DANGEROUS GOODS REGULATIONS

Edition 64 - 2022

IATA Category 5

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2	08-Aug-23	Document formatted to SMSA Standard	Cover
3	08-Aug-23	Added GACA logo	Cover
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5	08-Aug-23	Content page updated with page numbers	3,4
6	08-Aug-23	Added difference between hazard and risk	21
7	08-Aug-23	Added scope of dangerous goods course material	4
8	08-Aug-23	Added GACAR part 109 basic regulations	9
9	08-Aug-23	Added general principles of packing groups	19,20
10	08-Aug-23	Updated IATA DGR 64 edition table 2.3. A	17,18

Introduction

This course is designed for staff of freight forwarders involved in the handling, storage and loading of cargo or mail based on (table. 1.5.A) DGR (CAT 5).

The availability of access to the IATA DGR for SMSA employees kingdom wide will be through the DG help Desk team email dghelpdesk@smsaexpress.com who has the direct access of the current DGR online as well as the hard copy.

Scope and purpose of DGR manual

This DGR training manual is designed to provide SMSA employees with summarized and easily accessible information. It is designed to be used in combination with the IATA Dangerous Goods Regulations with enough exercises to test employees knowledge, skills and understanding of the DGR.

Course Objectives

- Understand the Legal requirements
- Identify the Shipper's and Operator's responsibilities
- Identify Dangerous Goods
- Identify Hidden Dangerous Goods
- Identify marks and labels of a DG Package
- Understand Provisions for Passengers and Crew
- Understand the loading and storage procedure
- Understand emergency response procedures

LESSON PLAN:

Time	08:30-09:30	09:30-10:00	10:30-12:30	13:15-14:00	14:10-16:00
DAY 1	Introduction, General Philosophy, Module -1 , 2 Applicability, Limitations,	Exercises Module -3 Classification,	Module 4 - Marking & Labelling. Exercises Module 5 - Handling	Module 6 - Emergency Response, Module 7 - Security	Final Exam

For classroom training employee will get one exam attempt during the training.

A mandatory written examination at the end of the course is required. Marks:

90% & above : Distinction
80 - 89% : Pass
79% & below : Fail

GENERAL PHILOSOPHY

IATA Dangerous Goods Regulations are published in order to provide procedures to Shipper and Operator for articles and substances with hazardous properties to enable it to be transported safely by air.

The IATA DGR is based on the international Civil Aviation Organization (ICAO) Technical Instruction and incorporates additional operational requirements that provide a harmonized system for Operators to accept and transport dangerous goods safely and efficiently.

Main principles used to ensure safe transport:

- **Classifying and Identifying** the dangerous goods
- Make sure that **prohibited** items are not shipped by air, unless exempted.
- Use of correct **packaging**
- Correctly **Marked and Labelled**
- Understand the completion of the **Shipper's declaration**
- Vigilant **for hidden hazards**
- Reporting **incidents and accidents**
- **Training**

APPLICABILITY

Definition

Dangerous goods are articles or substances which are capable of posing a hazard to health, safety, property or the environment and which are shown in the list of dangerous goods in these Regulations or which are classified according to these Regulations.

1.1 BASIS OF THE REGULATIONS

The UN Subcommittee of Experts on the Transport of Dangerous Goods (SCoETDG) develops recommended procedures for the transport of all types of dangerous goods except radioactive materials. These procedures, applicable to all modes of transport, are published in the Recommendations on the Transport of Dangerous Goods—Model Regulations (21st revised edition).

Note:

Recommendations on Tests and Criteria, which are incorporated into certain provisions of these Regulations are published as a separate manual ("Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria") (ST/SG/AC.10/11/Rev.7) available from the United Nations. This Manual includes:

•Part I: Classification procedures, test methods and criteria relating to explosives of Class 1.

•Part II: Classification procedures, test methods and criteria relating to self-reactive and polymerizing substances of Division 4.1 and organic peroxides of Division 5.2.

•Part III: Classification procedures, test methods and criteria relating to articles or substances of Class 2, Class 3, Class 4, Division 5.1, Class 8 and Class 9.

•Part IV: Test methods concerning transport equipment.

•Part V: Classification procedures, test methods and criteria relating to sectors other than transport.

•Appendices: Information common to a number of different types of tests and national contacts for test details.

Basis of these Regulations

The International Atomic Energy Agency (IAEA) develops recommended procedures for the safe transport of radioactive materials. These procedures are published in the Regulations for the Safe Transport of Radioactive Material (IAEA SSR-6, Rev.1). The requirements of these regulations as they pertain to air transport are reflected in Section 10.

The International Civil Aviation Organization (ICAO) has used these recommendations as the basis for developing the regulations for the safe transport of dangerous goods by air by any aircraft (including both internal and external carriage). The ICAO regulations are codified in Annex 18 to the Convention on International Civil Aviation and in its Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284 as amended) (Technical Instructions).

Note:

The term “aircraft” includes both aeroplanes and helicopters.

The IATA Dangerous Goods Regulations (the Regulations) contain all of the requirements of the Technical Instructions. IATA has included additional requirements, which are more restrictive than the Technical Instructions and reflect industry standard practices or operational considerations. These are identified by the symbol “☞” in the margin.

- **IAEA – INTERNATIONAL ATOMIC ENERGY AGENCY**
  Develops recommended procedures for the transport of Radioactive Material
- **UNCE – UNITED NATIONS COMMITTEE OF EXPERTS**
  Develops recommended procedures for the transport of all other classes of Dangerous Goods
- **ICAO – INTERNATIONAL CIVIL ORGANISATION**
  Incorporates all IAEA and UN CoE recommendations and procedures as the basis for the Technical Instructions

- **IATA – INTERNATIONAL AIR TRANSPORT ASSOCIATION**
  Incorporates all ICAO requirements and may add other restrictive requirements

In addition to this manual and the training, employee should refer to the GACAR 109 articles that are accessible through the link:

https://gaca.gov.sa/web/en-gb/content/laws-and-regulations > Part 109 Transportation of Dangerous Goods by Air

§ 109.1 Applicability

(a) Except as provided in paragraphs (c) and (d) of this section, this part prescribes rules governing the offering, preparation, and transportation of dangerous goods by air in the Kingdom of Saudi Arabia.

(b) This part applies to—

(2) Any person who performs, attempts to perform or is required to perform any function subject to this part including operators, ground handling agents, shippers, freight forwarders and their flight and nonflight employees, agents, and subsidiary and contract personnel;

(3) Any person who offers any dangerous goods for transportation by air

1.2 Application of the Regulations

The IATA Dangerous Goods Regulations are applicable to:

- All Airlines – Members or Associate members of IATA
- All Airlines party to the IATA Multilateral Interline Traffic Agreement – Cargo
- All Shippers and Agents offering consignments of dangerous goods to Airline Operators

Exemptions (1.2.6)

In instances of extreme urgency or when other forms of transport are inappropriate or when full compliance with the prescribed requirements is contrary to the public interest, the States concerned may grant exemption from the provisions of the Regulations provided that in such instances every effort is made to achieve an overall level of safety in transport which is equivalent to the level of safety provided for in these Regulations.

Exceptions (1.2.7)

Except for information provided to operator employees, as shown in 1.4.2, the provisions of the Regulations do not apply to dangerous goods carried by an aircraft where the dangerous goods are:

(a) to provide medical aid to a patient during flight,
(b) to provide veterinary aid or a humane killer for an animal during flight;
(c) for dropping during flight in connection with agricultural, horticultural, forestry, avalanche control or pollution control activities;
(d) for dropping or triggering in connection with avalanche control activities;
(e) to provide aid in connection with search and rescue operations during flight, or related to the flight;
(f) vehicles carried in aircraft designed or modified for vehicle ferry operations if all of the following requirements are met:
1. authorization has been given by the appropriate authorities of the States concerned and such authorities have prescribed specific terms and conditions for the particular operator's operation;
2. vehicles are secured in an upright position;
3. fuel tanks are so filled as to prevent spillage of fuel during loading, unloading and transit; and
4. adequate ventilation rates are maintained in the aircraft compartment in which the vehicles are carried.
(g) dangerous goods that are required for the propulsion of the means of transport or the operation of its specialized equipment during transport (e.g. refrigeration units) or that are required in accordance with the

operating regulations (e.g. fire extinguishers) (see Subsection 2.5 of the IATA DGR).

Note: This exception is only applicable to the means of transport performing the transport operation.

(h) contained within items of excess baggage (see definition of "excess baggage" in Appendix A–Glossary) being sent as cargo provided that:

1. the excess baggage has been consigned as cargo by or on behalf of a passenger;

2. the dangerous goods may only be those that are permitted by and in accordance with 2.3 to be carried in checked baggage;

3. the excess baggage is marked with the words "Excess baggage consigned as cargo".

General Transport Requirements (1.2.8)

All Dangerous Goods packages must be classified, certificated, described, packaged, marked, labelled, handled and transported accordance with IATA Dangerous Goods Regulations, unless otherwise stated in the IATA DGR Regulations.

Packages opened by Customs (1.2.10)

Packages opened by Customs must be restored to a condition complying with the IATA DGR Regulations by qualified persons.

1.3 SHIPPERS RESPONSIBILITIES

The individual or company offering a consignment for shipment must fully comply with the DGR Regulations when offering a consignment of Dangerous Goods

What is the Shipper responsible for?

- Providing any information that will enable employees to carry out their dangerous goods related responsibilities.

- Ensuring that the substance and articles are not prohibited.
- Properly identifying, classifying, packing, marking, labelling and documenting substances and articles.
- Ensuring employees are trained in dangerous goods.

1.4 OPERATORS RESPONSIBILITIES

A person, organization or enterprise engaged in, or offering to engage in an aircraft operation.

- Acceptance (Cargo acceptance, Check in staff)
- Storage (Warehousing after check in)
- Loading (Loading onto aircraft)
- Inspection (Awareness of damaged parcels)
- Provision of information (NOTOC, Shippers declaration)
- Emergency Response (Emergency Procedures)
- Retention of records (NOTOC; Shippers Declarations)
- Training (Training of all relevant staff members)

Information to Operator Employees

An Operator must, in the Operations Manual and/or other appropriate manuals, provide employees with information so as to enable them to carry out their responsibilities with regard to dangerous goods.

Provision of information at Cargo Acceptance Areas

An operator/operators handling agent must prominently display sufficient notices at visible locations at cargo acceptance points. They must include visual examples of dangerous goods, including batteries.

1.5 TRAINING REQUIREMENTS

1.5.1 Dangerous Goods Training Programs

1.5.1.1 Establishment and Maintenance

1.5.1.1.1 The employer of personnel that perform functions aimed at ensuring that dangerous goods are transported in accordance with these Regulations must establish and maintain a dangerous goods training program.

1.5.1.1.2 All operators must establish a dangerous goods training program regardless of whether or not they are approved to transport dangerous goods as cargo.

Training must include:

(a) general familiarization training—personnel must be trained to be familiar with the general provisions;

(b) function specific training—personnel must be trained to competently perform the function for which they are responsible; and

(c) safety training—personnel must be trained on how to recognise the hazards presented by dangerous goods, on the safe handling of dangerous goods and on emergency response procedures.

Refer to Table 1.5A of the current IATA DGR.

Module 2 - LIMITATIONS

General

Some dangerous goods are too dangerous to be carried by aircraft, others may be carried on cargo aircraft only and some are acceptable on both cargo and passenger aircraft. A number of limitations are placed on dangerous goods which are permitted to be transported by air. These limitations are established by these Regulations. Both States and operators may impose further restrictions called variations (see Subsection IATA DGR 2.8).

2.1 Forbidden Dangerous Goods

2.1.1 Dangerous Goods Forbidden in Aircraft Under Any Circumstances

Any article or substance which, as presented for transport, is liable to explode, dangerously react, produce a flame or dangerous evolution of heat or dangerous emission of toxic, corrosive or flammable gases or vapours under conditions normally encountered in transport must not be carried on aircraft under any circumstance.

Notes:

1. Certain dangerous goods known to meet the description above have been included in light type and without a UN number in the List of Dangerous Goods (Subsection 4.2) with the word “Forbidden” shown in Columns G/H, I/J and K/L. It must be noted that it is impossible to list all dangerous goods which are forbidden in aircraft under any circumstances. It is therefore essential that appropriate care be exercised to ensure that no such goods are offered for transport.

IATA DGR 2. 2.1.1 is intended to include articles being returned to the manufacturer for safety reasons, e.g. defective lithium batteries, see Special Provision A154.

Forbidden Unless Exempted

Some dangerous goods are forbidden unless exempted. In some cases dangerous goods, even when forbidden can be exempted, i.e. special permission can be granted for:

2.1.2 Dangerous Goods Forbidden Unless Exempted

The dangerous goods described in subparagraphs (a) through (f) must not be carried on aircraft unless exempted by States under the provisions of 1.2.6.1.

(a) radioactive material which is:

•in vented type B(M) packages;

•in packages which require external cooling by an ancillary cooling system;

•in packages subject to operational controls during transport;

•explosive;

•a pyrophoric liquid.

(b) unless otherwise provided, articles and substances (including those described as “not otherwise specified”) with a UN number, which are identified in the List of Dangerous Goods as being forbidden;

(c) infected live animals;

(d) liquids having a vapour inhalation toxicity which requires Packing Group I packaging;

(e) substances that are offered for transport in a liquid state at temperatures equal to or exceeding 100°C, or in a solid state at temperatures equal to or exceeding 240°C;

(f) any other articles or substance as specified by the appropriate national authority.

Cargo Aircraft Only

Dangerous goods that cannot be carried by passenger aircraft

Passenger and Cargo Aircraft

Dangerous Goods when acceptable can be carried on both

2.2 Hidden Dangerous Goods

Cargo declared under a general description may contain hazardous articles that are not apparent. Such articles may also be found in baggage.

2.3 Awareness of Hidden Dangerous Goods

General descriptions that are often used for items in cargo or in passengers' baggage which may contain dangerous goods. Other indications that dangerous goods may be present (e.g. labels, markings); and those dangerous goods which may be carried by passengers in accordance with DGR 2.3.

2.4 Examples of Hidden Dangerous Goods

(See DGR Ref. 2.2)

- Electrical Equipment
- Aircraft On Ground (AOG) Spares
- Frozen Fruit, Vegetables, Etc

Dangerous Goods Carried by Passengers and Crew (DGR: 2.3)

Dangerous goods must not be carried by passengers and crew, except for those listed in DGR: 2.3, and shown in Table 2.3.A.

- As checked baggage
- As carry-on -baggage
- on their person

Table 2.3.A Provisions for Dangerous Goods Carried by Passengers or Crew (Subsection 2.3)

Dangerous goods must not be carried in or as passengers or crew, checked or carry-on baggage, except as otherwise provided below. Dangerous goods permitted in carry-on baggage are also permitted "on one's person", except where otherwise specified.

	The pilot-in-command must be informed of the location	Permitted in or as carry-on baggage	Permitted in or as checked baggage	The approval of the operator is required
△ **Alcoholic beverages**, when in retail packagings, containing more than 24% but not more than 70% alcohol by volume, in receptacles not exceeding 5 L, with a total net quantity per person of 5 L. ***Note:*** *Alcoholic beverages containing 24% or less alcohol by volume are not subject to any restrictions.*	NO	YES	YES	NO
Ammunition, securely packaged (in Div. 1.4S, UN 0012 or UN 0014 only), in quantities not exceeding 5 kg gross weight per person for that person's own use. Allowances for more than one person must not be combined into one or more packages.	YES	YES	NO	NO
Avalanche rescue backpack, one (1) per person, containing cartridges of compressed gas in Div. 2.2. May also be equipped with a pyrotechnic trigger mechanism containing no more than 200 mg net of Div. 1.4S. The backpack must be packed in such a manner that it cannot be accidentally activated. The airbags within the backpacks must be fitted with pressure relief valves.	YES	YES	YES	NO
Baggage with installed lithium batteries non-removable batteries exceeding–0.3 g lithium metal or 2.7 Wh.	FORBIDDEN			
Baggage with installed lithium batteries: – non-removable batteries. Batteries must contain no more than 0.3 g lithium metal or for lithium ion must not exceed 2.7 Wh; – removable batteries. Batteries must be removed if baggage is to be checked in. Removed batteries must be carried in the cabin.	NO	YES	YES	NO
Batteries, spare/loose, including lithium batteries, non-spillable batteries, nickel-metal hydride batteries and dry batteries (see 2.3.5.8) for portable electronic devices must be carried in carry-on baggage only. Articles which have the primary purpose as a power source, e.g. power banks are considered as spare batteries. These batteries must be individually protected to prevent short circuits. Lithium metal batteries: the lithium metal content must not exceed 2 g (see 2.3.5.8.4). Lithium ion batteries: the Watt-hour rating must not exceed 100 Wh (see 2.3.5.8.4). Each person is limited to a maximum of 20 spare batteries. *The operator may approve the carriage of more than 20 batteries. Non-spillable batteries: must be 12 V or less and 100 Wh or less. Each person is limited to a maximum of 2 spare batteries (see 2.3.5.8.5).	NO*	NO	YES	NO
Camping stoves and fuel containers that have contained a flammable liquid fuel, with empty fuel tank and/or fuel container (see 2.3.2.5 for details).	YES	YES	NO	NO
Chemical Agent Monitoring Equipment, when carried by staff members of the Organization for the Prohibition of Chemical Weapons on official travel (see 2.3.4.4).	YES	YES	YES	NO
Disabling devices such as mace, pepper spray, etc. containing an irritant or incapacitating substance are forbidden on the person, in checked and carry-on baggage.	FORBIDDEN			
Dry ice (carbon dioxide, solid), in quantities not exceeding 2.5 kg per person when used to pack perishables not subject to these Regulations in checked or carry-on baggage, provided the baggage (package) permits the release of carbon dioxide gas. Checked baggage must be marked "dry ice" or "carbon dioxide, solid" and with the net weight of dry ice or an indication that there is 2.5 kg or less dry ice.	YES	YES	YES	NO
e-cigarettes (including e-cigars, e-pipes, other personal vaporizers) containing batteries must be individually protected to prevent accidental activation (see 2.3.5.8.2).	NO	NO	YES	NO
Electro shock weapons (e.g. Tasers) containing dangerous goods such as explosives, compressed gases, lithium batteries, etc. are forbidden in carry-on baggage or checked baggage or on the person.	FORBIDDEN			
Fuel cells containing fuel, powering portable electronic devices (e.g. cameras, cellular phones, laptop computers and camcorders), see 2.3.5.9 for details.	NO	NO	YES	NO
Fuel cell cartridges, spare for portable electronic devices, see 2.3.5.9 for details.	NO	YES	YES	NO
Gas cartridges, small, non-flammable containing carbon dioxide or other suitable gas in Division 2.2. Up to two (2) small cartridges fitted into a **self-inflating personal safety device**, intended to be worn by a person, such as a life jacket or vest. Not more than two (2) devices per passenger and up to two (2) spare small cartridges per device, not more than four (4) cartridges up to 50 mL water capacity for other devices (see 2.3.4.2).	YES	YES	YES	NO
Gas cylinders, non-flammable, non-toxic worn for the **operation of mechanical limbs**. Also, spare cylinders of a similar size if required to ensure an adequate supply for the duration of the journey.	NO	YES	YES	NO

	Hair styling equipment containing a hydrocarbon gas cartridge, up to one (1) per passenger or crew-member, provided that the safety cover is securely fitted over the heating element. This hair styling equipment must not be used on board the aircraft. Spare gas cartridges for such hair styling equipment are not permitted in checked or carry-on baggage.	NO	YES	YES	NO
	Insulated packagings containing refrigerated liquid nitrogen (dry shipper), fully absorbed in a porous material containing only non-dangerous goods.	NO	YES	YES	NO
	Internal combustion or fuel cell engines, must meet A70 (see 2.3.5.12 for details).	NO	YES	NO	NO
	Lithium Batteries: Portable electronic devices (PED) containing lithium metal or lithium ion cells or batteries, including medical devices such as portable oxygen concentrators (POC) and consumer electronics such as cameras, mobile phones, laptops and tablets (see 2.3.5.8). For lithium metal batteries the lithium metal content must not exceed 2 g and for lithium ion batteries the Watt-hour rating must not exceed 100 Wh. Devices in checked baggage must be completely switched off and must be protected from damage. Each person is limited to a maximum of 15 PED. *The operator may approve the carriage of more than 15 PED.	NO*	YES	YES	NO
	Lithium batteries, spare/loose, including power banks, see **Batteries, spare/loose**				
	Lithium battery-powered electronic devices. Lithium ion batteries for portable (including medical) electronic devices, a Wh rating exceeding 100 Wh but not exceeding 160 Wh. For portable medical electronic devices only, lithium metal batteries with a lithium metal content exceeding 2 g but not exceeding 8 g. Devices in checked baggage must be completely switched off and must be protected from damage.	YES	YES	YES	NO
	Lithium batteries, spare/loose with a Watt-hour rating exceeding 100 Wh but not exceeding 160 Wh for consumer electronic devices and PMED or with a lithium metal content exceeding 2 g but not exceeding 8 g for PMED only. Maximum of two spare batteries in carry-on baggage only. These batteries must be individually protected to prevent short circuits.	YES	NO	YES	NO
	Matches, safety (one small packet) or a small cigarette lighter that does not contain unabsorbed liquid fuel, other than liquefied gas, intended for use by an individual when carried on the person. Lighter fuel and lighter refills are not permitted on one's person or in checked or carry-on baggage. ***Note:*** *"Strike anywhere" matches, "Blue flame" or "Cigar" lighters or lighters powered by a lithium battery without a safety cap or means of protection against unintentional activation are forbidden (see 2.3.5.8.4(e)).*	NO	ON ONE'S PERSON		NO
	Mobility Aids: Battery-powered wheelchairs or other similar mobility devices with **non-spillable wet batteries, nickel-metal hydride batteries or dry batteries**, (see 2.3.2.2).	YES	YES	NO	YES
	Mobility Aids: Battery-powered wheelchairs or other similar mobility devices with **spillable batteries or with lithium ion batteries** (see 2.3.2.3 and 2.3.2.4 for details).	YES	YES	NO	YES
Δ	**Mobility Aids:** Battery-powered wheelchairs or other similar mobility devices with **lithium ion batteries** where the design of the mobility aid does not provide adequate protection for the battery(ies) (see 2.3.2.4.3 for details).	YES	NO	YES	YES
	Non-radioactive medicinal or toiletry articles (including aerosols) such as hair sprays, perfumes, colognes and medicines containing alcohol; and **Non-flammable, non-toxic (Division 2.2) aerosols**, with no subsidiary hazard, for sporting or home use (see 2.3.5.1). The total net quantity of non-radioactive medicinal or toiletry articles and non-flammable, non-toxic (Division 2.2) aerosols must not exceed 2 kg or 2 L and the net quantity of each single article must not exceed 0.5 kg or 0.5 L. Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents.	NO	YES	YES	NO
	Oxygen or air, gaseous, cylinders required for **medical use**. The cylinder must not exceed 5 kg gross weight. ***Note:*** *Liquid oxygen systems are forbidden for transport.*	YES	YES	YES	YES
	Permeation devices, must meet A41 (see 2.3.5.13 for details).	NO	YES	NO	NO
	Radioisotopic cardiac pacemakers or other devices, including those powered by lithium batteries, implanted into a person or fitted externally.	NO	ON ONE'S PERSON		NO
	Security-type equipment (see 2.3.2.6 for details).	YES	YES	NO	NO
	Security-type attaché cases, cash boxes, cash bags, etc. incorporating dangerous goods, such as lithium batteries and/or pyrotechnic material, except as provided in 2.3.2.6 are totally forbidden. See entry in 4.2–List of Dangerous Goods.	FORBIDDEN			
	Specimens, non-infectious packed with small quantities of flammable liquid, must meet A180 (see 2.3.5.11 for details).	NO	YES	YES	NO
	Thermometer, medical or clinical, which contains mercury, one (1) per person for personal use, when in its protective case.	NO	YES	NO	NO
	Thermometer or barometer, mercury filled carried by a representative of a government weather bureau or similar official agency (see 2.3.3.1 for details).	YES	NO	YES	YES

Note:
The provisions of Subsection 2.3 and Table 2.3.A may be limited by State or operator variations. Passengers should check with their airline for the current provisions.

2.5 Transport of Dangerous Goods by Post Office Mail

Dangerous Goods are generally forbidden in airmail. Exceptions are made for some infectious substances, dry ice, low levels of radioactive material, patient specimens and lithium ion batteries contained in equipment.

Note: It is important to check state and operator variations.

Dangerous Goods in Operator's Property (DGR: 2.5)

Dangerous Goods Regulations (DGR) does not apply to the articles and substances which form an integral part of the aircraft equipment such as;

- Fire extinguishers,
- Oxygen bottles,
- Life rafts,
- First aid kits

Consumer commodities for use or sale on the aircraft such as

- aerosol
- alcoholic beverages
- perfumes
- colognes
- safety matches and liquefied gas lighters or
- Dry ice for use in food and beverage service aboard the aircraft

(Ref: 2.5.1.1 to 2.5.1.3)

Replacement spares parts, fire extinguishers, aircraft batteries, in-flight sales items, etc., being shipped as cargo must comply with the Regulations.

2.6 Packing Groups

Packing Groups are assigned to dangerous goods according to the degree of danger they present. They are shown as Roman numerals: I, II, III. Packing Groups have been assigned to Classes 3, 4, 8 and Div 5.1, Div 6.1. Some substances in Class 9, Liquids in Div 5.1 and waste material in Div 6.2 have been assigned to Packing Groups by experience rather than the test.

PG I - **High Danger**

PGII - **Medium Danger**

PGIII - **Low Danger**

On Packages in the UN Package markings:

X = PGI

Y = PGII

Z = PGIII

2.7 Difference between Hazard and Risk

The term **hazard** is defined in the ICAO Safety Management Manual (SMM) (Doc 9859) as: A condition or object with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function.

Risk is the assessed potential for adverse consequences resulting from a hazard. It is the likelihood that the hazard's potential to cause harm will be realised. (ICAO Doc 9859)

Review exercises for Module - 2

Exercise -1

1. Who has the responsibility for the following procedures regarding dangerous goods?

(a) Classifying _____

(b) Identification _____

(c) Loading _____

(d) Marking & Labeling _____

(e) Inspection _____

2. What are 2 of the Operators responsibility?

_____

_____

Exercise – 2

Review Questions for Limitation

1. What kind of Hazard might be hidden in Tool Boxes?

_____

_____

2. Unaccompanied passenger baggage or Personal effects may contain hidden dangerous goods

TRUE	FALSE

6. Give 2 Dangerous Goods that may possibly be carried by Post Office mail

_____

_____

Notes

Module 3 - MARKING AND LABELLING

3.1 General

The correct marking and labelling of dangerous goods packages is an important element in the safe transport process. Markings and labels fulfill the following general purposes:

- They indicate the contents of the package;
- They indicate that the packaging meets approved standards;
- They provide safe handling and stowage information;
- They indicate the nature of hazard(s).

The shipper is responsible for the correct marking and labelling of the packages presented for transport.

The cargo agent, freight forwarder and operators' dangerous goods acceptance staff are required to check and make sure that all packages are correctly marked and labeled before accepting the consignment.

3.2 Marking (DGR: 7.1)

For each package and overpack containing dangerous goods that required marks the shipper must:

- Check that the required marks are applied in the correct locations on the package and that it meets the quality and specification requirements of the Regulations;
- Ensure that where specification packaging is required, the specification marks are as specified in 6.0.4;
- Remove or obliterate any irrelevant marking;
- Ensure that all of the required markings have been applied when the package is presented to the operator.

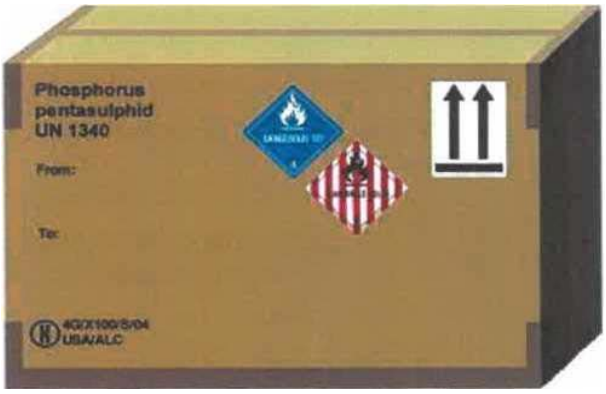
3.3 Size of marks

The mark of the UN number and the letters “UN” as specified in 7.1.4.1(a) must be at least 12 mm high, except for packagings of 30 L or 30 kg capacity or less, when they must be at least 6 mm in height and for packagings of 5 L or 5 kg or less when they must be of an appropriate size.

Types of Marks:

(DGR: 7.1.2)

Packaging Use Markings UN Specification Markings



It is the shipper’s responsibility to ensure that the dangerous goods are properly marked and labeled.

Following packaging Use Marks are required on all packages containing dangerous goods:

- **Proper Shipping Name**
- **UN/ID –Number**
- **Full Name and Address of Shipper**
- **Full Name and Address of Consignee**

3.4 Labelling (DGR: 7.2)

Packages containing dangerous goods must be properly labeled to indicate their content. It is the shipper's responsibility to provide adequate labeling and remove any old labels to avoid confusion. The use of the correct prescribed labels is a mandatory requirement. There are two

3.5 Types of labels:

There are two types of labels:

- Hazard Labels (Diamond shape); and
- Handling Labels (Square or rectangular shape)

3.6 Hazard Label

Hazard labels are required for all packages containing Dangerous Goods articles or substances.

The hazard label(s) required for each item is specified in Column D of the List of Dangerous Goods.

3.7 Primary and Subsidiary Hazards

When Dangerous Goods presenting more than one hazard, these packages require primary and subsidiary hazard labels required by the blue pages' column D.

3.8 Handling Labels

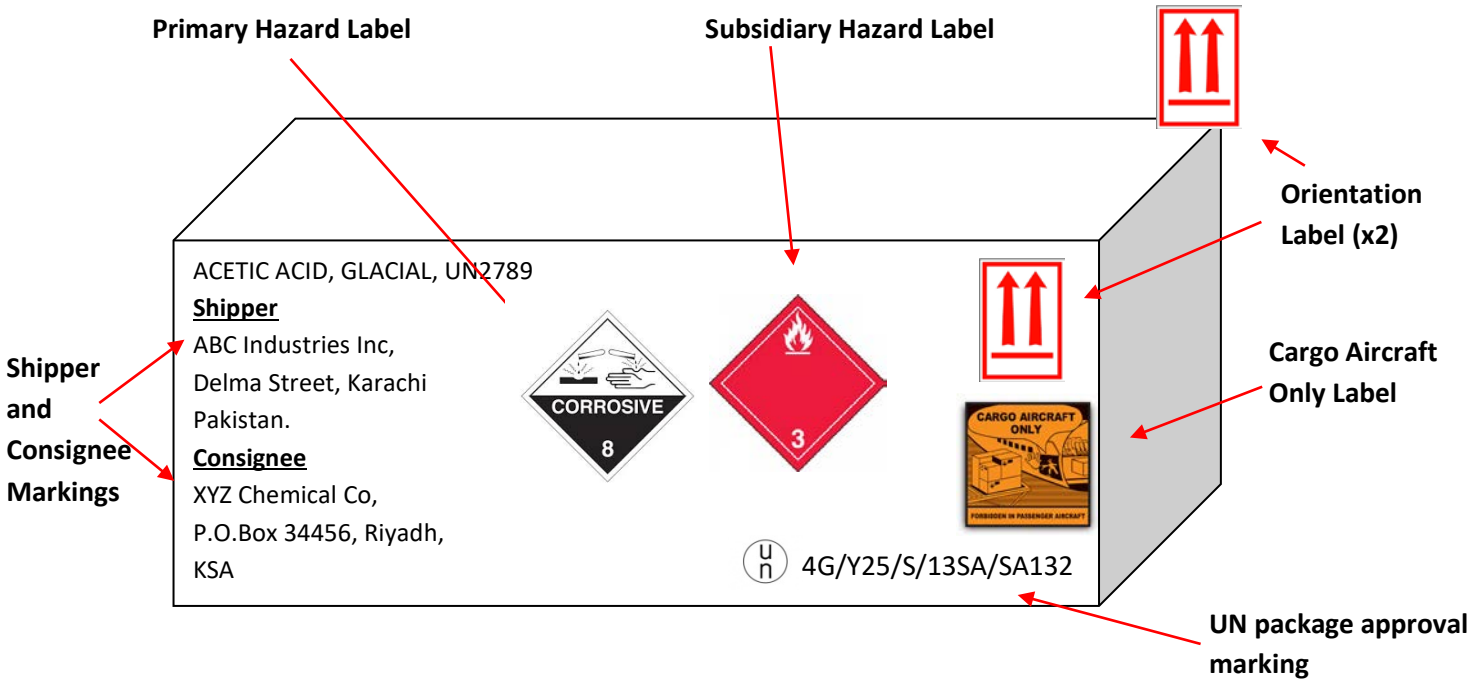
In addition to hazard labels, handling labels are used to provide information on the proper handling and stowage of packages of dangerous goods.

3.9 How to affix the labels (DGR: 7.2.6)

Remember, labels must:

- Be securely fixed or printed on the package and must not be obstructed by part of the packaging;
- Be on a background of contrasting colour or must have a dotted or solid line on the boundary;
- Not be folded or so that parts appear on different faces of the package;If the package is of such an irregular shape that the label cannot be attached or printed on a surface, it is acceptable to attach the labels to the package by means of a strong tag.

Remember the package must be large enough to accept all required labels.



3.10 Overpack Markings (DGR: 7.1.7.)

If the required package use markings on packages in overpacks are not clearly visible from the outside of the overpack, they must be reproduced on the outside of the overpack along with the word "Overpack":

Overpack packages must have following marking as required:

- Proper shipping names;
- UN or ID numbers;
- Full name and address of the shipper and consignee;
- Additional required markings for Dry ice, Division 6.2 Infectious substances, Div 2.2 refrigerated liquefied gases, Biological substance, category B, and chemical oxygen generators;
- Any special handling instructions appearing on package inside the overpack.

If the overpack contains UN specification packages, and the specification markings are not visible, they need not be reproduced on the overpack. The "Overpack"

marking is an indication that packages contained within, comply with the prescribed specifications.

Refer to DGR 7.1.7 for markings and 7.2.7 for labeling for Overpacks

Review exercises for Marking and Labelling (DGR: Section7)

1. Name 3 hazard class labels

_____

2. (a) What does Orientation label mean?

_____

(b) How many orientation labels must be on a package?

_____

3. What marks must always appear on any dangerous goods package?

_____

_____

_____

_____

4. What Marking identifies package being shipped using “Y” packing instruction?

_____

5. Mention the two types of labels that are used when “Dangerous Goods are involved.

Notes

Module 4 - STORAGE AND LOADING

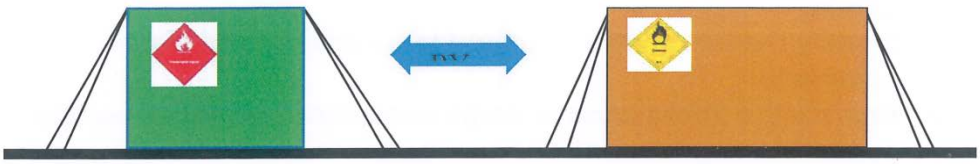
4.1 General

Dangerous goods are packaged to prevent the release of the contents in conditions normal to air transport. However, conditions normal to air transport rely on proper warehouse storage and handling and correct loading on to aircraft floor or Unit Load Devices. If handled improperly, the packaging containing dangerous goods may fail.

The following aspects must be addressed to ensure proper storage and handling of packages containing dangerous goods inside the warehouse and when being loaded on, or unloaded from, an aircraft:

- Protect from damage;
- Inspection; and
- Handling of self-reactive substances.

4.2 Securing and separating Dangerous Goods



When loaded in an aircraft compartment or ULD, packages containing dangerous goods must be protected from damage and secured to prevent displacement in flight or allow packages to move.

The rules of load distribution and restraint that apply to general cargo, apply equally to dangerous goods - particularly to large packages, drums containing liquid dangerous goods, and cylinders of compressed gases.

When loading dangerous goods, the following conditions must be considered to ensure they are carried safely:

- Segregation;
- Restraint;
- Shoring requirements;
- Commodity specific requirements

4.3 Loading – DGR: 9.3

Incompatible Dangerous Goods - DGR: 9.3.2

Packages containing dangerous goods, which might react dangerously with each other, must not be stowed on an aircraft (or in a warehouse) next to each other, or in such position that would allow interaction between them in the event of a leakage.

As a minimum, the segregation indicated by table 9.3.A must be followed.

An “X” indicates at the inter-section of row and column, the classes which must be separated from each other.

4.4 Segregation of Packages

DGR: TABLE 9.3.A

Hazard Label	1 excl . 1.4S	2.1	2.2 2.3	3	4.1	4.2	4.3	5.1	5.2	8	9 see 9.3.2.1.3
1 excluding 1.4S	See9.3.2.2.5	X	x	X	X	x	x	x	X	x	X
2.1	X	-	-	-	-	-	-	-	-	-	X
2.2, 2.3	X	-	-	-	-	-	-	-	-	-	-
3	X	-	-	-		-	-	x	-	-	X
4.1	X	-	-	-	-	-	-	-	-	-	X
4.2	x	-	-	-	-	-	-	X	-	-	-
4.3	x	-	-	-	-	-	-	-	-	X	-
5.1	x	-	-	X	-	X	-	-	-	-	X
5.2	x	-	-	-	-	-	-	-	-	-	-
8	x	-	-	-	-	-	x	-	-	-	-
9see 9.3.2.1.3	x	X	-	X	X	-	-	x	-	-	-

"X"= Indicates that packages must be segregated.

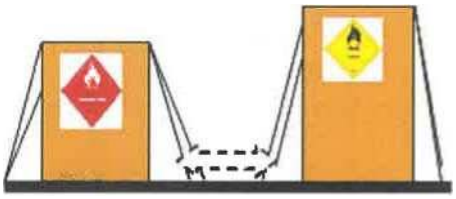
"—" = Indicates that packages do not require segregation.

Important:

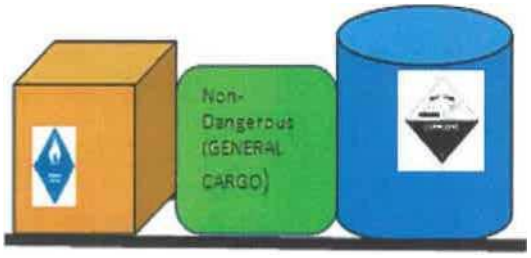
Division 1.4S, and Classes 6, 7 and 9 (other than lithium batteries) are not included in Table 9.3.Aas they do not require segregation from other classes of dangerous goods.

Packages and overpacks containing lithium ion batteries prepared in accordance with Section IA or Section IB of PI 965 and packages and overpacks containing lithium metal batteries prepared in accordance with Section IA or Section IB of PI 968 must not be stowed on an aircraft next to, or in a position that would allow interaction in the event of damage/fire with packages or overpacks containing dangerous goods which bear a Class 1, other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1 hazard label. To maintain acceptable segregation between packages and overpacks, the segregation requirements shown in Table 9.3.A must be observed. The segregation requirements apply based on all hazard labels applied on the package or overpack, irrespective of whether the hazard is the primary or subsidiary hazard.

4.5 The Two Methods to separate Dangerous Goods

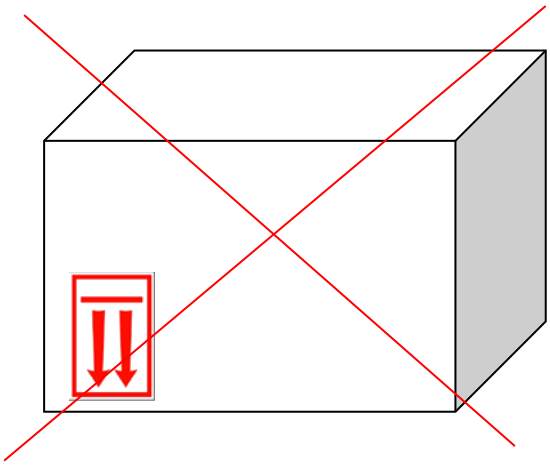


Tie down so the article or substances cannot interact in case of leakage



Locating ordinary Non-dangerous cargo in between the incompatible packages

4.6 Stowage of Packages Containing Liquids: DGR 9.3.3



Packages bearing the package orientation “This way up” label must be loaded, stowed and handled at all times in accordance with such a label. Single packaging with end closures containing liquids must be stowed with such closers upwards

4.7 Cargo Aircraft Only (CAO) Shipments (DGR: Ref: 9.3.4.1)

Packages or overpacks of Dangerous Goods bearing the “Cargo Aircraft Only” label must be loaded in accordance with one of the following provisions;

In a **Class “C”** aircraft cargo compartment; or

In a **unit load device** equipped with a fire detection/suppression system equivalent to that required by the certification requirements of a Class C aircraft cargo compartment as determined by the appropriate national authority; or

In such manner that in the event of an emergency involving such packages or overpacks, a crewmember or other authorized person can access those packages or overpacks, and can handle and where size and weight permit, separate such packages from other cargo

Where requested, packages or overpacks bearing “Cargo Aircraft Only” label should be made available to the crew for inspection prior to departure.

4.8 Damaged Packages of Dangerous Goods - DGR: 9.3.6

Operator and Agents staff must protect packages of dangerous goods from being damaged. In the event of visible damage to a DG package never to be LOADED to a vehicle, warehouse or on an aircraft or must be OFFLOADED immediately when discovered.

UNIT LOAD DEVICES (ULD) CONTAINING DANGEROUS GOODS- DGR: 9.3.8

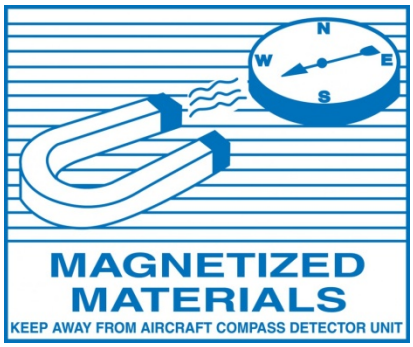
Each ULD containing restricted commodities must clearly display on its exterior an indication that restricted commodities are contained within the ULD.

This is normally done by attaching a regular white identification tag. But for dangerous goods this tag has border of prominent red hatching on both sides and with minimum dimensions of 148 X 210 mm).

The tag must be removed from the ULD immediately after the dangerous goods have been unloaded.

If the ULD contains packages bearing the “Cargo Aircraft Only" label, the tag must indicate that the ULD can only be loaded on a cargo aircraft.

Loading of Magnetized Materials - DGR: 9.3.9



MAGNETIZED MATERIALS are Cover materials with relatively high magnetic field strength such as magnetrons and non-shielded permanent magnets without keeper bars installed. Masses of ferro-magnetic metals such as automobiles, automobile parts, metal fencing, piping and metal construction material, even if not meeting the definition of magnetized materials, may be subject to operator's special stowage regulations since they may affect aircraft instruments, particularly the compasses.

Magnetized materials must not be loaded in such a position that they will have a significant effect on the direct-reading magnetic compasses or on the master compass detector units of the aircraft.

DRY ICE –Carbon Dioxide solid – DGR: 9.3.10

Live animals should not be loaded in close proximity to Dry Ice.

The operator must ensure that ground staff is informed that Carbon dioxide; solid dry ice is being loaded or is on board the aircraft. The maximum limit per compartment is depending on the Aircraft type. Thus before loading Dry Ice the operator must refer to the Aircraft Loading manual whether it can be loaded without any restrictions.

To avoid suffocation, before entering a confined space where Carbon dioxide, solid (dry ice) has been loaded or stored, ensure adequate ventilation has occurred.

Handling of Self-Reactive Substances and Organic Peroxide – DGR: 9.3.15

Packages containing organic peroxide of division 5.2 and self-reactive substances of Division 4.1 must be protected from direct sunlight and must be stored in a cool well- ventilated place from all sources of heat.

Inspection of for Damage or Leakage - DGR : 9.4

When handling and loading of Dangerous Goods packages, all the handling labels must be respected.

Packages or overpacks must not be loaded onto an aircraft or into a unit load device unless they have been inspected immediately prior to loading and found free from visible leaks or damage.

Before loading on an aircraft, ULD's must be checked and found free from any evidence of leakage or damage that would cause it to be unserviceable (DGR: 9.3.6.2).

On unloading, packages and overpacks containing dangerous goods must be inspected for damage or leakage. If evidence of damage or leaking is found, the position where the dangerous goods or the unit load device was stowed on the aircraft must be inspected for damage or contamination and hazardous contamination removed.

Any package, which become visible to be damaged or leaking, must be OFFLOADED from the aircraft and incident report must be raised in accordance with company, airport and governmental procedures.

This may require the services of specialist personnel. In the case of spillage of radioactive material or infectious substances, the appropriate national authority must be advised. In the case of leakage, the operator must ensure the remainder

of the consignment is undamaged and that no other load has been contaminated (DGR: 9.3.6.3).

Inspection for Damage or Leakage as per IATA DGR:

Packages or overpacks containing dangerous goods must be inspected for signs of damage or leakage upon unloading from the aircraft or unit load device. If evidence of damage or leakage is found, the position where the dangerous goods or unit load device was stowed on the aircraft must be inspected for damage or contamination and any hazardous contamination removed. The special responsibilities of operators regarding infectious substances are detailed in 9.4.2 and for radioactive materials in 10.9.4.

Infectious Substances

If any person responsible for the carriage of packages containing infectious substances becomes aware of damage to or leakage from such a package, that person must:

•avoid handling the package or keep handling to a minimum;

•inspect adjacent packages for contamination and put aside any that may have been contaminated;

•inform the appropriate public health authority or veterinary authority and provide information on any other countries of transit where persons may have been exposed to danger; and

•notify the shipper and/or the consignee.

Contaminated Cargo or Baggage Handling

If an operator becomes aware that baggage or cargo not identified as containing dangerous goods has been contaminated and it is suspected that dangerous goods may be the cause of the contamination, the operator must take reasonable steps to identify the nature and source of contamination before proceeding with the loading of the contaminated baggage or cargo. If the contaminating substance is found or suspected to be a substance classified as dangerous goods by these

Regulations, the operator must isolate the baggage or cargo and take appropriate steps to nullify any identified hazard before being transported further by air.

Damaged or Leaking Packages

If it is evident that a package is damaged or leaking, or if it is suspected that the package may have leaked or been damaged, access to the package should be restricted. Local safety and emergency procedures should then be followed.

When necessary, additional steps for the protection of persons, property and the environment, in accordance with the provisions established by the relevant competent authority (e.g. occupational health and safety authority, environmental agency, etc.), should be taken to overcome and minimize the consequences of such leakage or damage. The presence of GHS pictograms on a package which indicates that contents may pose a risk to persons or the environment may need to be taken into account even though the contents are not classified as dangerous goods.

Summary of Stowage and loading of Dangerous Goods

- Do Not load any damage packages
- Respect the handling labels
- Liquids are to be loaded in an upright position
- Secure the package against movement, i.e.; lashing or tightly loaded with other cargo
- Protect the light packages with heavy cargo
- Check the incompatibility
- CAO packages must be loaded according to stipulated requirement in the regulation
- If any state and operator variations are apply to your shipment

Review exercise for Handling

1. Can the following packages of dangerous goods be loaded next to each other?

Packages		Compatible
(a) Division 6.1 and class 3	YES/NO	_____
(b) Division 4.3 and class 8	YES/NO	_____
(c) Class 3 and Class 8	YES/NO	_____
(d) Division 5.1 and Class 3	YES/NO	_____

Module 5 - HANDLING EMERGENCIES

5.1 IATA DGR Chapter 9.5.1.2 (Emergency Response Information)

The operator must ensure that for consignments requiring a Shipper's Declaration for Dangerous Goods, appropriate information is immediately available at all times for use in emergency response to accidents and incidents involving dangerous goods in air transport. The information must be available to the pilot-in-command and can be provided by:

- *The Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (ICAO Doc. 9481–AN/928); or
- any other document, which provides appropriate information concerning dangerous goods on board.

For this reason we must ensure that the Shipper Declaration and all other documentation is accurately checked when received from the Shipper and compared with the cargo prior to delivering the cargo to the Operator. This will assist the Pilot and Crew to determine the necessary procedures during an emergency by referring to the correct information provided.

Emergencies at Facilities will follow the guidelines provided in Emergency Procedures Manual specific to the area (e.g. warehouse) where the incident occurs where the accident or incident occurred.

5.2 REPORTING OF INCIDENTS AND ACCIDENTS

Reporting of Dangerous Goods Occurrences

An operator must report to the appropriate authority of the State of the operator any occasion when:

(a) dangerous goods are discovered to have been carried when not loaded, segregated, separated or secured in accordance with IATA DGR 9.2 or 9.3; or

(b) dangerous goods are discovered to have been carried without information having been provided to the Pilot-in-Command in accordance with IATA DGR 9.5.1.1.

Dangerous Goods Occurrence Report

Operators must report:

•dangerous goods accidents and incidents to the appropriate authority of the State of the operator and the State in which the accident or incident occurred in accordance with IATA DGR 9.6.1;

•occasions of undeclared or mis-declared dangerous goods to the appropriate authority of the State of the operator and the State in which this occurred in accordance with IATA DGR 9.6.2;

•other occurrences in accordance with IATA DGR 9.6.4.

IATA DGR Figure 9.6.A is an example of a standard form which is in use in many parts of the world and may be used where the reporting format has not been specified by the appropriate authority. In addition, it is recommended that this format be used when reporting incidents to another operator.

Dangerous Goods Reporting Requirements

(a) *Reporting dangerous goods incidents and accidents*. Staff must report in writing all dangerous goods incidents and accidents to GACA and the appropriate authority in the State

(b) *Reporting undeclared or misdeclared dangerous goods*. Staff must report in writing the finding of undeclared or misdeclared dangerous goods discovered at its facilities, on to the GACA and arrival to its facilities to the appropriate authority in the state where the accident or incident occurred.

(c) Written reports made under this section must be in a format approved by the President and contain the information specified in Appendix A of GACAR Part 109 (Contents of Reports):

(1) Date of the incident or accident or the finding of undeclared or misdeclared dangerous goods;

(2) Location, the flight number, and flight date;

(3) Description of the goods and the reference number of the air waybill, pouch, baggage tag, ticket or other identifier;

(4) Proper shipping name (including the technical name, if appropriate) and UN/ID number1, when known;

(5) Class or division and any subsidiary risk;

(6) Type of packaging, and the packaging specification marking on it;

(7) Quantity;

(8) Name and address of the shipper, passenger, or other involved person;

(9) Any other relevant details;

(10) Suspected cause of the incident or accident;

(11) Action taken;

(12) Any other reporting action taken; and

(13) Name, title, address, and telephone number of the person making the report.

Copies of relevant documents and any photographs taken should be attached to a report.

(d) First reports must be submitted within 72 hours of the event or discovery, unless exceptional circumstances prevent this, and include the details that are

known at that time. If necessary, a subsequent report must be made as soon as possible giving all the details that were not known at the time the first report was sent. If a report has been made verbally, written confirmation must be sent as soon as possible.

5.3 Dangerous Goods Discrepancy Report

(a) Each person who discovers a discrepancy, as defined in paragraph (b) of this section, relative to the shipment of a dangerous good following its acceptance for transportation aboard an aircraft must, as soon as practicable, notify the GACA by telephone or electronically and must provide the following information:

(1) Name and telephone number of the person reporting the discrepancy,

(2) Name of the operator,

(3) Specific location of the shipment concerned,

(4) Name of the shipper,

(5) Nature of the discrepancy, and address of the shipper or person responsible for the discrepancy, if known.

(b) Discrepancies that must be reported under paragraph (a) of this section are those involving dangerous goods which are improperly—

(1) Described in the dangerous goods transport document;

(2) Certified on the declaration attached to the dangerous goods transport document; or

(3) Labelled, marked or packaged in a manner making their status as dangerous goods not ascertainable when accepted under the provisions of GACAR 109.61, including packages and baggage that are found to contain dangerous goods subsequent to their being offered and accepted as other than dangerous goods.

5.4 Dangerous Goods Emergency Response

How to react in case of an Emergency due to dangerous goods accidents and incidents

Act cautiously and in case of doubt always follow the emergency procedures. Be aware that the actions taken are only precautions and panic must be avoided.

When a package containing dangerous goods is damaged, but no spillage occurred:

- Separate the package from other shipments and contact your immediate supervisor
- Make a log entry and prepare the incident/accident occurrence report.

Classes 1 to 5 and 9

When leakage or spillage of the contents

- ➢ Inform immediate supervisor
- ➢ Identify the substances by referring to the shipper's declaration.
- ➢ Place the package in a safe location if safe to do so;
- ➢ If it is a Div 2.3 toxic gas - keep away minimum 25 M
- ➢ Get professional help from Fire Police or other emergency services.
- ➢ Make a log entry and prepare the incident/accident occurrence report.

Contamination of clothing and or skin

- ✓ Thoroughly wash off body with plenty of water;
- ✓ Remove contaminated clothes; s Do not eat or smoke;
- ✓ Keep hands away from eyes, mouth and nose;
- ✓ Seek medical assistance.

Classes 6,7 and 8

When a package containing dangerous goods is damaged, but no spillage occurred:

- Do not touch or move the package
- Restrict access to the immediate surrounding area
- Avoid possible contamination of the skin and inhalation of vapor
- Get professional help from Fire Police or other emergency services.
- Make a log entry and prepare the incident/accident occurrence report

Contamination of clothing and/or skin

- ✓ Thoroughly wash off body with plenty of water;
- ✓ Remove contaminated clothes;
- ✓ Do not eat or smoke;
- ✓ Keep hands away from eyes, mouth and nose;
- ✓ Seek medical assistance.

Aircraft Emergency Response Drills

1. COMPLETE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES.

2. CONISIDER LANDING AS SOON AS PRACTICCABLE

3. USE DRILL FROM THE CHART BELOW

DRILL NO.	INHERENT RISK	RISK TO AIRCRAFT	RISK RO OCCUPANTS	SPILL OR LEAK PROCRDURE	FIRE-FIGHTING PROCEDURE	ADDITIONAL CONSIDERATIONS
1	Explosion may cause structural failure	Fire and /or explosion	As indicated by the drill letter (s)	Use 100% Oxygen: no smoking	All agents according to availability: use standard fire procedure	Possible abrupt loss of pressurization
2	Gas non-flammable, pressure may create hazard in fire	Minimal	As indicated by the drill letter (s)	Use 100% oxygen: establish and maintain maximum ventilation for “A” “I” or “P” drill letter	All agents according to availability: use standard fire procedure	Possible abrupt loss of pressurization
3	Flammable liquid or solid	Fire and /or explosion	Smoke, fumes and heat. And as indicated by the drill letter(s)	Use 100% oxygen: establish and maintain maximum ventilation : No Smoking minimum electrics	All agents according to availability: no water on “W” drill letter	Possible abrupt loss of pressurization
4	Spontaneously combustible or pyrophoric	Fire and/or explosion	Smoke, fumes and heat. And as indicated by the drill letter(s)	Use 100% oxygen: establish and maintain	All agents according to availability: no water	Possible abrupt loss of pressurization: minimum electrics if “F”

				maximum ventilation	on “W” drill letter	OR “H” drill letter
5	Oxidizer, may ignite other materials, may explode in heat of a fire	Fire and/or explosion possible corrosion damage	Eye, nose and throat irritation: skin damage on contact	Use 100% oxygen: establish and maintain maximum ventilation :	All agents according to availability: no water on “W” drill letter	Possible abrupt loss of pressurization
6	Toxic, may be fatal if inhaled , ingested, or absorbed packages	Contamination with toxic liquid or solid	Acute toxicity effects may be delayed	Use 100% oxygen: establish and maintain maximum ventilation : do not touch without gloves	All agents according to availability: no water on “W” drill letter	Possible abrupt loss of pressurization: minimum electrics if “F” OR “H” drill letter
7	Radiation from broken and/or unshielded packages	Contamination with spilled radioactive material	Exposure to radiation, and personal contamination	Don’t move packages : avoid contact	All agents according to availability	Call for qualified person to meet the aircraft
8	Corrosive, fumes disabling if inhaled or in contact with skin	Possible corrosion damage	Eye, nose and throat irritation: skin damage on contact	Use 100% oxygen: establish and maintain maximum ventilation : do not touch without gloves	All agents according to availability: no water on “W” drill letter	Possible abrupt loss of pressurization: minimum electrics if “F” OR “H” drill letter

9	No general inherent risk	As indicated by the drill letter	As indicated by the drill letter	Use 100% oxygen: establish and maintain maximum ventilation : if “A” drill letter	All agents according to availability: no water on “A” drill letter	None
10	Gas flammable. High fire risk if any ignition source present	Fire and/or explosion	Smoke, Fumes and heat, and as indicated by the drill letter	Use 100% oxygen: establish and maintain maximum ventilation : No Smoking minimum electrics	All agents according to availability	Possible abrupt loss of pressurization
11	Infections substances may affect humans or animals if inhaled. ingested or absorbed though the mucous membrane or an open wound	Contamination with infectious substances	Delayed infection to humans or animals	Do not touch minimum recirculation and ventilation in affected area	All agents according to availability: no water on “Y” drill letter	Call for qualified person to meet the aircraft

DRILL LETTER	ADDITIONAL RISK	DRILL LETTER	ADDITIONAL RISK
A	ANAESTHETIC	M	MAGNETIC
C	CORROSIVE	N	NOXIOUS
E	EXPLOSIVE	P	TOXIC (POISON)

F H I L	FLAMMABLE HIGH IGNITABLE IRRITANT/TEAR PRODUCING OTHER RISK LOW OR NONE • Toxic has the same meaning as poison	S W X Y	SPONTANEOUSLY COMBUSTIBLE OR PYROPHORIC IF WT GIVES OFF POISONS OR FLAMMABLE GAS OXIDIZER DEPENDING ON THE TYPE OF TYPE OF INFECTIONS SUBSTANCE THE APPROPRIATE NATIONAL AUTHORITY MAY BY REQUIRED TO QUARANTINE INDIVIDUALS ANIMALS CARGO AND THE AIRCRAFT

Aircraft Emergency response drills

International Civil Aviation Organization (ICAO)

Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods (Doc 9481-AN-/928)

Review Exercise for Incident/Accident

1. What precautions must be taken when loading each of the following types of dangerous goods?

(a) Flammable liquid

_____

(b) Self-reactive Substances

_____

2. While unloading, you see a fiberboard box with a wet corner and the box bears an **"Infectious Substance"** label.

What immediate actions are required?

_____
_____
_____
_____
_____
_____
_____
_____
_____

NOTES

Module 6 – SECURITY

6.1 Introduction

Security plays a vital role in the safe transport of dangerous goods. Every contracting State must establish dangerous goods security measures, applicable to Shippers, Operators and other individuals engaged in the transport of dangerous goods by air. The purpose is to minimize theft or misuse of dangerous goods that may endanger persons, property or the environment.

6.2 Definition of High Consequence Dangerous Goods

High consequence dangerous goods are those which have the potential for misuse in a terrorist event and which may, as a result, produce serious consequences such as mass casualties, mass destruction or, particularly for Class 7, mass socio-economic disruption.

An indicative list of high consequence dangerous goods in classes and divisions other than Class 7 is given in Table 1.7.A.

6.3 Indicative List of High Consequence Dangerous

Class	Division	Substance or article
1	1.1	Explosives
	1.2	Explosives
	1.3	Compatibility group C explosives
	1.4	Explosives of UN Nos. 0104, 0237, 0255, 0267, 0289, 0361, 0365, 0366, 0440, 0441, 0455, 0456 and 0500
2	2.3	Toxic gases (excluding aerosols)
3		Desensitized explosives
4	4.1	Desensitized explosives
6	6.1	Toxic substances of packing group I, excluding excepted quantities
6	6.2	Infectious substances of Category A (UN2814 and UN2900)

For Class 7, chapter 1.7.3.1.3, 1.7.3.1.4 and Table 1.7B must be met.

6.4 Security Plans

Operators, shippers and others (including infrastructure managers) engaged in the transport of high consequence dangerous goods (see 1.7.3) should adopt, implement and comply with a security plan that addresses at least the elements specified in 1.7.4.2 of the IATA DGR.

6.5 Security measures to be addressed

The Plan should address measures to take that would minimize security risks. Security plans must include the following elements:

- Specific allocation of responsibilities to competent and qualified persons.
- Records of the dangerous goods or types of dangerous goods transported.
- Review of current operations and assessment of vulnerabilities.
- Statement of measures implemented to reduce security risks (including training, security policies, operating practices, equipment and resources used).
- Effective and up-to-date procedures for reporting and dealing with security threats, breaches of security and security-related incidents.
- Procedures or the evaluation, testing, periodic review and update of security plans.
- Measures to ensure the physical security of the transport information contained in the plan.
- Measures to ensure that the distribution of information relating to the transport operation contained in the security plan is limited, as far as possible, to only those who need to have it.

For radioactive material, the provisions agreed by the International Atomic Energy Agency (IAEA) must be applied, particularly those of the Convention on Physical Protection for Nuclear material and the IAEA circular on The Physical Protection of Nuclear Material Facilities.

FOR INTERNAL TRAINING USE

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