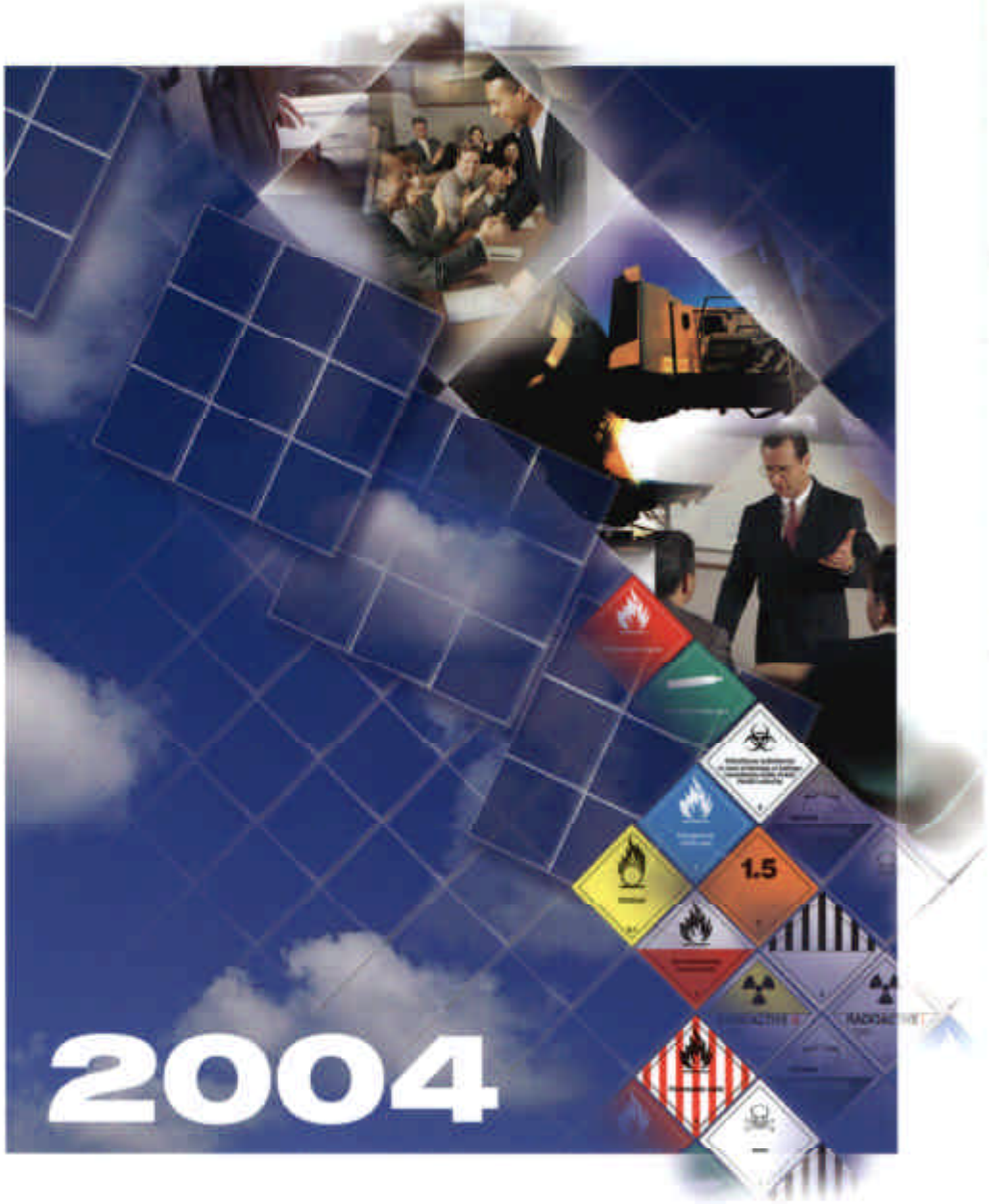


Dangerous Goods Training Programme

BOOK 3 — Cabin Crew; Passenger Handling Personnel; Security Screening Personnel

28th Edition

International Air Transport Association

Dangerous Goods Training Programme

BOOK 3 — Cabin Crew; Passenger Handling Personnel; Security Screening Personnel

28th Edition
Effective 1 January 2004

based on the 45th Edition of the IATA Dangerous Goods Regulations, effective 1 January 2004

International Air Transport Association
Montreal — Geneva

IATA

TABLE OF CONTENTS

INTRODUCTION

Dangerous goods are commodities that possess potentially dangerous characteristics. These characteristics will not make their transport by air dangerous, provided that suitable precautions are taken. Within the definition of dangerous goods, these goods not only consist of obvious substances such as acids, explosives and poisons, but also include less apparent articles like magnets, refrigerants and some everyday household items such as bleaches and aerosols.

Regulations for transporting dangerous goods by air are internationally agreed rules for their safe transportation, published by The International Civil Aviation Organisation (ICAO) as the *Technical Instructions for the Safe Transport of Dangerous Goods by Air.* The emphasis is placed firmly on safety. As you may expect from the title these "Technical Instructions" are very detailed. These requirements are reflected completely in the IATA *Dangerous Goods Regulations,* which are used and recognised as the "field" document for air transportation. You need to be aware of these Regulations so that you may monitor the system where possible and may properly carry out your own responsibilities.

The ICAO Technical Instructions require that you be familiar with the general philosophy of the Regulations, limitations on dangerous goods, together with general marking and labelling identification and emergency procedures.

The pages that follow will help you understand the relevant parts of these provisions more fully.

All cross-references contained herein are made to the 45th edition of the IATA *Dangerous Goods Regulations* (DGR), which must be used in conjunction with the 28th edition this training programme.

The 45th edition of the IATA *Dangerous Goods Regulations* becomes effective on 1 January 2004 and replaces the 44th edition, which must not be used after 31 December 2003 unless specifically permitted in the Regulations.

TESTING AND CERTIFICATION

There is a legal requirement that a test must be undertaken following dangerous goods training to verify understanding of the Regulations. A certificate must be issued confirming successful completion of the test (DGR 1.5.0.4).

Review questions appear at the end of each unit and at the end of this book. The review questions appearing at the end of this book can be used to test the student's understanding of the aspects of the subject with which they should be familiar. To facilitate the requirement of the paragraph above and to facilitate the user of this training book, the pages with the answers of these Review Questions have been perforated to enable them to be removed prior to use of the book in the classroom.

GENERAL PHILOSOPHY

Safety

Dangerous goods can be transported safely by air transport provided certain principles are strictly followed. These principles and procedures include:

- correct classification of the dangerous goods;
- ensuring that prohibited items are not shipped by air, unless exempted;
- use of packaging that meets the prescribed specifications, and ensuring quantity per package limitations are observed;
- all relevant staff have regular mandated job-specific training;
- correct declaration of the dangerous goods;
- the pilot-in-command is advised of the location of the dangerous goods aboard the aircraft;
- all categories of staff check for hidden hazards.

The IATA Dangerous Goods Regulations is an easy-to-use manual based on the International Civil Aviation Organization (ICAO) Technical Instructions. It incorporates additional operational requirements, which provide a harmonised system for operators to accept and transport dangerous goods safely and efficiently.

Classification

Dangerous goods are classified according to criteria determined by the United Nations Committee of Experts. This classification determines the acceptability of the articles and substances for air transport as well as the conditions for their transport. It is the responsibility of the shipper of cargo to determine if articles and substances are dangerous goods or not, and if dangerous goods, to determine the correct Class or Division. This list is not "all inclusive" and therefore it contains many generic or "not otherwise specified" entries to assist in the classification of those articles or substances not listed by name.

Prohibitions

Some dangerous goods have been identified as being too dangerous to be carried on any aircraft under any circumstances; others are forbidden under normal circumstances but may be carried with specific approvals from the States concerned; some are restricted to carriage on all cargo aircraft; most however, can be safely carried on passenger aircraft, provided certain requirements are met.

Packaging

Packaging is the essential component in the safe transport of dangerous goods by air. The IATA Dangerous Goods Regulations provide Packing Instructions for all dangerous goods acceptable for air transport with a wide range of options for inner, outer and single packagings. The packing instructions normally require the use of UN performance-tested specification packagings, however these are not required when dangerous goods are shipped under the provisions of Limited Quantity "Y" Packing Instructions. The quantity of dangerous goods permitted within these packagings is strictly limited by the Regulations so as to minimise the risk should an incident occur.

Marks and Labels

The packages are marked with required markings and bear the required labels to ensure that the hazards can be recognised without relying on accompanying documentation in an emergency.

Declaration

The proper declaration of dangerous goods by the shipper ensures that all in the transportation chain know what dangerous goods they are transporting, how to properly load and handle them and what to do if an incident or accident occurs either in-flight or on the ground.

Notification to Pilot-in-Command

The pilot-in-command must know what is on board the aircraft in order to properly deal with any emergencies, which may occur. The pilot must also convey this information, if possible, to air traffic and emergency services to aid in the response to any aircraft incident or accident.

Avoiding Hidden Hazards

Information regarding "Hidden Dangerous Goods" must also be conveyed to passengers, crew and shippers to assist them in recognising dangerous goods, which they are not permitted to carry on their person, in their baggage, or as cargo and which may not be readily recognisable as being dangerous.

As an alternative "if an in-flight emergency occurs" the pilot-in-command can provide a telephone number instead of the details about the dangerous goods on board the aircraft.

Accident/Incident Reporting

Dangerous goods accidents or incidents must be reported, so that an investigation by the relevant authorities can establish the cause and take corrective action. Also, if as a result of these investigations changes are required in the Regulations, appropriate regulatory action can be taken without delay.

Training

Training is an essential element in maintaining a safe regulatory regime. It is necessary for all individuals involved in the preparation or transport of dangerous goods to be properly trained to carry out their responsibilities. Depending on the job-function, this may entail only familiarisation training or may also include more detailed training in the intricacies of the Regulations.

The training programmes are subject to review and approval as determined by the appropriate governmental authority. Recurrent training must take place within 24 months of previous training to ensure knowledge is current, unless a competent authority has defined a shorter period. A test must be undertaken following the training to verify understanding of the Regulations.

COURSE OBJECTIVES

After thorough study and use of this training book you will be able to:

- define dangerous goods;
- describe the origin of the current Regulations;
- identify the classes of dangerous goods;
- be knowledgable of the special provisions for passengers and crew;
- look for hidden hazards in baggage;
- recognise/identify the hazard/handling labels applicable to dangerous goods;
- be aware of the requirement to report incidents/accidents and mis-declarations involving dangerous goods; and
- apply the appropriate emergency procedure action as per emergency response matrix.

UNIT 1 — GENERAL PHILOSOPHY

1.1 DANGEROUS GOODS

What are dangerous goods?

By formal definition dangerous goods are:

> "Articles or substances which are capable of posing a risk to health, safety or to the environment and which are shown in the list of dangerous goods in these (IATA Dangerous Goods) Regulations or which are classified according to the Regulations".

However, because air transport has additional characteristics (vibration, pressure and temperature changes) that can have an effect on packagings being transported by air that are not apparent on the ground, there are additional precautions that apply to dangerous goods being transported by air, These precautions are necessary so that any risk to the aircraft and its passengers and crew posed by the dangerous goods is eliminated or minimised.

If there is a risk, why do we allow them to be transported at all?

There is a commercial demand for many products classified as dangerous goods, such as paints and batteries and especially time-sensitive ones like radioisotopes for medical treatment, and goods that must be kept refrigerated for a considerable time. Sometimes air transport or travelling by air is the only way to reach remote places.

Some dangerous goods are even required on an aircraft for its airworthiness or operation. Items such as aircraft fuel, batteries, fire extinguishers and life rafts. Duty free goods, such as perfumes and alcoholic beverages are needed for cabin service during flight. The aircraft operator is excepted from the provisions of the Regulations when carrying such items.

More importantly, if the risk can be identified then it may often be eliminated, in which case the transport by air can be accomplished safely by maintaining strict controls and responsibilities.

What happens if the risk cannot be eliminated?

Then the article or substance is extremely dangerous and is prohibited from being carried under any circumstances. Special care is taken to ensure that such goods are not accepted for air transport.

Certain goods are considered to be too dangerous for carriage by air in the normal course of events. However, in exceptional circumstances and under exemption of the Sates concerned, these goods may be carried at the discretion of the airline provided all the conditions of the exemption granted are complied with.

How may dangerous goods may be accepted for transport by air, then?

A great many dangerous goods may be carried on aircraft as controlled cargo provided they are properly prepared for transport in accordance with the Regulations, which also defines and controls the standard of packaging that must be used. The List of Dangerous Goods itemises nearly three thousand of the most commonly shipped dangerous goods by name and indicates the maximum quantities of such goods permitted per package on a Passenger and/or all-Cargo Aircraft. They are not permitted in passenger or crew checked or carry-on baggage.

It is possible that the limitations placed on dangerous goods in the Regulations may be further restricted by national governments and individual airlines. These restrictions are referred to as **State and Operator Variations** and are always more restrictive than the Regulations.

1.2 THE REGULATIONS

What are these Regulations?

You may recall that the legal requirements are contained in the **ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air,** which forms the basis of International and National laws.

However, airlines use the **IATA Dangerous Goods Regulations** as the every day field document. These comply fully with the ICAO Technical Instructions, and in some cases are more restrictive, by taking account of industry practices or operational considerations.

1.3 LEGAL BASIS

Why do I need to know about dangerous goods?

- There is a **mandatory (legal) requirement** that you be made aware of the risks involved in the transportation of dangerous goods.
- It assists in the essential safety of the aircraft, its passengers and crew, by bringing to your attention the responsibilities you have and the vigilance you will need to show.
- You may also be a passenger sometime and will find comfort in knowing that your colleagues are equally aware of the Regulations.

Note: *The Regulations are continually changing, refresher training is required within every 24 months to keep your knowledge current.*

What about everyone else, do they need to know as well?

Yes. Everyone in the transport chain needs to be aware of the dangers posed and an understanding of the Regulations to varying degrees, depending on their job responsibilities.

Example: *The shipper of cargo who may need to send dangerous goods by air, has specific responsibilities for complying with the Regulations. While the passenger who may be flying for the first time or is a frequent business traveller, will need to be informed about those articles or substances that may not be carried aboard an aircraft, either as baggage or on their person.*

What do the Regulations do?

The ICAO Technical Instructions provide the basis under which dangerous goods can be transported safely by air at a level of safety necessary to ensure that the aircraft or its occupants are not placed at additional risk.

The general principle being that should an incident occur, it would not lead to an accident.

A dangerous goods incident is defined as an occurrence related to the transport of dangerous goods by air which results in injury to a person, property damage, fire, breakage, spillage, leakage of fluid or radiation or other evidence that the integrity of the packaging has not been maintained.

A dangerous goods accident is defined as an occurrence related to the transport of dangerous goods by air which results in fatal or serious injury to a person or major property.

1.4 TRAINING REQUIREMENTS

What do the Regulations require of me?

Training is **mandated** to gain an **understanding** of the philosophy and requirements of the Technical Instructions. There is a need for everyone concerned to receive **training** in the subject, either for familiarisation or to provide detailed knowledge, so that the individual's responsibilities can be met.

A test must be undertaken and successfully completed following the training to verify understanding of the Regulations. After successful completion of the initial training, recurrent training must be taken within the next 24 months, unless a competent authority has defined a shorter period.

What understanding and training should I have?

The successful application of the Regulations greatly depends on the understanding of the risks involved and a knowledge of the Regulations.

The training required by each category of personnel involved in the movement of dangerous goods by air is detailed in the Regulations.

There are three elements to this training:

- General familiarisation training;
- Function or job specific training; and
- Safety training.

Recurrent training is required within 24 months to ensure your knowledge is up-to-date.

What aspects of the Regulations do I need to be aware?

The training required by each category of personnel involved in the movement of dangerous goods by air is detailed in the Regulations:

In your case, either as cabin crew, in passenger handling or security screening personnel, this must cover the following aspects:

- General Philosophy;
- Limitations;
- Provisions for Passengers and Crew;
- Labelling and Marking; and
- Emergency Procedures.

Are there any other regulations of which I should be aware?

Yes! There are other requirements such as health and safety etc., at your work place and of course your own company's manuals regarding dangerous goods. We are only concerned here with the IATA *Dangerous Goods Regulations.*

1.5 PASSENGER INFORMATION *(DGR 9.5.3)*

What about informing passengers of the Regulations?

It is not practical to give our passengers individual training on the Regulations. However, we can and must bring to their attention an awareness of what must not be carried aboard an aircraft, either as checked baggage or as carry-on articles.

Many innocuous-looking items may contain dangerous goods and a list of general descriptions which, experience has shown, are often applied to such items is shown later in Section 2.3

Check-in staff must be adequately trained to assist in identifying and detecting dangerous goods carried by passengers. Staff should seek confirmation from a passenger about the contents of any item where they are suspicious that it may contain dangerous goods, with the objective of preventing forbidden dangerous goods from being taken aboard an aircraft.

Information must also be provided to passengers about the type of dangerous goods which they are forbidden from transporting aboard an aircraft.

As a minimum, this information must consist of:

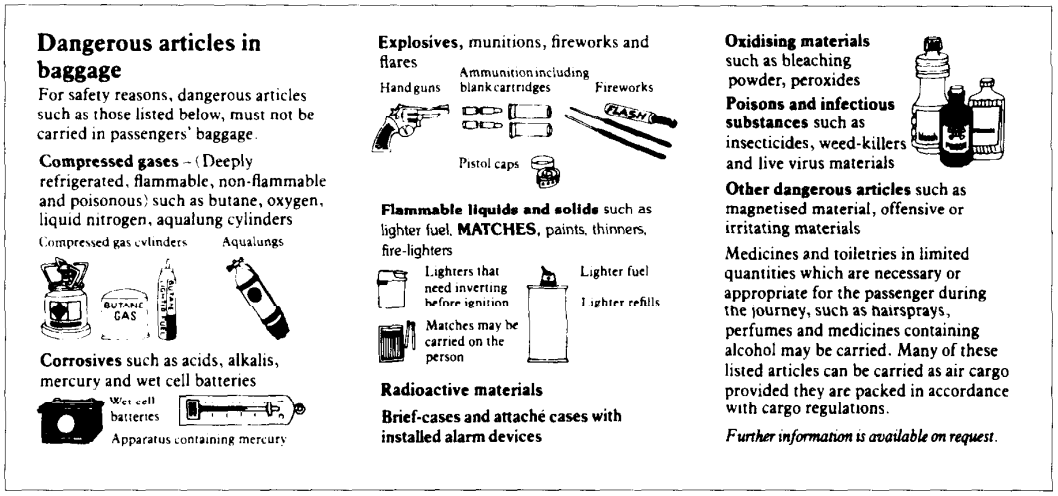
- Information with the passenger ticket or in another manner such that prior to or during the check-in process, the passenger receives the information.
- Notices sufficient in number and prominently displayed at each of the places at an airport where tickets are issued, and where passengers check in, in aircraft boarding areas and in baggage claim areas.

Think before you pack it ... because

For safety reasons, carriage of certain goods in your baggage is **forbidden:** MATCHES, LIGHTERS, GAS, PAINTS, FIREWORKS, BLEACH, etc.

So make sure your baggage is safe. In case of doubt, ask your airline.

- Notices clearly displayed at any other location where passengers are checked in.



Check-in staff should seek confirmation from a passenger about the contents of any item where they are suspicious that it may contain dangerous goods, with the aim of preventing dangerous goods which passengers are not permitted to have from being taken on board an aircraft in their baggage.

There are many people involved in the "transport chain", from the passengers themselves to those staff involved in the acceptance of checked baggage, handling and boarding of the passenger, the ramp staff handling passenger baggage and cargo as well as the aircraft flight and cabin crew. If everyone in that "chain" is aware of what dangerous goods are and of the Regulations for their carriage, safety will be enhanced.

1.6 UNIT 1 — REVIEW QUESTIONS

The Legal Basis for the Regulations is the ICAO *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Commonly referred to as the Technical Instructions or the T.I.).

The field document, used by member airlines is the IATA *Dangerous Goods Regulations* (IATA/DGR).

UNIT 2 — LIMITATIONS

2.1 PROVISIONS FOR PASSENGERS AND CREW

Can passengers and crew carry dangerous goods in their baggage?

The bottom-line is that the Regulations permit very few dangerous goods to be carried by passengers and crew.

To safely transport dangerous goods by air a number of essential requirements have to be met. There is more than just knowing what the Regulations state. It is about complying, without exception, to the Regulations and establishing a chain of safeguards and checks.

Many every day items that are considered as dangerous goods, and are required for practical reasons may, subject to certain controls, be carried by passengers and crew, either on the person, packed in checked or carry-on baggage, and always in controlled quantities.

These dangerous items have been excepted from the provisions of the Regulations when carried by passengers and crew. But they are still subject to specific provisions and limitations.

Some dangerous articles and substances that are not permitted as carry-on or checked baggage may be shipped as cargo. As cargo, each package is subject to detailed inspection by the operator's dangerous goods acceptance personnel. The staff has received certified training in dangerous goods and is familiar with the requirements of the Regulations to such depth as to enable them to competently check both the package and the accompanying documentation. This is also the start of an important communication process. This will safely see the goods stowed on an aircraft and the pilot-in-command notified in writing as to where the dangerous goods have been loaded on the aircraft and that the packages are free from any damage or leakage.

2.2 DANGEROUS GOODS PERMITTED IN PASSENGER BAGGAGE

What are these items and what provisions apply to them?

These tend to be everyday items of personal use, which are separated into **three** groups based upon **three** different requirements needed for their safe transport:

Group 1: Items that require the approval of the operator AND where the pilot-in-command must be notified
Group 2: Items that require the approval of the operator where the pilot-in-command need NOT be notified
Group 3: Items that do not require prior approval

Group 1

Items that require the approval of the operator and where the pilot in command **must** be notified:

Wheelchairs or other battery-powered mobility aids (spillable battery)

With the approval of the operator(s), as checked baggage, wheelchairs or other battery-powered mobility aids with spillable batteries provided that the wheelchair or mobility aid can be loaded, stowed, secured and unloaded always in an upright position and that the battery is disconnected. The battery terminals must be protected to prevent accidental short circuits and the battery is securely attached to the wheelchair or mobility aid. If the wheelchair or mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position, the battery must be removed and the wheelchair or mobility aid may then be carried as checked baggage without restriction. The removed battery must be carried in strong, rigid packagings as follows:

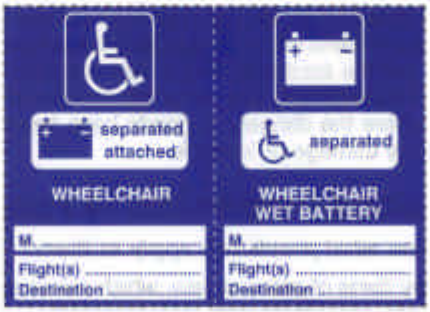
- packagings must be leak-tight, impervious to battery fluid and be protected against upset by securing to pallets or by securing them in cargo compartments using appropriate means of securement (other than by bracing with freight or baggage) such as by use of restraining straps, brackets or holders;
- batteries must be protected against short circuits, secured upright in these packagings and surrounded by compatible absorbent material sufficient to absorb their total liquid contents; and

- these packagings must be marked "BATTERY, WET, WITH WHEELCHAIR" or "BATTERY, WET, WITH MOBILITY AID" and be labelled with the "Corrosive" label (see DGR Figure 7.3.U and Unit 3.2), and with the "Package Orientation" label (see DGR Figures 7.4.D and 7.4.E and Unit 3.2).

To assist in the handling of wheelchairs and mobility aids with batteries, a label is available (see DGR Figure 9.3.G and Unit 3.2.2) which may be used to assist in identifying whether or not a wheelchair has had the battery removed. The label is in two parts; Part A remains with the wheelchair and indicates whether or not the battery has been removed. In the particular case where the battery is separated from the wheelchair, Part B may be used to assist in identifying the battery and also in reconciling the battery and its wheelchair.

Battery-powered Wheelchair and Mobility Aid Label

FIGURE 9.3.A



The pilot-in-command must be informed of the location of a wheelchair or mobility aid with an installed battery or the location of a packed battery (DGR 2.3.2.4). It is recommended that passengers make advance arrangements with each operator; also that batteries which are spillable should be fitted with spill-resistant vent caps when feasible.

Mercurial barometers and thermometers (weather bureau)

With the approval of the operator(s), as carry-on baggage only, a mercurial barometer or thermometer carried by a representative of a government weather bureau or similar official agency. The barometer or thermometer must be packed in a strong outer packaging, having a sealed inner liner or a bag of strong leak-proof and puncture-resistant material impervious to mercury, which will prevent the escape of mercury from the package irrespective of its position. The pilot-in-command must be informed of any such barometer or thermometer (DGR 2.3.3.1).

Group 2

Those that require the approval of the operator (and where the pilot-in-command need **NOT** be notified):

Ammunition for sporting purposes

With the approval of the operator(s), as checked baggage only, securely boxed ammunition (cartridges for weapons) in Division 1.4S used for sporting purposes. They must be in quantities of 5 kg or less gross weight per person for that person's own use, excluding ammunition with explosive or incendiary projectiles. Allowances for more than one person must not be combined into one or more packages (DGR 2.3.2.2).

Camping stoves and fuel containers that have contained a flammable liquid fuel

With the approval of the operator, as checked baggage only, camping stoves and fuel containers for camping stoves that have contained a flammable liquid fuel may be carried provided the fuel tank of the camping stove, and/or fuel container has been completely drained of all liquid fuel and action has been taken to nullify the danger. To nullify the danger, the empty fuel tank and/or container must be allowed to drain for at least 1 hour, the fuel tank and/or container must then be left uncapped for a minimum of 6 hours to allow any residual fuel to evaporate. Alternative methods, such as adding cooking oil to the fuel tank fuel tank and/or container to elevate the flash point of any residual liquid above the flash point of flammable liquid and then emptying the fuel tank and/or container, are equally acceptable. The fuel tank, and/or container must then have the cap securely fastened and be wrapped in an absorbent material such as paper towel and placed in a polyethylene or equivalent bag. The top of the bag must then to be sealed or gathered and closed with an elastic band or twine.

Note: *Provided the above cleaning method is followed, then in accordance with these Regulations, the fuel stove or container can be classified as non-hazardous. However to control the carriage of these items, they are listed in Table 2.3.A Provisions for Dangerous Goods Carried by Passengers or Crew. (DGR 2.3.2.5)*

Dry ice (as checked baggage)

Carbon dioxide, solid (dry ice) in quantities not exceeding 2 kg (4.4 lb) per passenger when used to pack perishables not subject to these Regulations with the approval of the operator in checked baggage, provided the package permits the release of carbon dioxide gas (DGR 2.3.2.1).

Wheelchair or other battery-powered mobility device (non-spillable batteries)

With the approval of the operator(s), as checked baggage, wheelchairs or other battery-powered mobility aids with non-spillable batteries, provided that the battery is disconnected, the battery terminals are protected from short circuits and the battery is securely attached to the wheelchair or mobility aid (DGR 2.3.2.3).

Note: *Wheelchairs/mobility aids with gel type batteries do not require the battery to be disconnected provided the battery terminals are insulted to prevent accidental short circuits.*

Heat producing articles

With the approval of the operator(s), heat producing articles, i.e. battery-operated equipment such as underwater torches and soldering equipment which, if accidentally activated, will generate extreme heat and can cause fire, may be carried in carry-on baggage only. The heat producing component, or the energy source, must be removed so as to prevent unintentional functioning during transport (DGR 2.3.3.2).

Avalanche rescue backpack

With the approval of the operator(s), one avalanche rescue backpack per person equipped with a pyrotechnic trigger mechanism containing not more than 200 mg net of explosives in Division 1.4S and not more than 250 mg of compressed gas in Division 2.2. 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 (DGR 2.3.4.4).

Insulated packagings containing refrigerated liquid nitrogen

With the approval of the operator(s), insulated packagings containing refrigerated liquid nitrogen, sometimes referred to as "Dry Shippers", intended for transport, at low temperature, of non-dangerous products that are not subject to the Regulations provided the design of the insulated packaging would not allow the build-up of pressure within the container and would not permit the release of any refrigerated liquid nitrogen irrespective of the orientation of the insulated packaging (DGR 2.3.4.3).

Non-flammable gas cylinder fitted into a life jacket

With the approval of the operator(s), no more than two small cylinders containing carbon dioxide or other non-flammable, non-toxic gas fitted into a self-inflating life jacket for inflation purposes plus not more than two spare cartridges (DGR 2.3.4.2).

Oxygen or air cylinders

With the approval of the operator(s), small gaseous oxygen or air cylinders required for medical use(DGR 2.3.4.1).

Group 3

Those that do not require prior approval:

Aerosols in Division 2.2 (Non-flammable, non-toxic gas)

Aerosols in Division 2.2, with no subsidiary risk, for sporting or home use, are permitted in checked baggage only (DGR 2.3.5.2).

Medicinal or Toilet Articles

Non-radioactive medicinal or toilet articles (including aerosols). The term "medicinal or toilet articles" is intended to include such items as hair sprays, perfumes, colognes and medicines containing alcohols (DGR 2.3.5.1).

The total net quantity of all above mentioned articles carried by each passenger or crew member under the provisions of 2.3.5.1 and 2.3.5.2 must not exceed 2 kg (4.4 lb) or 2 L (2 qt), and the net quantity of each single article must not exceed 0.5 kg (1 lb) or 0.5 L (1 pt).

Alcoholic beverages, e.g. whisky, vodka, gin etc.

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 for such beverages. However alcoholic beverages containing 24% or less alcohol by volume are not subject to any restrictions in the Regulations (DGR 2.3.5.8).

Carbon dioxide gas cylinders

Small carbon dioxide gas cylinders 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 (DGR 2.3.5.3).

Consumer electronic devices containing lithium or lithium ion cells or batteries

Consumer electronic devices (watches, calculating machines, cameras, cellular phones, lap-top computers, camcorders, etc.) containing lithium or lithium ion cells or batteries when carried by passengers or crew for personal use. Spare batteries must be individually protected to prevent short circuits and carried in carry-on baggage only. In addition, each spare battery must not exceed the following quantities:

(a) for lithium metal or lithium alloy batteries, a lithium content of not more than 2 g; or

(b) for lithium ion batteries, an aggregate equivalent lithium content of not more than 8 g.

Lithium ion batteries with an aggregate equivalent lithium content of more than 8 g but not more than 25 g may be carried in carry-on baggage if they are individually protected so as to prevent short circuits and are limited to two spare batteries per person (DGR 2.3.5.10).

Dry ice (in carry-on baggage)

Carbon dioxide solid, (dry ice) in quantities not exceeding 2 kg (4.4 lb) per passenger when used to pack perishables not subject to the Regulations in carry-on baggage, provided the package permits the release of carbon dioxide gas. This concession cannot be used in addition to dry ice in checked baggage (DGR 2.3.5.6).

Hair curlers containing hydrocarbon gas

Hair curlers containing hydrocarbon gas, no more than one per passenger or crew member, provided that the safety cover is securely fitted over the heating element. These hair curlers must not be used on board the aircraft at any time. Gas refills for such curlers are not permitted in checked or carry-on baggage (DGR 2.3.5.9).

Medical or clinical thermometer

One small medical or clinical thermometer which contains mercury, for personal use, when in its protective case (DGR 2.3.5.5).

Radio-isotopic cardiac pacemakers/radio-pharmaceuticals

Radioisotopic cardiac pacemakers or other devices, including those powered by lithium batteries, implanted into a person, or radio-pharmaceuticals contained within the body of a person as the result of medical treatment (DGR 2.3.5.4).

Safety matches or lighter

Safety matches or a lighter intended for use by an individual when carried on one's person. However, lighters containing unabsorbed liquid fuel (other than liquefied gas), lighter fuel and lighter refills are not permitted on one's person nor in checked or carry-on baggage (DGR 2.3.5.7).

Note: *"Strike anywhere" matches are forbidden for air transport.*

How do I know if the approval of the operator has been obtained?

Your company procedures should detail how approvals are obtained and recorded. Similarly it should describe procedures for ensuring that the pilot-in-command is notified when required by the Regulations.

Note: *The Regulations do not apply to dangerous goods placed on board an aircraft with the approval of the operator to provide medical aid to a patient during flight.*

The IATA Dangerous Goods Regulations summarise these provisions in a table that is reproduced on the next two pages for your convenience.

Dangerous goods must not be carried by passengers and crew, either as baggage or on their person, except for those listed in DGR 2.3, and shown in Table 2.3.A.

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

Dangerous goods must not be carried in or as passengers or crew, checked or carry-on baggage, except as otherwise provided below.

Permitted in or as carry-on baggage	Permitted in or as checked baggage	Permitted on one's person	The approval of the operator(s) is required	The pilot-in-command must be informed of the location	
NO	NO	NO	n/a	n/a	**Disabling devices** such as mace, pepper spray, etc. containing an irritant or incapacitating substance are prohibited on the person, in checked and carry-on baggage.
NO	NO	NO	n/a	n/a	**Security-type attaché cases, cash boxes, cash bags**, etc. incorporating dangerous goods, such as lithium batteries and/or pyrotechnic material, are totally forbidden. See entry in 4.2 - List of Dangerous Goods.
NO	YES	NO	YES	NO	**Ammunition (cartridges for weapons) for sporting purposes, securely boxed** (in Division 1.4S), in quantities not exceeding 5 kg (11 lb) gross weight per person for that person's own use, excluding ammunition with explosive or incendiary projectiles. Allowances for more than one passenger must not be combined into one or more packages.
NO	YES	NO	YES	NO	**Camping stoves and fuel containers that have contained a flammable liquid fuel,** may be carried provided the fuel tank of the camping stove and/or fuel container has been completely drained of all liquid fuel and action has been taken to nullify the danger. (See 2.3.2.5 for details).
YES	YES	NO	YES	NO	**Carbon dioxide, solid (dry ice),** in quantities not exceeding 2 kg (4.4 lb) per passenger when used to pack perishables not subject to these Regulations in carry-on baggage, provided the package permits the release of carbon dioxide gas. Operator approval required for checked baggage only.
NO	YES	NO	YES	NO	**Wheelchairs or other battery-powered mobility devices with non-spillable batteries** (see Packing Instruction 806 and Special Provision A67), provided that the battery is disconnected, the battery terminals are insulated to prevent accidental short circuits and the battery is securely attached to the wheelchair or mobility aid. ***Note**: Wheelchairs/mobility aids with gel type batteries do not require the battery to be disconnected provided the battery terminals are insulated to prevent accidental short circuits.*
NO	YES	NO	YES	YES	**Wheelchairs or other battery-powered mobility devices with spillable batteries**. (See 2.3.2.4 for details.)
YES	NO	NO	YES	NO	**Heat producing articles** such as underwater torches (diving lamps) and soldering irons. (See 2.3.3.2 for details.)
YES	NO	NO	YES	YES	**Mercury barometer or thermometer** carried by a representative of a government weather bureau or similar official agency. (See 2.3.3.1 for details.)
YES	YES	NO	YES	NO	**Avalanche rescue backpack,** one (1) per passenger, equipped with a pyrotechnic trigger mechanism containing less than 200 mg net of Division 1.4S and less than 250 mg of compressed gas in Division 2.2. 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	NO	YES	NO	**Insulated packagings containing refrigerated liquid nitrogen** (dry shipper), fully absorbed in a porous material and intended for transport, at low temperature, of non-dangerous products are not subject to these Regulations provided the design of the insulated packaging would not allow the build-up of pressure within the container and would not permit the release of any refrigerated liquid nitrogen irrespective of the orientation of the insulated packaging.

***Note:** n/a means not applicable.*

TABLE 2.3.A
Provisions for Dangerous Goods Carried by Passengers or Crew (2.3) *(continued)*

Permitted in or as carry-on baggage	Permitted in or as checked baggage	Permitted on one's person	The approval of the operator(s) is required	The pilot-in-command must be informed of the location	
YES	**YES**	YES	**YES**	NO	**Non-flammable gas cylinder fitted into a life jacket** containing carbon dioxide or other suitable gas in Division 2.2, up to two (2) small cylinders per passenger, and up to two (2) spare cartridges.
YES	**YES**	NO	**YES**	NO	**Oxygen or air, gaseous, small cylinders** required for medical use.
NO	YES	NO	**NO**	NO	**Aerosols in Division 2.2**, with no subsidiary risk, for sporting or home use.
YES	YES	YES	**NO**	NO	And **Non-radioactive medicinal or toilet articles** (including aerosols) such as hair sprays, perfumes, colognes and medicines containing alcohol. The total net quantity of all above mentioned articles must not exceed 2 kg (4.4 lb) or 2 L (2 qt), and the net quantity of each single article must not exceed 0.5 kg (1 lb) or 0.5 L (1 pt)
YES	YES	YES	**NO**	NO	**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.
YES	YES	YES	**NO**	NO	**Carbon dioxide gas cylinders** 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.
YES	YES	YES	**NO**	NO	**Consumer electronic devices containing lithium or lithium ion cells or batteries**, such as watches, calculating machines, cameras, cellular phones, lap-top computers, camcorders, etc., when carried by passengers or crew for personal use. Spare batteries must be individually protected to prevent short circuits and carried in carry-on baggage only. In addition, each spare battery must not exceed the following quantities: a) for lithium metal or lithium alloy batteries, a lithium content of less than 2 g; or b) for lithium ion batteries, an aggregate equivalent lithium content of less than 8 g. Lithium ion batteries with an aggregate equivalent lithium content of more than 8 g but not more than 25 g may be carried in carry-on baggage if they are individually protected so as to prevent short circuits and are limited to two spare batteries per person.
YES	YES	NO	**NO**	NO	**Hair curlers containing hydrocarbon gas**, up to one (1) per passenger or crew-member, provided that the safety cover is securely fitted over the heating element. These hair curlers must not be used on board the aircraft at any time. Gas refills for such curlers are not permitted in checked or carry-on baggage.
YES	YES	YES	**NO**	NO	***Medical or clinical thermometer***, which contains mercury, one (1) per passenger for personal use, when in its protective case.
NO	NO	YES	**NO**	NO	**Radioisotopic cardiac pacemakers** or other devices, including those powered by lithium batteries, implanted into a person, or radiopharmaceuticals contained within the body of a person as the result of medical treatment.
NO	NO	YES	**NO**	NO	**Safety matches or a lighter** with fuel/fluid fully absorbed in a solid and intended for use by an individual when carried on one's person. However, lighters with a flammable liquid reservoir containing unabsorbed liquid fuel (other than liquefied gas), lighter fuel and lighter refills are not permitted on one's person nor in checked or carry-on baggage. ***Note:*** *"Strike anywhere" matches are forbidden for air transport.*

2.3 RECOGNITION OF DANGEROUS GOODS AND HIDDEN HAZARDS *(DGR 2.2)*

Are all dangerous goods easily identified?

No. It is essential therefore that awareness and vigilance are maintained at all times when examining and accepting baggage, or in the case of flight attendants, assisting in the stowage of carry-on baggage in the cabin prior to flight. Great care should be taken to ensure that no dangerous goods, other than those described earlier, are carried on board the aircraft as baggage.

Remember, the passenger or crew member may not be aware that their items are considered dangerous, and are not permitted.

Confirmation should be sought from a passenger about the contents of any item where there are suspicions that it may contain dangerous goods.

What should I be alert for?

There are many examples of items which may contain or indicate the presence of dangerous goods. There may be certain groups of passengers, whose reason for travel may also be an indication of their carrying dangerous goods, and they may be doing so unknowingly or purposefully. These passengers often use the articles or substances in their everyday work environment and therefore often do not recognise the hidden hazards of the articles or substances that they are carrying.

Note: *Even if the passenger is carrying the dangerous goods to a meeting for example, and this is the sole purpose of the journey, the dangerous goods are still not permitted as baggage unless excepted!*

What kind of items should I be suspicious of?

Typical examples of items that may contain or indicate the presence of dangerous goods not previously addressed by Table 2.3.A are:

Aircraft Spare Parts/Aircraft Equipment/Aircraft on Ground (AOG) Spares	May contain items meeting any of the criteria for dangerous goods. For example, explosives (flares or fire bottle cartridges), chemical oxygen generators, cylinders of compressed gas (such as oxygen, carbon dioxide, nitrogen or fire extinguishers), paint, adhesives, aerosols, life-saving appliances (life jackets, escape slides), fuel in equipment, first aid kits, wet or lithium batteries, matches, fire extinguishers, etc.
Automobile Parts (car, motor, motorcycle)	May contain wet batteries, shocks/struts with nitrogen, air bag inflators/air bag modules, engines, carburettors or fuel tanks that contain or have contained fuel, compressed gases in tyre inflation devices, etc.
Breathing Apparatus	May indicate cylinders of compressed air or oxygen, chemical oxygen generators or refrigerated liquefied oxygen.
Camping/Expeditionary Equipment	May contain flammable gases (butane, propane, etc.), flammable liquids (kerosene, gasoline, etc.), flammable solids (hexamine, matches, etc.) or other dangerous goods.
Chemicals	Most chemicals are dangerous and only qualified dangerous goods acceptance staff can advise if it is acceptable as cargo. Dangerous chemicals must never be accepted as baggage.
COMAT (Company Materials)	Such as aircraft parts, may contain dangerous goods as an integral part, e.g. chemical oxygen generators in a passenger service unit (PSU), compressed gas, flammable liquid, corrosive material, magnetized material, etc.
Cryogenic (Liquid)	Indicates refrigerated liquefied gases such as nitrogen, neon, helium, argon, etc. Cryogenic liquids are dangerous because they might destroy human skin tissue on contact, and when spilled, they could cause suffocation in confined spaces.
Cylinders	Indicates compressed or liquefied gases.

Dental Apparatus	May contain flammable resins or solvents, compressed or liquefied gas, mercury and radioactive material.
Diagnostic Specimens	May contain infectious substances.
Diving Equipment	May include air cylinders (such as scuba tanks, vest bottles, etc.) which usually contain compressed air or a special gas mixture. Emptied cylinders (pressure gauge reads zero) are acceptable. Diving lamps may contain rechargeable lead acid batteries and high intensity diving lamps can generate extremely high heat when operated in air. In order to be carried safely, the bulb or battery must be disconnected.
Drilling or Mining Equipment	May contain explosives and/or other dangerous goods.
Dry Shipper (Vapour Shipper)	May contain free liquid nitrogen. Dry shippers are subject to the Regulations when they permit the release of any free liquid nitrogen irrespective of the orientation of the package.
Electrical Equipment	May contain magnetized material or mercury in switch gear and electron tubes or wet batteries in uninterruptable power supplies (UPS).
Electrically Powered Apparatus (wheelchairs, mobility aids, lawn mowers, golf carts, etc.)	May contain wet cell batteries.
Film Crew or Media Equipment	May include explosive pyrotechnic devices, generators incorporating internal combustion engines, wet cell batteries, fuel and heat producing items.
Frozen food	May be packed in Carbon dioxide, solid (dry ice), which can adversely affect live animals and humans.
Fuel Control Unit	May contain flammable liquids.
Hot Air Balloon	May contain cylinders with flammable gas, fire extinguishers, batteries, etc.
Household Goods	May contain items meeting any of the criteria for dangerous goods including flammable liquids such as solvent based paint, adhesives, polishes, aerosols (for passengers, those not permitted under DGR 2.3), bleach, corrosive oven or drain cleaners, ammunition, matches, etc.
Instruments	May conceal barometers, manometers, mercury switches, rectifier tubes, thermometers, etc. containing mercury.
Laboratory Testing Equipment	May contain contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.
Machinery Parts	May contain adhesives, paints, sealants, solvents, wet and lithium batteries, mercury, cylinders of compressed or liquefied gas, etc.
Magnets and other items of similar material	May individually or cumulatively meet the definition of magnetized material (see DGR 3.9.1.2).
Medical Supplies	May include items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.
Metal Construction Material / Metal Piping / Metal Fencing	May contain ferro-magnetic material, which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments (see DGR 3.9.1.2).

Passenger Baggage	May contain items meeting any of the criteria for dangerous goods. Examples include fireworks, flammable household liquids, corrosive oven or drain cleaners, flammable gas or liquid lighter refills or camping stove cylinders, matches, ammunition, bleach, aerosols (those not permitted under DGR 2.3), etc.
Pharmaceuticals	May contain items meeting any of the criteria for dangerous goods, particularly radioactive material, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.
Photographic Supplies	May contain items meeting any of the criteria for dangerous goods, particularly radioactive material, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.
Racing Car or Motorcycle Team Equipment	May contain engines, carburettors or fuel tanks which contain fuel or residual fuel, flammable aerosols, cylinders of compressed gases, nitromethane, other fuel additives or wet batteries, etc.
Refrigerators	May contain liquefied gases or an ammonia solution.
Repair Kits	May contain flammable adhesives, solvent-based paints, organic peroxides, resins, etc.
Samples for Testing	May contain items meeting any of the criteria for dangerous goods, particularly infectious substances, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances.
Semen	May be packed with Carbon dioxide, solid (dry ice) or refrigerated liquefied gas. See also "Dry Shipper".
Show, Motion Picture, Stage Special Effects Equipment	May contain flammable, explosive substances or stage smoke (dry ice).
Swimming pool chemicals	May contain oxidising or corrosive substances.
Switches in Electrical Equipment	May contain Mercury
Tool boxes	May contain explosives (power rivets), compressed gases, aerosols, flammable gases (butane cylinders or torches), flammable adhesives or paints, corrosive liquids (acids or caustic cleaning compounds), etc.
Torches	Micro torches and utility lighters may contain flammable gas and be equipped with an electronic starter. Larger torches may consist of a torch head (often with a self-igniting switch) attached to a cylinder of flammable gas.
Unaccompanied Passenger Baggage / Personal Effects	May contain items meeting any of the criteria for dangerous goods, such as fireworks, flammable household liquids, corrosive oven or drain cleaners, flammable gas or liquid lighter refills or camping stove cylinders, matches, bleach, aerosols, etc.
Vaccines	May be packed in dry ice.

What about packaging standards for other liquids or powders that may leak or spill?

There are articles and substances that do not fall within the scope of the Regulations but which, in the event of leakage, may cause a serious clean-up problem or contribute to corrosion of aircraft structures on a long term basis. These must be checked to ensure that the packaging is adequate to prevent leakage during transport.

2.4 UNIT 2 — REVIEW QUESTIONS

Normally dangerous goods cannot be carried by passengers and crew. However, certain items have been excepted from the provisions of the Regulations.

If a passenger does present a dangerous item at check-in, during security screening or while stowing baggage in the cabin, which is not excepted by the provisions of the Regulations, the passenger must be informed that the item is not permitted. There are options that the passenger may use to solve the problem, for example, shipping it as a fully declared dangerous goods cargo shipment.

Remember, if the dangerous goods item is not shown in Table 2.3.A then it is not permitted as baggage!

FOR YOUR NOTES

UNIT 3 — LABELLING AND MARKING

3.1 DANGEROUS GOODS CLASSES

Do all dangerous goods have the same risk?

No. The Regulations divide dangerous goods into 9 classes reflecting the type of risk involved. In some cases these classes are further sub-divided into divisions to identify a particular risk, within that class. In such cases, reference is made only to the division and not the class.

Example: Division 5.2 and not Class 5, Division 2.

The order in which the classes and divisions are numbered is for convenience and does not imply a relative degree of danger. Which means that Class 1 is not necessarily more dangerous than Class 2 or 3, etc.

What are the classes of dangerous goods?

Each class or division has specific criteria that are used to determine whether an article or substance belongs to that class or division. These criteria are technically detailed and classification of an item requires specialist knowledge of the criteria. These classes are:

Class 1 — Explosives

Class 2 — Gases

Class 3 — Flammable liquids

Class 4 — Flammable solids; substances liable to spontaneous combustion; substances which in contact with water emit flammable gases

Class 5 — Oxidizing substances and Organic Peroxides

Class 6 — Toxic and infectious substances

Class 7 — Radioactive material

Class 8 — Corrosives

Class 9 — Miscellaneous dangerous goods.

3.2 LABELLING

Packages containing dangerous goods must be properly labelled to indicate their contents. There two types of labels:

- hazard labels;
- handling labels.

3.2.1 Hazard Labels

Packages containing dangerous goods are normally identified with special "hazard" labels, intended to alert you to their risk(s).

Each class or division has a unique identification label that must be displayed on the outside of each package. These hazard labels must conform to detailed specifications covering such items as size, colour, symbols and class/division number. Although most labels will have the text of the hazard on them, some may not, but the shape, colour and symbol of the label will alert you to the danger.

On the following pages you will find examples of each of these diamond-shaped hazard labels (much smaller than the minimum 100 × 100mm as shown in 7.2.2.3.1), and the additional rectangular handling labels.

Note: *If you discover a package with a dangerous goods label on it, ask the passenger to confirm whether the package contains dangerous goods. If the package contents are dangerous goods or you are unsure as to the contents, refer to Unit 4 of this training programme.*

Class/Division/Name Cargo IMP Code	Hazard Label	Description	Comments and/or Examples
CLASS 1 – EXPLOSIVES			
Division 1.1 REX		Articles and substances having a mass explosion hazard	THESE EXPLOSIVES ARE NORMALLY FORBIDDEN FOR CARRIAGE BY AIR *e.g. TNT, Dynamite or Torpedoes*
Division 1.2 REX		Articles and substances having a projection hazard	
Division 1.3 REX RCX | when RGX | permitted		Articles and substances having a minor blast or projection hazard	
Division 1.4 REX		Articles and substances which present no significant hazard	
Division 1.5 REX		Very insensitive substances which have a mass explosion hazard	
Division 1.6 REX		Extremely insensitive articles which do not have a mass explosion hazard	

Class/Division/Name Cargo IMP Code	Hazard Label	Description	Comments and/or Examples
RXB RXC RXD RXE RXG			Compatibility Group Assignment according to DGR Table 3.1.A, e.g. *Distress signals, Fuse igniters.*
RXS		Articles and substances which present no significant hazard. Effect from accidental functioning is confined within the package.	e.g. *Ammunition for hand weapons, for signal, Safety Fuses, some types of Fireworks, etc.*

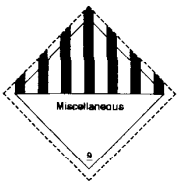
CLASS 2 – GASES

Division 2.1 Flammable gas RFG		Any gas which, when mixed with air in certain proportions, forms a flammable mixture.	e.g. *Butane, Hydrogen, Propane, Acetylene, Lighters.*
Division 2.2 Non-flammable non-toxic gas RNG		Any non-flammable, non-toxic gas or low-temperature liquefied gas.	e.g. *Carbon dioxide, Neon, Fire extinguisher. liquefied Nitrogen or Helium.*
Division 2.3 Toxic gas RPG		Gases known to be toxic or corrosive to humans and known to pose a health risk.	Most toxic gases are forbidden for carriage by air; some are permitted, e.g. *Aerosols of low toxicity, Tear gas devices.*

Class/Division/Name Cargo IMP Code	Hazard Label	Description	Comments and/or Examples
CLASS 3 – FLAMMABLE LIQUIDS			
Class 3 Flammable Liquid RFL		Any liquid having a closed cup flash point of 60.5°C or below (DGR Appendix A).	e.g. *Paint, Alcohols, some Adhesives, Acetone, Petrol, etc.*
CLASS 4 – FLAMMABLE SOLIDS, ETC.			
Division 4.1 Flammable solid RFS		Any solid material, which is readily combustible or may cause or contribute to fire through friction.	e.g. *Matches, Sulphur, Celluloid, Nitronaphthalene.* ***Note:*** *Some are self-reactive.*
Division 4.2 Spontaneously Combustible RSC		Such substances are liable to spontaneous heating or to heating up in contact with air and then liable to catch fire.	e.g. *White or Yellow phosphorus, Magnesium diamide.*
Division 4.3 Dangerous When Wet RFW		Substances, which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases.	e.g. *Calcium carbide, Sodium.*

Class/Division/Name Cargo IMP Code	Hazard Label	Description	Comments and/or Examples
CLASS 5 – OXIDIZING SUBSTANCE; ORGANIC PEROXIDE			
Division 5.1 Oxidizer ROX		A substance that yields oxygen readily to stimulate the combustion of other material.	e.g. *Ammonium nitrate fertilizer, Calcium chlorate, Bleaches.*
Division 5.2 Organic Peroxide ROP		An organic material (liquid or solid) that can be ignited readily by external flame and then burns with an accelerating rate: some substances react dangerously with others.	e.g. *tert-Butyl hydroperoxide*, as listed in Appendix C of the DGR.
CLASS 6 – TOXIC (POISONOUS) SUBSTANCE; INFECTIOUS SUBSTANCE			
Division 6.1 Toxic substance RPB		Liquids or solids, which are dangerous if inhaled, swallowed or absorbed through the skin.	e.g. *Arsenic, Nicotine, Cyanide, Pesticides, Strychnine.* Some are totally forbidden, e.g. *Bromoacetone.*
Division 6.2 Infectious Substance RIS		Substances which are known or reasonably expected to contain pathogens and cause disease in humans or in animals.	e.g. *Virus, Bacteria*, such as *HIV (AIDS), Rabies, some diagnostic specimens and biological products, Medical and Clinical waste.*

Class/Division/Name Cargo IMP Code	Hazard Label	Description	
CLASS 7 – RADIOACTIVE MATERIAL			
Class 7 Radioactive Material Category I — White RRW		Radioactive materials with low radiation level on the package surface. No Transport Index indicated.	e.g. *Radionuclides or isotopes* for medical or industrial purposes, such as *Cobalt 60, Caesium 131 and Iodine 132.*
Class 7 Radioactive Material Category II — Yellow RRY		Radiation level higher than Category I and a Transport Index not exceeding 1.	
Class 7 Radioactive Material Category III — Yellow RRY		Radiation level higher than Category II and/or a Transport Index exceeding 1 but not more than 10.	
Class 7 Radioactive Material Fissile Criticality Safety Index		Criticality Safety Index labels must be used in addition to the appropriate Radioactive labels to provide control over accumulation of packages or overpacks containing fissile material.	e.g. Fissile material: *Uranium 233 and 235; Plutonium 239 and 241.*

Class/Division/Name Cargo IMP Code	Hazard Label	Description	Comments and/or Examples
CLASS 8 – CORROSIVE			
Class 8 Corrosive Material RCM		A liquid or solid that will cause severe damage when in contact with living tissue or, in the case of leakage will materially damage or even destroy other goods or the means of transport.	e.g. *Battery acids, Mercury, Sulphuric acid.*
CLASS 9 – MISCELLANEOUS DANGEROUS GOODS			
Class 9 Miscellaneous dangerous goods RMD		Any substance which presents a danger during air transportation that is not covered by other classes. These include aviation regulated solid or liquid substances with anaesthetic, noxious or similar properties which could cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of assigned duties.	e.g. *Asbestos, Life Rafts, Internal Combustion Engines, Vehicles.*
Polymeric beads RSB		Semi-processed polymeric articles, impregnated with a flammable gas or liquid as a blowing agent; they may evolve small quantities of flammable gas.	
Carbon Dioxide, solid/Dry Ice ICE		Carbon dioxide, solid/dry ice has a temperature of –79°C. On sublimation it produces a gas heavier than air, which in an enclosed area and in larger quantities can lead to suffocation.	

3.2.2 Handling Labels

Certain dangerous goods require special handling labels in addition to the hazard label, because they need to be handled or loaded in a particular manner.

Name Cargo IMP Code	Handling Labels	Description	Comments and/or Examples
Magnetized material MAG		These materials have relatively high magnetic field strength.	e.g. *Magnetrons and non-shielded permanent magnets without keeper bars installed.* Class 9 label is not required with magnetized material label.
Cargo Aircraft Only CAO		Handling label for Cargo Aircraft Only	Must be used on packages that are not permitted on passenger aircraft (DGR 7.2.4.2).
Cryogenic Liquid RCL		Handling label for Cryogenic liquids	Must be used in addition to the non-flammable gas (Division 2.2) hazard label on packages and overpacks containing cryogenic liquids (refrigerated liquefied gas).
Package Orientation (This Way Up)		ISO Standard 780:1985	Must be used on combination packagings and overpacks containing liquid dangerous goods, with exceptions. (DGR 7.2.4.4).
Package Orientation (This Way Up) Alternate Design			

Name Cargo IMP Code	Handling Labels	Description	Comments and/or Examples
Handling label for battery-powered wheelchairs or mobility aids		May be attached to the battery-powered wheelchair or mobility aid to assist with the handling of wheelchairs and mobility aids with batteries. The label may be used to assist in identifying whether or not a wheelchair has had the battery removed.	The label is in two parts, Part A remains with the wheelchair and indicates whether or not the battery has been removed. In the particular case where the battery is separated from the wheelchair, Part B may be used to assist in identifying the battery and also in reconciling the battery and its wheelchair.
Keep Away from Heat		Handling label for self-reactive substances in Division 4.1 and 5.2, Organic Peroxides	Should be used in addition to the applicable hazard label on packages and overpacks containing self-reactive substances in Division 4.1 and 5.2, Organic Peroxides. Such shipments must be protected from direct sunlight and stored in a cool and well-ventilated place, away from all sources of heat. Mandatory requirement as of January 1, 2005.

What do I do about irrelevant labelling?

It is possible that someone might have a package bearing a dangerous goods hazard label, for example a corrosive label, on a package that only contains clothing. The correct course of action would be to ask the passenger to remove or obliterate the inappropriate label, explaining the potential confusion that its presence would cause. If however the package did contain a corrosive material the passenger would be advised that it could not be carried as checked or carry-on baggage, but could be offered as cargo for transport provided it met all the requirements and was properly documented.

Are there any other labels or marks that may indicate dangerous goods?

Yes, but they are not labels that are required for the transport of dangerous goods by air. There are two basic sources for these additional labels or marks.

Firstly, they may be required by other modes of transport, such as sea and rail, although increasing intermodal harmonisation is reducing such differences.

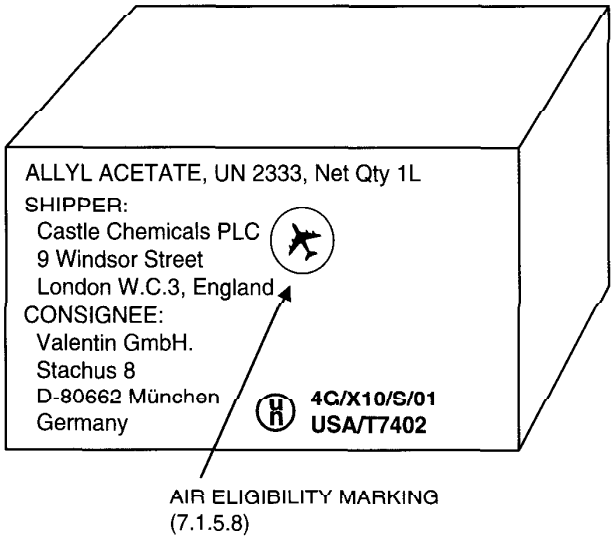
Secondly, many "household" products particularly are required under national legislation to carry product or consumer warning notices and labels. These do not necessarily mean that the goods are dangerous, but that the use and disposal of them requires caution. The presence of such notices and labels should be taken as an indication that the goods may be regulated. If in doubt, contact your supervisor or dangerous goods specialist before accepting the item as passenger baggage.

3.3 MARKING

Packages containing dangerous goods must be marked in accordance with the Regulations. There are two types of package markings:

- Markings which identify the **use** of a particular packaging for a particular shipment. Every package of dangerous goods must be marked with the Proper Shipping Name, the UN or ID number, and the full name and address of the shipper and consignee (DGR 7.1.5.1(a), (b)). All the other package use marking requirements of DGR 7.1.5.1 (c to g) must be shown as applicable.
- Markings which identify the design or specification of a packaging.

Example of a UN Specification Marking:



(un)	=	United Nations Packaging Symbol indicating that the package has been designed, tested and manufactured according to the United Nations Specifications.
4G	=	The Packaging Type Code. "4G" indicates a fibreboard box.
X	=	The packing group designator. X can be used for packing groups I, II and III. Y can by used for packing group II and III, Z only for packing group III.
10	=	Tells you the maximum permitted gross weight, in kilograms, of the package.
S	=	Indicates the package is used to contain solids or inner packagings.
01	=	Shows the year in which the package was manufactured.
USA	=	Indicates the State authorising the allocation of the mark.
T7402	=	Name or identification mark of the manufacturer.
	=	Air Eligibility marking indicating that the shipper has determined that the package meets the applicable air transport requirements.

Some packages will show the letter "V" next to the Packaging Type Code. This indicates a packaging that may be assembled and transported without additional testing under the specific provisions of DGR 6.3.1.3.

Example: (un) 4GV/X50/S/01
A/PA-02/2909

Specification packages for Infectious Substances will show Class 6.2 to indicate that it has been tested according to DGR 6.5 requirements.

Example: (UN) 4G/Class 6.2/01
DK/SP-9899-ERIKSSON

Note: *Some dangerous goods are permitted to be packed in strong packagings, which are not required to meet UN specifications. Therefore these packagings will not carry the UN specification marking.*

Packages, including those used for limited quantities of dangerous goods, **must** be marked to indicate that the shippper has determined that the package meets the applicable air transport requirements. This marking must be applied near the Proper Shipping Name and UN/ID Number (DGR 7.1.5.8).

The marking must be durable, legible and of such a size relative to the package to be readily visible. The marking must include the symbol of an aircraft within a circle and may include the words "Air Eligible".

3.4 UNIT 3 — REVIEW QUESTIONS

UNIT 4 — DANGEROUS GOODS EMERGENCY RESPONSE

4.1 INTRODUCTION

What can I do, and where are the procedures to follow?

Emergency procedures must be available wherever dangerous goods are handled. ICAO Annex 14 - Aerodromes, Chapter 9 - Emergency and Other Services, requires that airport authorities establish procedures to deal with emergencies involving dangerous goods.

In addition, DGR 9.5.2 requires that operators provide information to flight crew and other employees, in the operator's operations or other appropriate manuals, on the action to be taken in the event of emergencies involving dangerous goods.

An example of emergency information for flight crew in relation to dangerous goods is the ICAO publication *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481-AN/928), generally referred to as the "red book".

Emergency response training is required for all categories of personnel as specified in DGR Table 1.5.A. The following basic procedures are given as an example.

It is important that you are familiar with your local requirements and are aware of all emergency contacts.

4.2 GENERAL PROCEDURES FOR PASSENGER HANDLING AND SECURITY SCREENING PERSONNEL

The general procedures to be followed during a dangerous goods incident comprise the following:

- Notify immediate supervisor and get professional assistance.
- Identify the dangerous goods (if safe to do so).
- Where safe to do so, isolate the package by removing other packages or property.
- Avoid contact with the contents of the package.
- If the contents come in contact with your body or clothes:
  - thoroughly wash off body with plenty of water;
  - remove contaminated clothing;
  - do not eat or smoke;
  - keep hands away from eyes, mouth and nose;
  - seek medical assistance.
- Staff involved in such incidents should stay on site until their names are noted.
- The appropriate authorities must be notified.

4.3 GENERAL PROCEDURES FOR CABIN CREW

Are there special actions required for dangerous goods incidents in the passenger cabin during flight?

Yes, and these are found in the ICAO *Emergency Response Guide* and are as follows:

Initial action:

- Notify pilot-in-command.
- Identify the item.
- Store the package in a secure location (if undamaged), and monitor the package's condition.

In case of fire:

- Use standard procedure / check use of water.

In case of spillage or leakage:

- Collect emergency response kit or other useful items.
- Put on rubber gloves and smoke hood or smoke mask - portable oxygen.
- Move passengers away from area and distribute wet towels or cloths.
- Place dangerous goods item in polyethylene bags.
- Stow polyethylene bags.
- Treat affected seat cushions / covers in the same manner as dangerous goods item.
- Cover spillage on carpet / floor.
- Regularly inspect items stowed away and contaminated furnishings.

After landing:

- Advise ground personnel of the dangerous goods items and where they are stowed.
- Make the appropriate entry in the maintenance log.
- The appropriate authorities must be notified.

4.4 DANGEROUS GOODS EMERGENCY RESPONSE CHART (GROUND INCIDENTS)

Hazard Class / Division and Compatibility Group	Dangerous Goods Class	Hazard Description	Immediate Action Minimise leakage and contact with other cargo
1.3C 1.3G	Explosives (acceptable on Cargo Aircraft only)	Fire and minor blast hazard and/or minor propulsive hazard	Notify Fire Department Guard against fire
1.4B 1.4C 1.4D 1.4E 1.4G		Fire, but no other significant hazard	
1.4S	Explosives (safety)	Small fire hazard	
2.1 2.2 2.2	Flammable Gas Non-Flammable Gas Cryogenic Liquid	Ignites when leaking High pressure cylinder bursting Subcooling	Notify Fire Department Guard against fire Evacuate goods – ventilate area
2.3	Toxic Gas (acceptable on Cargo Aircraft only)	High pressure cylinder bursting and toxic inhalation	Keep away minimum 25 m
3	Flammable Liquid	Gives off flammable vapour	Notify Fire Department Guard against fire
4.1 4.2 4.3	Flammable Solid Spontaneously Combustible Dangerous when wet	Combustible, contributes to fire Ignites in contact with air Ignites in Contact with water	Do NOT use water under any circumstances
5.1 5.2	Oxidizer Organic Peroxide	Ignites combustibles on contact Reacts violently with other substances	Notify Fire Department Guard against fire Do NOT use water
6.1	Toxic Substance	Harmful if swallowed, inhaled or in contact with skin	Isolate area Obtain qualified assistance Do NOT touch
6.2	Infectious Substance	Causes disease in Humans and Animals	Keep away minimum 25 m
7 Cat I 7 Cat II/III	Radioactive – White Radioactive – Yellow	Radiation hazards and harmful to health	
8	Corrosive	Hazardous to skin and metal	Notify Fire Department Guard against fire Avoid contact with skin
9	Polymeric Beads Magnetized Material Carbon dioxide, solid (Dry Ice) Miscellaneous Dangerous Goods	Evolves small quantities of flammable gas Affects navigation system Causes subcooling/suffocation Hazards not covered by other classes	Avoid contact with skin No immediate action required

4.5 CONTAMINATED CARGO OR BAGGAGE HANDLING

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

What is a dangerous goods accident and incident?

A dangerous goods accident is an occurrence related to the transport of dangerous goods that results in fatal or serious injury to a person or serious damage to property.

A dangerous goods incident is an occurrence, other than a dangerous goods accident, related to the transport of dangerous goods by air, not necessarily happening on board an aircraft, which results in injury to a person, property damage, fire, breakage, spillage, leakage of fluid or radiation or other evidence that the integrity of the packaging has not been maintained. Any occurrence relating to the transport of dangerous goods which seriously jeopardises an aircraft or its occupants is also deemed to be a dangerous goods incident.

To whom do we have to report dangerous goods incidents and accidents?

The operator must report dangerous goods incidents and accidents to the appropriate authorities of the State of the operator and the State in which the accident or incident occurred, in accordance with the reporting requirements of those appropriate authorities.

An operator must report any occasion when undeclared or mis-declared dangerous goods are discovered in cargo. Such a report must be made to the appropriate authorities of the State of the operator and the State in which this occurred. An operator must also report any occasion when dangerous goods not permitted under 2.3 are discovered in passengers' baggage. Such a report must be made to the appropriate authority of the State in which this occurred.

Why is the airline obliged to report undeclared or misdeclared dangerous goods to the competent authority?

This reporting is required so that the authority can take action to prevent a recurrence of the offence.

IATA DANGEROUS GOODS ENDORSED TRAINING SCHOOLS

Dangerous goods training for shippers and freight forwarders is provided by many Member airlines of IATA. To supplement this training, IATA has developed a Training School Endorsement Programme to certify independent training schools whose training programmes meet airline requirements. Schools that are endorsed by IATA are listed in a central registry maintained by IATA, and their students who have passed the approved test are recorded in IATA's International Student Register.

Organisations interested in having their Dangerous Goods courses endorsed by IATA are invited to direct their enquiries to:

AUSTRALIA

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Tel: +61 (8) 9370 5018
Fax: +61 (8) 9272 7376
E-mail: janet@airsafe.com.au
Website: www.airsafe.com.au

Dangerous Goods Management (Australia)
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