short and simple. The key article is the second, which states that apart from some excessively dangerous goods, other dangerous goods may be carried internationally in road vehicles subject to compliance with the following:

- The conditions laid down in Annex A for the goods in question, in particular as regards their packaging and labelling.
- The conditions laid down in Annex B, in particular as regards the construction, equipment and operation of the vehicle carrying the goods in question.

Annexes A and B have been regularly amended and updated since the entry into force of ADR. These annexes were entirely revised and restructured and entered into force on 1 July 2001. Additional new amendments entered into force on 1 January 2003. Still a further set of new amendments entered into force on 1 January 2005. The latest structure is consistent with that of the United Nations Recommendations on the Transport of Dangerous Goods, Model Regulations, the International Maritime Dangerous Goods Code (of the International Maritime Organization), the Technical Instructions for the Safe Transport of Dangerous Goods by Air (of the International Civil Aviation Organization) and the Regulations concerning the International Carriage of Dangerous Goods by Rail (of the Intergovernmental Organisation for International Carriage by Rail).

**TRAINING**

To handle hazardous cargo, a company’s employees should be trained. Based on the law of the country and international law, training records should be maintained by the company and could be subject to audits during agency inspections. The United Nations’ International Maritime Dangerous Goods (IMDG) code is a basic guideline for shipping this type of cargo overseas, but countries generally maintain their own hazardous cargo rules.

Some NVOC’s are under the impression that since they neither manufacture the materials nor prepare hazardous declarations, they are exempt from training. Generally the rules state that any person who offers a shipment is accountable, and that also means NVOC’s. Since NVOC’s report and prepare ocean bills of lading and dock receipts, they are subject to hazardous materials training requirements. A big problem for the NVOC industry regarding hazardous materials training is the constant turnover of employees.
ACTIONS FOR THE EXPORTER

A responsible Exporter should first, analyse what goods are being moved - especially looking at the Safety Data Sheets and Environmental pollution problems. If there are dangerous goods being moved, then it is necessary to consult an expert - the assistance of a dangerous goods safety advisor should be sought.

It is important that the Exporting companies should have fully trained staff who are able to cope with such products and are aware of local as well as international regulations relating to the subject.

Ignorance of any of the laws can bring Exporters fines and the excuse ‘the forwarder accepted it’ will not be accepted in international law, as the Exporter is always responsible.
APPENDIX

Abbreviations Used

- **ADR**: Initials of a French phrase meaning 'International agreement concerning the carriage of dangerous goods by road'. The agreement requires that detailed technical requirements have to be met before a certificate allowing bulk carriage of liquid, gaseous or explosive dangerous goods is issued to a vehicle.

- **FCL**: Full container load.

- **HNS**: Hazardous and noxious substances.

- **IATA**: International Air Transport Association, established in 1945, is a trade association serving airlines, passengers, shippers, travel agents, and governments. The association promotes safety, standardisation in forms (baggage checks, tickets, weigh bills), and aids in establishing international airfares. IATA headquarter is in Geneva, Switzerland.

- **ICAO**: International Civil Aviation Organization is an United Nations specialised standards and recommended practices concerning air navigation, prevention of unlawful interference, and facilitation of border-crossing procedures for international civil aviation. Operating since 1947, ICAO includes almost all U.N. members. Headquarters are in Montreal, Canada.


- **IMO**: International Maritime Organization: Formerly known as the Inter-governmental Maritime Consultative Organization (IMCO), was established in 1958 through the United Nations to coordinate international maritime safety and related practices.

- **LCL**: Less than a container load.

- **NOVC**: Non-vessel operating common carrier, a ships agent, conducts business for the ship but does not operate the vessel.

- **Solas**: Safety of Life a Sea Convention.