Information Article

Transport of Dangerous Goods by Air

Aircraft Accident / Incident - Some Relevant Things to Know / Account For - Re **Dangerous Goods**

References: (*for purchase [as required] from appropriate sources - as linked to below*)

ICAO Annex 18 - **The Safe Transport of Dangerous Goods (DG) by Air** - Edition **4** / July 20**11** - *incorporating amendments **1-10***

https://caa.rks-gov.net/wp-content/uploads/2016/09/icao_annex_18_thesafetransportofdangerousgoodsbyair-1.pdf
+
https://afeonline.com/product/icao-annex-18-amendment-11
+
https://afeonline.com/product/icao-annex-18-amendment-12
+
Working Paper re Updating Annex 18 - November 2023 / ***PROPOSED AMENDMENT TO ANNEX 18 TO CLARIFY STATES' RESPONSIBILITIES - RE 'THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR'***

https://www.icao.int/safety/DangerousGoods/DGP29/DGP.29.WP.004.5.en.pdf

ICAO Doc 9284 - **Technical Instructions for the Safe Transport of DG by Air -** 2023 -24

https://standart.aero/en/icao/book/doc-9284-technical-instructions-for-the-safe-transport-of-dangerous-goods-by-air-en-cons

Addendum to ICAO Doc 9284 - 2023-24

https://www.icao.int/safety/DangerousGoods/AddendumCorrigendum%20to%20the%20Technical%20Instructions/Doc.9284.Addendum1.en.pdf

Supplement to ICAO Doc 9284 - 2025-26:

https://fmslondon.co.uk/product/icao-supplement-to-technical-instructions-2025-2026/

ICAO Doc 9481 - Emergency Response Guidance for Aircraft Incident Involving DG - 2023/2024

https://standart.aero/en/icao/book/doc-9481-emergency-response-guidance-for-aircraft-incidents-involving-dangerous-goods-en-cons

IATA - Dangerous Goods Regulations - 2025 (66th Edition)

https://store.iata.org/IEC_ProductDetails?id=6065-66

Note 1 - Currency / display re all of above links (and any other links shown herein) will inevitably become incorrect and / or stop working with the passage of time. Whilst we attempt to keep all such links current, some will inevitably be found to no longer work / be out of date. The 'interested' reader is advised to account for this accordingly e.g. seek for the current version(s) him / her-self – if / as required

Note 2 - Trademarks (ICAO and IATA) are shown on this and the previous page. We so do in an editorial fashion only and (as applicable) to the benefit of the trademark owner. There is absolutely no intention herein of infringement of any such trademark

General Definition (ICAO)

DANGEROUS GOODS (transport by **AIR**)

Articles / items or substances etc. meant for transportation by air, having the potential to pose a risk to health, safety, property and the environment etc. Same are documented in the current 'list of dangerous goods' - as per ICAO's '***Technical Instructions for the Safe Transport of Dangerous Goods by Air***' document (ICAO Doc **9284**) ***OR*** - which are otherwise classified according to said technical instructions

INTRODUCTION

Note - This info article is only concerned with the transport of dangerous goods (DG) ***by air***. Obviously, DG can (and are)also be transported by road, rail and sea etc.

Dangerous goods (DG) can be safely carried by air, provided associated, mandatory ***principles*** (standards; recommended practices; technical instructions etc.) are fully complied with. Said 'principles' have been designed to better facilitate such carriage without unacceptably compromising the safety of an aircraft, its occupants, third parties, property, the environment etc.

Such principles are typically included in the ICAO / IATA documents referenced to further above i.e.

- Said ***ICAO*** / ***IATA*** documents (as per above) etc. - serve to regulate the carriage of DG ***by air*** - on an international / worldwide basis

This is because ICAO is a United Nations (UN) body and consequently, if any state (country) is a UN member (the vast majority are), 'very generally speaking' it is obliged to (**must**) follow all ICAO standards and technical instructions and strongly consider following all recommended practices - including those concerning DG. (The vast majority of the world's states / countries ***are*** UN members)

- A UN member state cannot (very generally - ***but*** there are exceptions) 'dilute / make less restrictive' ICAO requirements ***but it can*** make them more exacting / demanding - which a considerable number of 'states' choose so to do in many areas related to aviation in general

- Many passenger and cargo airlines are now also members of the associated, international trade organisation (International Air Transport Association - **IATA**) - which represents their commercial, safety and similar interests in numerous, different areas

  One such area includes the 'transportation of DG by air' - and full requirements are documented in IATA publication - 'IATA Dangerous Goods Regulations' - based on the associated ICAO documentation on the same subject (particularly ICAO's 'Carriage of DG by Air - Technical Instructions - ***Doc 9284***')

  However, do note that said 'IATA Dangerous Goods Regulations' can and do ***provide considerable, additional / supplemental information over and above*** (but not in conflict with) the associated ICAO documentation

In the aviation context, dangerous goods are typically carried on all manner of aircraft operations and types - including ***passenger*** aircraft / flights

Indeed, passengers are legally permitted to transport quite a wide range of DG themselves - either carried on their person / in their carry-on baggage ***AND*** / ***OR*** placed in hold baggage - depending on the type of DG …… e.g. (and again, very generally and subject to strict regulation / compliance / handling as required):

- Gaseous oxygen for personal medical use
- Thermometers containing mercury
- Wheelchairs with batteries which are potentially capable of spilling liquid content
- Toiletry articles - including perfumes (liquids and aerosols)
- Aerosols in general
- 'Hair curlers' containing e.g. hydrocarbon gas
- Alcoholic beverages
- Explosive Ammunition
- Safety Matches / Cigarette Lighters
- Dry Ice
- etc.

Note: ***Many other DG types are capable of being / permitted to be carried by air*** - **BUT** on ***cargo only aircraft***

There are a relatively small number of DG for which ***carriage by air is prohibited / forbidden*** absolutely ***OR*** for which special permission to carry (i.e. via an ***exemption***) is required from ***each*** state (country) having an 'interest' in the carriage by air of same e.g. ***each*** and ***every*** state over / through which any such flight lands and / or overflies

Prohibited DG may be generally summarised re their potential 'capability/ies' of:

- Exploding
- Dangerously reacting
- Producing a flame
- Producing dangerous evolution of heat
- Producing dangerous emission of toxic material
- Being corrosive
- Being capable of producing flammable gases and / or vapours
- Being radioactive
- Being infectious

Obviously, the above list requires ***significant*** clarification and amplification to contrast what can be carried - with what cannot ..... e.g. a cigarette lighter is capable of producing a flame but can be 'legally' carried (but only one [1]) by passengers, on most forms of public air transport

Such clarification and amplification is included in the appropriate regulations, instructions, standards, practices etc. already referred to further above - and also as may be included in each state's (country's) own, associated legislation, regulation etc. re the subject matter concerned

Note that a fairly broad range of dangerous goods are carried by air, thousands of times per day, as a ***direct consequence of the*** **aircraft operation** ***itself*** e.g.

- Fuel
- Oxygen
- Life-rafts (more specifically their inflation devices)
- Pyrotechnics (explosives) e.g. distress signals
- Batteries
- Fire Extinguishers
- Alcohol
- Perfumes and Toiletries
- Dry Ice
- Aerosols
- Veterinary Aids and Humane Killers for Animals (Cargo Flights only)
- etc.

INTERNATIONAL STANDARDISATION

Standardisation, in the widest meaning of the term, typically already exists for the transport of DG ***by air***. The basis for same is provided by the United Nations / ICAO. Similar standardisation governs ***maritime*** transport of DG via the UN's International Maritime Organisation (IMO / International Maritime Dangerous Goods code [IMDG])

Whilst not so closely UN linked / regulated (as air and maritime transport) - ***road*** and ***rail*** transport of DG (regulated in the main at ***national*** government level) is nevertheless largely recognised as being mainly compatible with associated UN standards - leading to a fairly (but not totally) seamless flow of DG between the diverse organisations and differing forms of land transport involved

Note - For more information on how one country (the UK [but also relates to the European Union as the UK was a member of the latter up until December 2019]) has dealt with the matter of transport of DG - follow below link

http://www.hse.gov.uk/cdg/manual/regenvirnment.htm#imdg)

IMPLEMENTATION and ENFORCEMENT

It should be clearly understood that standardisation and compliance measures apply to the entire process of the carriage of dangerous goods by ***air*** (and not just to the 'bit' concerning the actual flight) - thus typically including:

- Freight Shippers / Handling Agents / Forwarders etc.
- Aircraft Operators
- Postal (Mail) Agencies
- Couriers
- Passengers
- etc.

Such standardisation / compliance typically being managed by a combination of:

- Legislation, Regulation and Best Practice
- Inspection, Surveillance and Enforcement
- Identifying, Recording and Investigating DG Incidents
- Imposition of Violation Penalties

Standardisation and compliance is guided in the main by the relevant, reference documents shown on the first 2 pages of ***this*** info article - typically resulting (at least from the ICAO viewpoint) in each country / state producing its own corresponding legislation and regulation - which can often be more restrictive that that required by ICAO. (Note - the appropriate state / country specific requirements ***are*** generally included in the appropriate ***IATA Dangerous Goods Regulations*** documents)

Individual states / countries typically have their own inspection, surveillance and enforcement etc. procedures so as to try to ensure compliance with associated DG legislation etc. For example, inspections are typically made in operators' and handling agents' premises and include:

- Looking at procedures (including those for acceptance and loading), checking manuals, staff instructions etc.
- Inspecting DG packages and associated documentation
- Looking at general cargo (to see if any of it may contain undeclared dangerous goods)
- Checking for DG associated notices being present in passenger terminals
- Reviewing / approving the training and testing (competence) programmes for dangerous goods associated operators (both ground and air staff)

Dangerous Goods 'Inspectors' typically have assigned powers to:

- Inspect, open and seize packages
- Analyse the contents of suspicious packages
- Inspect and seize documents
- Inspect, open and seize the contents of passengers' baggage - and have those contents analysed / confiscated etc.

Where (extremely rarely) said implementation is at fault and / or enforcement fails - the consequences can be catastrophic. Follow the below link for an example of an aircraft accident to a scheduled, ***passenger*** carrying aircraft - where both implementation and enforcement (relating to the carriage of DG by air) failed - with tragic consequences

https://en.wikipedia.org/wiki/ValuJet_Flight_592

It is well worth re-emphasising here that the very real complexities associated with the transport of DG by air need to be clearly understood and addressed by all concerned. However, on the vast majority of occasions where DG are so transported - it is ***without*** incident

In the main, the latter situation is typically down to 3 simple principles:

- ✓ Appropriate packaging of DG so that the hazard(s) are contained within (i.e. prevented from spreading out of) said packaging
- ✓ Clearly communicating the presence and type of DG (i.e. via appropriate marking, labelling, documentation procedures, verbal briefing etc.) to all those 'that need to know'
- ✓ Handling DG accordingly i.e. in the required way / manner / as per SOP etc.

DANGEROUS GOODS CLASSIFICATION

Dangerous Goods (for transport by air) are split-up into nine different 'United Nations' (UN) categories known as 'classes'. Some of these categories are further broken down ***within a class*** - the 'broken down' bit being referred to as a 'division'

The UN classes and associated divisions are:

Class 1	**Explosives**
Class 2	**Gases**
Class 3	**Flammable Liquids**
Class 4	**Flammable Solids and Reactive Substances**
Class 5	**Oxidisers and Organic Peroxides**
Class 6	**Toxic and Infectious Substances**
Class 7	**Radioactive Materials**
Class 8	**Corrosives**
Class 9	**Miscellaneous Dangerous Goods**

Class 1 - Explosives

This Class is sub-divided into:

Division 1.1 - substances / articles which have a mass explosion hazard
Division 1.2 - substances / articles which have a projection hazard but not a mass explosion hazard
Division 1.3 - substances / articles which have a fire hazard and either a minor blast hazard or a minor projection hazard - or both - but not a mass explosion hazard
Division 1.4 - substances / articles which present no significant hazard
Division 1.5 - very insensitive *substances* which ***have*** a mass explosion hazard
Division 1.6 - extremely insensitive *articles* which ***do not have*** a mass explosion hazard

Examples of explosives include - ammunition, ejector seat cartridges, fireworks, signal flares etc.

Class 2 - Gases

This Class is sub-divided into:

Division 2.1 - flammable gases (Examples: acetylene, butane, cigarette lighter gas, propane)
Division 2.2 - non-flammable, non-toxic gases (Examples: oxygen, carbon-dioxide, helium, nitrogen)
Division 2.3 - toxic gases (Examples: carbon-monoxide, fluorine, chlorine, hydrogen cyanide)

Class 3 - Flammable Liquids

Class 3 is not sub-divided

Examples of flammable liquids include: - acetone, paint, perfumery products, petrol etc.

Class 4 - Flammable Solids and Reactive Substances

This Class is sub-divided into:

Division 4.1 - flammable solids (Examples: camphor, fire-lighters, matches, magnesium)
Division 4.2 - substances liable to spontaneous combustion (Examples: iron oxide, metal catalysts, white phosphorus and seed cake)
Division 4.3 - substances which, when in contact with water, emit a flammable gas (Examples: barium; lithium; sodium; zinc powder)

Class 5 - Oxidisers and Organic Peroxides

This Class is sub-divided into:

Division 5.1 - oxidising substances (Examples: chemical oxygen generators; ammonium nitrate; hydrogen peroxide)
Division 5.2 - organic peroxides (Example: benzoyl peroxides)

Class 6 - Toxic and Infectious Substances

This Class is sub-divided into:

Division 6.1 - toxic substances (Examples: alkaloids, arsenic, nicotine, pesticides)
Division 6.2 - infectious substances (Examples: viruses such as Ebola, HIV, Hepatitis and COVID - 19)

Class 7 - Radioactive Material

This Class is not sub-divided

Radioactive material is that containing radionuclides, which exceed a laid down level of activity concentration + the total activity in a consignment ***also*** exceeds a laid down, minimum value

Air transport is commonly used to carry radioactive materials as many have a relatively short 'half-life'. Almost all are radioisotopes for medical use in diagnosis and treatment - or are related to industrial sources

Common radionuclides are Iodine 125 (I-125), Iridium 192 (Ir-192) and Caesium 137 (Cs-137)

Class 8 - Corrosives

This Class is not sub-divided

Examples of corrosive substances - mercury, nitric acid, soda lime etc.

Class 9 - Miscellaneous Dangerous Goods

This Class is not sub-divided

Miscellaneous dangerous goods comprise those substances and articles which present a hazard during air transport - but which are not covered by any of the other Classes. Increasingly, this Class is being used for items of dangerous goods containing a miscellany of several low hazard goods in a / one single article

Examples of miscellaneous dangerous goods include - air bag inflators, consumer commodities, dry ice, lifesaving appliances (e.g. defibrillators and their lithium batteries). (Note - in cases where the latter [lithium batteries] fall under Packing Instructions 965 or 968, the DG ***MUST*** bear both the lithium battery handling label and the Class 9 hazard label)

Dangerous Goods with Multiple Hazards

Some dangerous goods have more than one associated hazard - i.e. they might have a primary hazard and one or more subsidiary risks. For example, Acetic Acid (glacial and solution > 80% acid) is both flammable ***and*** corrosive. Each hazard / risk should be considered to have equal status and it should not be assumed that one of them is of lesser danger than the other

Other examples - asbestos, dry ice, internal combustion engines and many more

Subsidiary Risks / Hazards – Note: This entry is similar (but provides additional info) to the one above

Many dangerous goods present more than one hazard. In such cases the primary hazard governs the allocation of Class and the other hazard(s) are referred to as subsidiary risks / hazards. For example - Ethanol (Ethyl Alcohol) is flammable whereas Methanol (Methyl Alcohol) is both flammable and toxic

Such goods must be labelled so that they show both the primary and subsidiary hazards

DEGREE of DANGER (Packing Groups [PG])

The DG 'classes' already documented a little further above indicate the ***types*** of hazards presented by dangerous goods. However, within the classes themselves, many dangerous goods have further varying degrees of 'danger' e.g. some being more dangerous than others e.g. flammables with differing flash points

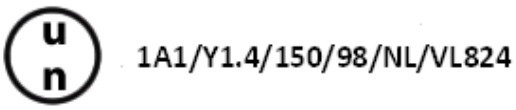
Accordingly, a system has been developed by the UN for establishing this ***relative*** degree of danger, which entails the assignment of a ***'Packing Group'*** category (written as 'roman numerals') to the individual dangerous goods i.e.

Packing Group I = high danger / highest degree of protective packing required
Packing Group II = medium danger
Packing Group III = low danger / lowest degree of protective packing required

Not all DG Classes have Packing Groups e.g. they are not used for radioactive materials, gases, aerosols, infectious substances etc. (i.e. DG classes 1, 2, 6.2 and 7). For such materials, alternative packing instructions are available and should be used

Most packages also need to bear the 'UN packaging approval mark' confirming that the packaging has been tested and approved in accordance with relevant United Nations performance standards

An example of what the latter 'looks like' is shown just below:



Note 1 - When performance testing a dangerous goods ***package*** in order to determine that its design meets the minimum performance criteria required by the UN (and also to attain the mandatory UN approval) - the Packaging Group of the product to be transported in the package is one of the factors that determines the test protocol

Note 2 - Testing conducted on a package which is a '**Packing Group I**' product is (understandably) considerably more stringent than the testing requirements for a '**Packing Group III**' product

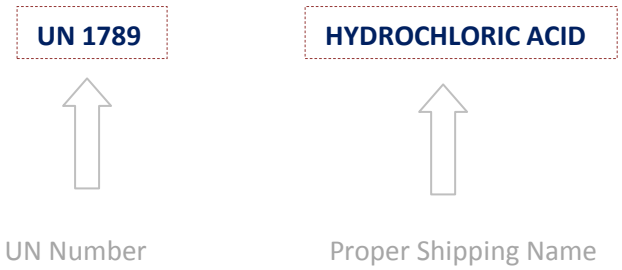
IDENTIFICATION of DG

UN Number and Proper Shipping Name

A specific 4 digit 'UN Number' and associated 'Proper Shipping Name' (PSN) is allocated to specific types of dangerous goods - and must be used on all DG packaging and documentation. This worldwide system of identification overcomes problems of language, pronunciation and misunderstandings - which might otherwise arise e.g. from the apparent similarity of many chemical names

The above can assist e.g. emergency responders to obtain information quickly about the properties of a DG substance + the most appropriate actions to take when responding to an associated emergency involving same

Example:



There are approximately 2000 dangerous goods which have been assigned UN numbers and PSNs

For dangerous goods having ***no*** specific UN number and PSN assigned, a generic or 'N.O.S.' (not otherwise specified) labelling allocation must be used on associated packaging and documentation

Example:

UN 1760 CORROSIVE LIQUID - *N.O.S* (+ technical name)

In this instance the technical name of the dangerous component(s) should be included in brackets after the generic PSN.

DG packages are generally marked with appropriate 'points of contact' - i.e. showing the name, address and (sometimes) other contact information - of both the relevant shipper (consignor) and the consignee (receiver) of the DG

Package Labels

All DG packages should be labelled - being the main means of identifying the ***hazard(s)*** of the package contents. Label colours and symbols denote the hazards (see next page)

In addition to hazard labels, some DG packages are required to display ***handling labels*** - typically denoting e.g. package orientation requirement; that a package contains magnetized material; that a package is restricted to carriage by cargo aircraft only etc.

Example Only - DG Package Labels

DOCUMENTATION and OTHER INFORMATION USED IN TRANSPORT of DG by AIR

Shipper's Declaration

When dangerous goods are offered for transport by air they must be accompanied by a completed dangerous goods transport form ('Shipper's Declaration for Dangerous Goods') - certifying that the consignor has packed, labelled and declared the DG according to the appropriate regulations

For the latter and where transport by air is required, the IATA Dangerous Goods Regulations (DGR) typically apply

For each DG item to be transported the completed form must indicate / show:

- whether the DG is for carriage on passenger aircraft or for cargo aircraft only
- the proper DG shipping name (including the technical name, if applicable)
- the DG Class and / or Division
- the DG UN number
- the DG packing group
- any subsidiary risk(s) associated with the DG
- the net quantity, type of packaging and number of DG packages
- the DG packing instruction number
- Cross reference to the associated 'air waybill'

For radioactive material the document must ***additionally indicate***:

- Name and / or symbol of the radioactive material
- The activity (radio-activity) level
- Category of the package (e.g. **II** - **Yellow**)
- *Transport Index (as applicable)

* Transport Index (**TI**) is a single number assigned to a package containing ***radioactive*** material - derived from the maximum radiation dose rate at a distance of 1 metre from the package. The most restrictive number is '**III YELLOW**'

The 'shipper's declaration additionally includes administrative type info (e.g. details of shipper [consignor] and consignee; air waybill cross-reference, departure and destination points; dates etc.) and must be signed / dated by an 'appropriate person'. Where necessary 'additional handling information' (special handling requirements) is also to be included

A Shipper's Declaration for Dangerous Goods is not required for goods classified, packaged and labelled as *UN 3373 Biological substance, category B* or for *exempt human* / *animal specimens*

An uncompleted example of a 'shipper's declaration' is shown on the next page:

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper	Air Waybill No. Page of Pages Shipper's Reference Number *(optional)*
Consignee	*For optional use for Company logo name and address*
Two completed and signed copies of this Declaration must be handed to the operator.	**WARNING** Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.
TRANSPORT DETAILS This shipment is within the limitations prescribed for: *(delete non-applicable)* PASSENGER AND CARGO AIRCRAFT / CARGO AIRCRAFT ONLY Airport of Departure:	
Airport of Destination:	Shipment type: *(delete non-applicable)* NON-RADIOACTIVE / RADIOACTIVE

NATURE AND QUANTITY OF DANGEROUS GOODS

Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Packing Group	Quantity and type of packing	Packing Inst.	Authorization

Additional Handling Information

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. I declare that all of the applicable air transport requirements have been met.

Name/Title of Signatory

Place and Date

Signature *(see warning above)*

Air Waybills

Air Waybills are essentially 'contracts' for the shipping of cargo. They are not always required for consignments of dangerous goods, depending on the method of carriage

If issued, they will state when the consignment contains dangerous goods and a copy accompanies the consignment on to the carrying aircraft. The Air Waybill number is quoted (cross-referenced to) on the dangerous goods transport document / shipper's declaration and is typically the only link between them. Apart from this, Air Waybills generally had little or no useful information on them (***in the past***) to aid identification of DG in emergencies

However, since January 2013 the DG regulations have been amended i.e. now clearly identifying dangerous goods which can be described on documentation, ***such as an air waybill - rather than via a Shipper's Declaration***

Safety Data Sheets

A Safety Data Sheet typically describes in detail the hazards and other required information associated with any particular type of DG - including information relating to:

- Identification of DG
- Hazard(s) identification
- Composition / information on ingredients
- First-aid measures
- Fire-fighting measures
- Accidental release measures
- Handling and storage
- Exposure control / personal protection
- Physical and chemical properties
- Stability and reactivity
- Toxicological information
- Ecological information
- Disposal considerations
- Transport information
- Regulatory information
- Other information

Safety Data Sheets had not typically been required (in the past) to accompany dangerous goods 'in transport' - ***BUT*** (from 2015 on) have increasingly become used for the 'intended purpose'

They may typically be found on / in an associated DG package and / or with the shipper's papers

Cargo Manifest

Cargo manifests are required by ICAO Annex 9 (Facilitation) but otherwise generally have little to do with the requirements for carrying dangerous goods on an aircraft. They may make reference to the fact that dangerous goods are part of the cargo for a flight - but this may be in code

Apart from this, there is generally no information in a Cargo Manifest (concerning DG) which might be of assistance during an emergency

PROVISION of DG INFORMATION to the AIRCRAFT COMMANDER

NOTOC

Once dangerous goods have been loaded onto an aircraft, they become the responsibility of the Aircraft Commander (i.e. the Pilot-in-Command or Captain) until the flight is complete. It is thus necessary for the Aircraft Commander to know (amongst many other things) which specific types of DG have been loaded on to his / her aircraft - and where they have been placed

He / she is provided with this information in a document known as a ***'Notification to Captain / Commander'*** - or **NOTOC**

The NOTOC generally identifies the dangerous goods loaded (typically by proper shipping name, UN number, Class / Division, subsidiary risks and packing group etc.) together with their quantity and details of where they have been stowed in the aircraft. The NOTOC must be provided to the Captain prior to aircraft push-back / taxi

A table is available to clearly identify those dangerous goods ***not*** required to be shown on a NOTOC

The person responsible for loading the DG certifies and signs the NOTOC - to the effect that it / they have been loaded in accordance with the appropriate regulations / instructions - and the Aircraft Captain / Commander then signs to acknowledge receipt of the DG and associated information

A copy of the NOTOC must be kept on the ground at a ***readily accessible*** location until after the flight has safely landed at destination - and been unloaded

From 01 January 2014 it became mandatory for NOTOC copies to also be lodged with the air carrier's (i.e. the air carrier transporting the DG) operations control centre / equivalent facility

A typical (example) NOTOC is shown on the next page:

SPECIAL LOAD - NOTOC (For Exercise Use Only)

Station of Loading:	Flight No.:	Date:	A/C Reg.:	Prepared By:
MAA	ABC 999	xx Jun 12	A6-XXX	J Doe

Dangerous Goods - Emergency Telephone number where a copy of this information can be obtained: +971 50 XXX XXXX

Station of Off-Loading	AWB No	Proper Shipping Names	Division	UN or ID No.	Sub Risk	No. of Packages	Net Qty or TI per package	PG or RAD Cat.	Code	CAO Y/N	Loaded	
											ULD ID	Position
AUH	123-4567891	Radioactive Material, Type A Package	7	UN2915		25	2 TI	Yellow-III	RRY	N	PMC1234EY	CL
AUH	124-6789122	Radioactive Material, Type A Package	7	UN2915		15	3 TI	Yellow-III	RRY	N	PMC2345EY	DL
AUH	125-3456987	Magnetised Material	9	UN2807		5	60Kgs		RMD	N	PMC3456EY	S
AUH	126-6987455	Polyhalogenated Biphenyls - liquid	9	UN3151		3	200L	II	RMD	Y	PMC7894EY	ER
AUH	128-9874564	Batteries, wet, filled with acid	8	UN2794		1	50Kgs		RCM	Y	PMC7445EY	JL

There is no evidence that any damaged or leaking packages containing dangerous goods have been loaded on the aircraft

Other Special Load:

Station of OffLoading	AWB No	Contents & Description		No. of Packages	Qty	Supplementary Information	Code	Loaded	
								ULD ID	Position
AUH	127-5987456	Humain Remains		1	150Kgs	Sealed coffin	HUM	PMC5544EY	41R
AUH	147-9632547	DRY ICE		1	200Kgs		ICE	PMC4455EY	21P

Ramp Sup / LM Signature: _____LM John Doe_____ **Captain's Signature: _____**

DG INFORMATION required for use in EMERGENCIES

DG Information for Aircraft Commander's Use - in Emergencies

Given the nature of the transportation of DG by air, it is impossible to prevent associated incidents from ever happening. However, most which do occur are relatively minor and typically occur on the ground (There will always be exceptions - see 'linked' information shown on page 6)

If an aircraft emergency occurs, it is unlikely that it will have arisen directly from properly consigned and handled DG, but the latter will obviously need to be considered in responding to such a situation

If Dangerous Goods are carried as air cargo, the Aircraft Commander must rapidly have available (to him / her) emergency response information about them, although this does not have to be too detailed. The associated document which most aircraft operators have chosen to carry on board their aircraft is * ICAO's Doc 9481 '***Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods***'. Similar information can be provided by any other acceptable means

* Doc 9481 contains general information re factors which might need to be considered when dealing with any dangerous goods (being transported by air) incident - and also provides ***specific emergency response drill*** codes for ***each*** item listed in the (separate) 'Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Doc 9284)'

Passing of DG Information to Air Traffic Services - during an associated Emergency

There is no reliably recognised system of pre-notifying ***airport*** authorities of the dangerous goods on board aircraft which might be operating at or otherwise affecting their airport(s). This means that in an emergency, responding emergency services and others are dependent on obtaining such information from either the Aircraft Commander directly and / or indirectly from the aircraft operator / handling agent / cargo agent / whoever

** The associated ICAO Technical Instructions state that '..... If an in-flight emergency occurs and the operational situation 'on the day' so permits, the ***Aircraft Commander*** must inform the appropriate air traffic services unit of the dangerous goods carried on board. Where possible this should include:

- the proper shipping names
- UN / ID numbers
- the Classes / Divisions
- compatibility group for explosives
- subsidiary risk(s)
- quantities
- locations on aircraft

** Note - practically speaking it is recognised, of course, that during a major aircraft emergency, no one on board the emergency aircraft ***might*** have the time and / or capability to transmit such a message

As an alternative to the above, ICAO permits a summary of the DG on board to be transmitted ***OR*** an appropriate, telephone contact number be provided - from which / where details of the same info (as listed just above) can be obtained - and also (possibly) expert advice provided on the DG involved and the precautions to be observed - similar to that contained in 'safety data sheet' type documents

DG Notification to National Authority / Authorities - for Use in Emergency Response Ops

Should Dangerous Goods be carried on board an aircraft experiencing an ***accident*** / ***serious incident***, ICAO regulations stipulate that the ***aircraft operator*** is to obtain the following info pertaining to such DG - and pass it on ***without delay*** to the appropriate **responding emergency services** (wherever in the world the latter might be responding to the associated accident / serious incident):

- Proper shipping names
- UN Numbers
- Class / Divisions
- Compatibility groups for Class 1 Dangerous Goods (Explosives)
- Any associated Subsidiary Risks
- Quantities
- Locations on board aircraft
- Brief, plain language description of Dangerous Goods situation at the time of information transmission

Where all of the required information shown above is ***not*** quickly and / or easily available - then forward as much as possible of it on, in whatever format ***is*** available and forward the rest as / if it becomes available. This same information is also to be forwarded, ***as soon as possible***, to the appropriate authorities of the State (country) of the Aircraft Operator and the State where the accident / serious incident occurred (if different). The 'authority' referred to here is expected to be the 'Dangerous Goods' agency (or equivalent) of the appropriate national 'Civil Aviation Authority / equivalent'

The above procedure shall ***also*** be followed for (the less serious) ***significant incidents*** - if ***requested*** so to do by an appropriate emergency service and / or authority - with the exception that notification to the ***State of the Operator*** is not required

Aircraft Operators should address the requirements for the provision of all of the above in (their own) appropriate contingency / emergency response plans

RESPONDING to EMERGENCIES

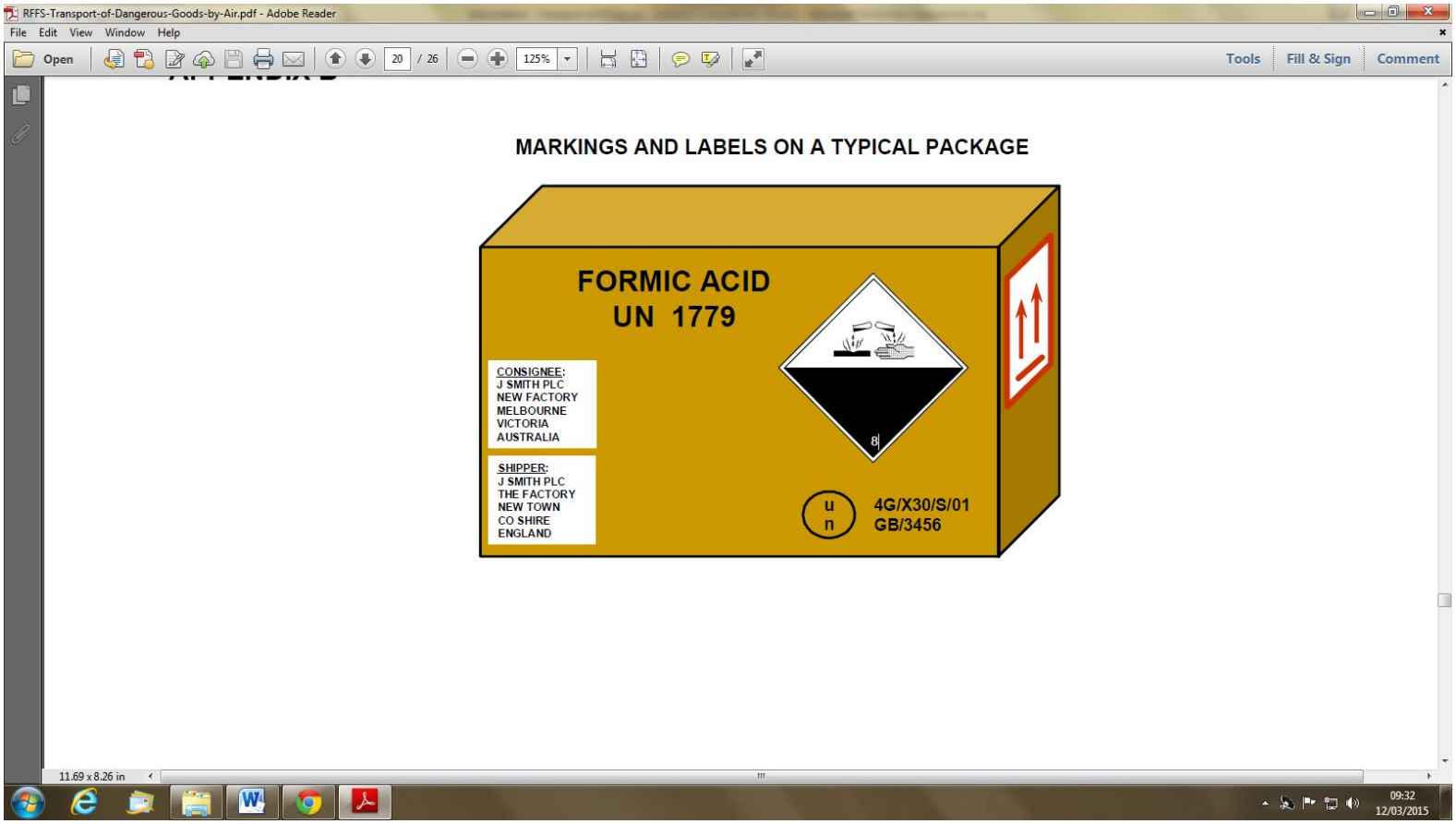
Although fire and rescue etc. services may need to deal with a major aircraft accident involving DG - it is more likely that a 'DG situation' will occur to an aircraft already parked on the ground; to DG located in an airport warehouse / similar etc. Accordingly, there are a number of considerations to apply for a ***ground*** response (to emergencies involving DG) - typically including:

- Assessment of what has happened or is happening - from a distance if necessary
- Use binoculars to look for information (e.g. labels)
- Use a thermal imaging camera to look for 'hot spots'
- Consider use of appropriate Personal Protective Equipment if initial inspection needed
- Position leaking packages so that the leakage point is uppermost
- Use sand to contain or absorb leakage / spillage
- Use plastic tools - metal could react or cause sparks
- Do not commit fire and rescue personnel to obtain info already known / quickly available
- Do not commit fire and rescue personnel if 'life' is otherwise ***not*** at risk

See also attachment 2 - page 21

Attachment 1 to Information Article

Example - **Correctly Labelled DG Package**



Attachment 2 to Information Article

Example - Preparation of an Emergency Response Action Plan for a Dangerous Goods Type Crisis

https://www.tc.gc.ca/eng/tdg/erap-menu-72.htm

(Canada - 2024)