Example Operations Manual Entry for a UK Remotely Piloted Aircraft System Operator Approved to Carry Dangerous Goods as Cargo

Revision History

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| --- | --- | --- |
| DATE | VERSION | CHANGES |
| 31/07/2023 | 1 | Initial version |
| 03/12/2024 | 2 | All previous tracked amendments accepted.  Editorial Note updated from retained to assimilated UK regulations.  X.1.1 Changed to Operational Authorisation (Article 12, Regulation 2019/947).  X.1.1 Editorial Note text changed from Air Navigation (Dangerous Goods) Regulations, Article 4 to Article 12, of UK Regulation (EU) 2019/947.  X.1.2 Note amended to reflect the updated process of applying through the CAA Customer Portal.  X.1.4 Reference in Note changed from 11.10.4 to X.5.2.4.  X.1.4 Addition of provisions for the replacement of marking and labels.  X.1.4 Supporting text for Class 9 label updated to include Sodium batteries.  X.1.4 ‘Lithium Battery mark’ text and example image updated to ‘Battery mark’ and supporting text updated to include Sodium batteries.  X.1.4 Battery mark note updated to advise that Fig 5-3 of the 2021-2022 Edition of the Technical Instructions may continue to be applied until 31 December 2026.  X.1.4 The following labels and marks have been updated to include minimum dimensions:   * Radioactive Material, Excepted Package * Magnetized Material * Cargo Aircraft Only * Cryogenic Liquid * Keep Away from Heat * Excepted Quantities Mark * Limited Quantities Mark * Environmentally Hazardous Substances   X.2.1 References in table changed from 11.10.4 to X.5.2.4 or 11.10.2 to X.5.2.2.  X.3.1 Note 2 updated to add ‘assessment’ and ‘function’.  X.3.3 Addition of an editorial note relating to the requirement to amend the NOTOC when additional dry ice is added to a ULD after acceptance.  X.3.8   * Information which must appear on the NOTOC updated to better reflect the Technical Instructions * Removal of note 3. * Reformat of section to become a table. * Addition of UN3164 Articles, pressurized, hydraulic.   X.3.9 Additional information added to ‘Availability of NOTOC on the ground during flight’.  X.3.12 RPAS changed to UAS.  X.5.1 Flight crew onboard changed to remote pilots.  X.5.2 Heading and Editorial Note changed to include ‘Remote’.  X.5.2.2 Contact details updated to include an out of hours number.  X.5.2.4 Editorial Notes amended to UK Regulations for consistency.  X.7.2 Paragraph added to include the requirement for recurrent training and assessment.  X.7.2 The address of the organisation is no longer required.  X.7.2 Addition of the requirement to retain training and assessment records for 36 months.  X.7.5 Heading changed from ‘Identifcation of Training and Testing Materials’ to ‘Instructor Qualifications and Competencies’.  Text changes have been marked as underlined in red throughout this document. |
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# SECTION X DANGEROUS GOODS AND WEAPONS

**Editorial Note 1:** References to EU regulations are to those regulations which are assimilated regulations and are referenced hereafter as “UK Regulation (EU) year/number” or “UK Regulation (EU) No. number/year”.

**Editorial Note 2:** Editorial notes within the following text indicate where the operator needs to add text to describe their specific operation. The editorial notes must be replaced with the operator’s own text before submission to the CAA.

**Editorial Note 3:** The following text makes numerous references to the International Civil Aviation Organization’s Technical Instructions for the Safe Transport of Dangerous Goods by Air (Technical Instructions). Should the Operator decide to use the IATA Dangerous Goods Regulations as a means of complying with the ICAO Technical Instructions, references to the respective regulations should be amended accordingly.

## X.1 Policy on the Transport of Dangerous Goods

X.1.1 **Approval for the Transport of Dangerous Goods through an Operational Authorisation (Article 12, Regulation 2019/947).**

Dangerous goods can only be carried according to the International Civil Aviation Organization’s Technical Instructions for the Safe Transport of Dangerous Goods by Air (Technical Instructions), irrespective of whether the flight is wholly or partly within or wholly outside the territory of a State. An approval must be granted by the State of the Operator before dangerous goods can be carried on an aircraft, except as identified in X.1.3. An additional approval or an exemption may be required to permit the transport of some dangerous goods – see X.1.2 below.

**Editorial Note 1:** *Insert Text*[Operator Name] **hasbeen granted an approval in accordance with Article 12, of UK Regulation (EU) 2019/947, for the transport of dangerous goods by air under an operational authorisation.**

**Editorial Note 2:** The following Nominated Person is responsible for ensuring that the operator remains in compliance with the applicable dangerous goods requirements in accordance with Air Navigation (Dangerous Goods) Regulations:

**[Job Title/Name and contact details]**

**Editorial Note 4:** The following person is responsible for the supervision and maintenance of the dangerous goods approval: (If not the same as above)

**[Job Title/Name and contact details]**

**Editorial Note 5:** As queries regarding the transport of dangerous goods are likely to be escalated to the person(s) listed above, the operator should make arrangements to ensure continuity of supervision in their absence.

**Editorial Note 6:** operators must include the transport of dangerous goods as cargo, in the scope of their specific safety risk assessment on the transport of items in the cargo compartment;

X.1.2 **Forbidden Dangerous Goods**

Certain dangerous goods, which are normally forbidden, may be specifically approved for air transport by the CAA for other purposes as specified in the ICAO Technical Instructions, provided that in such instances an overall level of safety in transport which is at least equivalent to the level of safety provided for in the Technical Instructions is achieved.

In instances of extreme urgency or when other forms of transport are inappropriate or full compliance with the prescribed requirements is contrary to public interest, the States concerned may grant an exemption from the provisions of the Technical Instructions provided that in such instances an overall level of safety in transport which is at least equivalent to the level of safety provided for in the Technical Instructions is achieved. For the purposes of exemptions, “States concerned” are the States of Origin, Operator, transit, overflight and destination. For the State of overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.

**Note:** Applications for such approvals or exemptions should be submitted to the Civil Aviation Authority Dangerous Goods department through the CAA Customer Portal at least 10 working days prior to the proposed flight date.

**Dangerous goods carried in accordance with an exemption or approval must comply with the conditions on the exemption or approval, as well as those on the permanent approval unless these have been varied by the exemption or further approval.**

**Editorial Note 1:** The operator’s procedure for ensuring relevant personnel are made aware of the details of short-term approvals and exemptions regarding the dangerous goods (e.g. through the issue of internal notices to staff and to staff from entities that carry out any responsibility of the Operator) should be described. It is recommended that when dangerous goods are carried under a specific exemption or approval, a copy of that document be maintained and ready to be disclosed.

**Editorial Note 2:** Operators holding specific non-expiring approvals or exemptions related to the carriage of dangerous goods should provide details of these and the conditions of carriage specified therein.

### X.1.3 **General Exceptions**

#### X.1.3.1 **Airworthiness and Operational Items**

An approval is not required for items classified as dangerous goods which are required to be aboard the aircraft for propulsion purposes, for the operation of its specialised equipment during flight, or which are required in accordance with the operating requirements;

**Note:** Dangerous goods intended as replacements for those referred to in X.1.3.1 above **may not** be carried without the approval referred to in X.1.1 and unless consigned and accepted for transport in accordance with the ICAO Technical Instructions.

### X.1.4 **Marking and** **Labelling of Packages**

Articles and substances meeting the dangerous goods classification criteria are assigned a ‘UN Number’ under the United Nations classification system. This consists of a four-digit number preceded by the capital letters ‘UN’. Packages of dangerous goods must be marked with the UN Number(s) applicable to their contents.

Packages containing dangerous goods can also be identified by labels indicating the hazard of the goods by their class or division or by the presence of certain handling labels/marks.

***Note:*** *When dangerous goods marks or labels are seen on items not declared as dangerous goods, it is often an indication that they do contain such goods. Undeclared dangerous goods must not be loaded on an aircraft and reporting procedures must be implemented (see X.5.2.4).*

During the course of air transport, including storage, the dangerous goods mark(s) and label(s) must not be covered or obscured by any part of or attachment to the packaging or any other label or mark.

When the operator discovers that any marks or labels for packages of dangerous goods have become lost, detached or illegible the operator must replace them with appropriate marks or labels in accordance with the information provided on the dangerous goods transport document or other transport document, such as an air waybill, when applicable As required by Part 7;2.7 of the Technical Instructions.

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| CLASS 1 – EXPLOSIVE | |
| Class 1 (with exploding bomb symbol) – explosives generally not permitted on an aircraft.    \* Division and compatibility group | Class 1 (without exploding bomb symbol):  Divisions 1.4B, 1.4F, 1.5 and 1.6 - explosives not permitted on an aircraft in normal circumstances.    \*\* Compatibility group |

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| CLASS 2 – GASES | | |
| Flammable gas  (Division 2.1) | Non-flammable, non-toxic gas (Division 2.2) | Toxic gas (Division 2.3) |

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| CLASS 3 – FLAMMABLE LIQUID |
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| CLASS 4 – FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES | | |
| Flammable solid (Division 4.1) | Substance liable to spontaneous combustion (Division 4.2) | Substance which, in contact with water, emits flammable gas (Division 4.3) |

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| CLASS 5 – OXIDISING SUBSTANCES AND ORGANIC PEROXIDES | | |
| Oxidising substance  (Division 5.1) | Organic peroxide (Division 5.2) (flame may be black or white) | |
|  | **5.2** |

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| CLASS 6 – TOXIC AND INFECTIOUS SUBSTANCES | | |
| Toxic substance (Division 6.1) | Infectious substance (Division 6.2) | |
|  | The bottom part of the label should bear the inscription:  “INFECTIOUS SUBSTANCE — In case of damage or leakage immediately notify public health authority”. |

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| CLASS 7 – RADIOACTIVE MATERIAL | | |
| Category I | Category II | Category III |
| Criticality safety index label |  | |

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| CLASS 8 – CORROSIVE |
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| CLASS 9 – MISCELLANEOUS |  |
|  | Class 9 label for lithium cells and battery(ies)(Section I, IA and IB) or sodium ion cells and battery(ies)(Section I) shipments  Image result for lithium battery class 9 label |

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| HANDLING LABELS | | | |
| *Packages of dangerous goods may also bear labels providing handling information; these are:* | | | |
| **Magnetized material** | | **Cargo aircraft only** | |
| **Cryogenic liquid label** | Package orientation    (red or black) | | **Keep away from heat** |

*Intermediate Bulk Containers (IBCs) are only permitted for the transport of UN 3077 Environmentally hazardous substance, solid, n.o.s. The maximum permitted stacking load applicable when the IBC is in use must be displayed on a symbol as follows:*

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| **IBCs capable of being stacked** | | | **IBCs NOT capable of being stacked** | |
| BATTERY MARK | | | |
|  | | Application of the battery mark to a consignment of lithium batteries (of any type) and/or sodium batteries indicates that the Shipper has determined specific requirements have been met. Consignments with this mark, without the Class 9 label do not need to be accompanied by a dangerous goods transport document (Shipper’s Declaration) and no acceptance check is required.  Note: the mark illustrated in Fig 5-3 of the 2021-2022 Edition of the Technical Instructions may continue to be applied until 31 December 2026. | |
| EXCEPTED QUANTITIES MARK | | | |
| *Packages containing excepted quantities of dangerous goods can be identified from the following:* | | | |
|  | Hatching and symbol of the same colour, black or red, on white or suitable contrasting background.  \* Place for class or, when assigned, the division number(s).  \*\* Place for name of shipper or consignee, if not shown elsewhere on the package. | | |

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| LIMITED QUANTITIES MARK | |
| *Packages containing limited quantities of dangerous goods can be identified from the following:* | |
|  | Many dangerous goods when in reasonably limited quantities present a reduced hazard during transport and can safely be carried in good quality packagings that have not been tested and marked as is required for UN Specification packagings required for larger quantities of dangerous goods. Packages containing limited quantities of dangerous goods must be marked with a diamond shaped mark. When presented for carriage by air, the mark must additionally include a “Y” which indicates compliance with the provisions of the ICAO Technical Instructions, some of which are more stringent than those of the UN Model Regulations and of other modes of transport.  **NOTE:** The mark depicted here but without the ‘Y’ indicates that the package contains dangerous goods in limited quantities as permitted by surface transport regulations (ADR/IMDG) which may not be acceptable for air transport. A package so marked and offered for transport in the absence of a dangerous goods transport document must be reported to the appropriate authority where the goods are discovered as a discovery of undeclared dangerous goods (the CAA if discovered within the UK). |

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| ENVIRONMENTALLY HAZARDOUS SUBSTANCES MARK | |
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|  | Packages containing environmentally hazardous substances (UN Nos. 3077 and 3082) must be durably marked with the environmentally hazardous substance mark with the exception of packages containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 kg or less for solids. |

## X.2 Duties of All Personnel Involved

### X.2.1 **Detailed Assignments of Responsibilities**

**Editorial Note 1:** Operators need to assign the key responsibilities associated with the carriage of dangerous goods. For example, it may be intended for acceptance checks of consignments of dangerous goods cargo to be conducted by suitably trained ground staff of the operator or alternatively by a designated handling agent. Duties associated with the carriage of dangerous goods include:

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| Nominated Person | * Ensuring that the operator remains in compliance with the applicable dangerous goods requirements. * Ensuring all necessary permissions, approvals and exemptions are held and maintained. * Management and supervision of the carriage of dangerous goods |
| Person(s) Responsible for the Supervision and Maintenance of the Operator’s Dangerous Goods Approval | * Oversight and control of the carriage of dangerous goods. * Generation (or acceptance) of relevant procedures. * Responding to queries regarding the carriage of dangerous goods. |
| Cargo Department/ Cargo Sales Agents | * Arrangement of the carriage of dangerous goods in accordance with the operator’s stated policies. * Recognition of undeclared dangerous goods. |
| Persons receiving or handling general cargo, mail and stores | * Recognition of undeclared dangerous goods. * Dealing with dangerous goods that are found damaged or leaking during processing for transport. * If there is a dangerous goods incident or accident, or if undeclared dangerous goods are detected, a report is made to the appropriate Authority (see X.5.2.4). |
| Persons receiving or handling dangerous goods | * Acceptance procedures for dangerous goods are carried out as required by the Technical Instructions. * Inspection procedures during the processing of dangerous goods for transport are carried out as required by the Technical Instructions. * Dealing with dangerous goods that are found damaged or leaking during processing for transport. * Dangerous goods are loaded, segregated, stowed and secured on an aircraft in accordance with the Technical Instructions. * Generation of written information to the commander (NOTOC). * Provision of written information about dangerous goods loaded on board to the commander for signature. * Retention of documentation on the ground. * Recognition of undeclared dangerous goods. * If there is a dangerous goods incident or accident, or if undeclared dangerous goods are detected, a report is made to the appropriate Authority (see X.5.2.4). |
| Operations Personnel | * If there is an aircraft incident or accident, information is passed to emergency services and state Authorities as required by the Technical Instructions (see X.5.2.2). * If there is a dangerous goods incident or accident, or if undeclared dangerous goods are detected a report is made to the appropriate Authority (see X.5.2.4). |
| Remotely Pilots | * Recognition of undeclared dangerous goods. * Signature of NOTOC to indicate receipt of information. * If an in-flight emergency occurs, as soon as the situation permits, passage of details of dangerous goods on board to the appropriate Air Traffic Services Unit. * If there is a dangerous goods incident or accident, or if undeclared dangerous goods are detected a report is made to the appropriate Authority (see X.5.2.4). |
| Trainers | * Provision of initial and recurrent dangerous goods training commensurate with the responsibilities of the personnel concerned. |
| Compliance Monitoring Manager and Auditors | * Ensuring that activities are monitored for compliance with the applicable dangerous goods requirements and that these activities are carried out properly under the supervision of the relevant head of functional area. |
| Person Responsible for the Safety of the Operation | * Ensuring that all aspects related to the carriage of Dangerous Goods are included in the specific safety risk assessment and continuously reviewed and monitored. * Identification of new hazards related to the transport of items or dangerous goods in the cargo compartment. * Ensuring the initiation and follow-up of internal occurrence / accident investigations. |

**Editorial Note 2:** In practice an entity other than the Operator, may carry out some or all of the procedures for processing dangerous goods cargo for air transport. Such entity must be provided with sufficient information to enable these procedures to be actioned. Operators should specify whether they utilise suitably qualified personnel of the operator or of an external entity at the various locations of the operation and how the information is made available to their qualified personnel or the entity’s staff.

## X.3 Guidance on the Requirements for Acceptance, Handling and Stowage

## X.3.1 Acceptance Check

Before a consignment consisting of a package or overpack containing dangerous goods, a freight container containing radioactive material or a unit load device containing dangerous goods is first accepted for carriage by air, the operator must, by use of a checklist, verify the following:

a) the documentation or, when provided, the electronic data is compliant with the applicable requirements

b) the quantity of dangerous goods stated on the dangerous goods transport document is within the limits per package on a passenger or cargo aircraft as appropriate;

c) the package, overpack or freight container marks accord with the details stated on the accompanying dangerous goods transport document and is clearly visible;

d) where required, the letter in the packaging specification marking designating the packing group for which the design type has been successfully tested is appropriate for the dangerous goods contained within. This does not apply to overpacks where the specification marking is not visible;

e) proper shipping names, UN numbers, labels, and special handling instructions appearing on the interior package(s) are clearly visible or reproduced on the outside of an overpack;

f) the labelling of the package, overpack or freight container is as required for the consignment;

g) the outer packaging of a combination package or the single packaging is permitted by the applicable packing instruction, and when visible is of the type stated on the accompanying dangerous goods transport document;

h) the package or overpack does not contain different dangerous goods which require segregation from each other; and

i) the package, overpack, freight container or Unit Load Device (ULD) is not leaking and there is no indication that its integrity has been compromised.

The operator must be able to identify the person who performed the acceptance check.

***Note 1:*** *An acceptance check is not required for dangerous goods in excepted quantities, radioactive material in excepted packages and lithium batteries consigned in accordance with Section II of the applicable packing instruction.*

***Note 2:*** *Persons conducting dangerous goods acceptance checks must have received dangerous goods training and assessment commensurate with this function. Acceptance checks conducted in the United Kingdom must only be conducted by a person who has successfully completed training applicable to this role from a UK CAA Approved Dangerous Goods Training Organisation.*

X.3.2 **Inspections for Damage or Leakage**

A package or overpack containing dangerous goods must not be loaded onto an aircraft or into a ULD unless it has been inspected immediately prior to loading and found free from evidence of leakage or damage. A ULD must not be loaded aboard an aircraft unless the device has been inspected and found free from any evidence of leakage from or damage to any dangerous goods contained therein. Packages or overpacks containing dangerous goods must be inspected for signs of damage or leakage upon unloading from the aircraft or ULD.

X.3.3 **Segregation, Separation and CAO**

X.3.3.1 Dangerous goods must be loaded, stowed and secured on an aircraft as required by the Technical Instructions. This includes segregating packages from each other when they contain incompatible dangerous goods, the separation of explosives of different division numbers and compatibility groups (when required), securing packages in a manner that will prevent any movement. Dangerous goods must also be protected so they cannot be damaged by the movement of baggage, mail, stores or other cargo.

**Editorial Note 1:** Operators holding approval for the carriage of dangerous goods should determine how such goods shall be secured to prevent movement in flight, to protect from damage by the movement of other items and to achieve adequate segregation whilst maintaining accessibility (if required), taking into account the types of aircraft operated, and compartment size. Procedures for the use of a Crash Protected Container should be detailed. Additionally, it is appropriate to amend the following tables to reflect the operator’s policy towards the separation of dangerous goods from other cargo (e.g. dry ice and animals in accordance with X.3.4), or for the operator to specify that Dangerous goods requiring segregation will not be carried.

### X.3.3.2 Packages and overpacks containing UN 3480 — Lithium ion batteries prepared in accordance with Section IA or Section IB of Packing Instruction 965 and packages and overpacks containing UN 3090 — Lithium metal batteries prepared in accordance with Section IA or Section IB of Packing Instruction 968 must not be stowed on an aircraft next to, or in a position that would allow interaction with, packages or overpacks containing dangerous goods which bear a Class 1, other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1 hazard label.

**Segregation of incompatible dangerous goods**

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| Hazard Label | 1 | 2.1 | 2.2,  2.3 | 3 | 4.1 | 4.2 | 4.3 | 5.1 | 5.2 | 8 | 9 See X.3.5.3 |
| 1 | Note 1 | Note 2 | Note 2 | Note 2 | Note 2 | Note 2 | Note 2 | Note 2 | Note 2 | Note 2 | Note 2 |
| 2.1 | Note 2 |  |  |  |  |  |  |  |  |  | X |
| 2.2, 2.3 | Note 2 |  |  |  |  |  |  |  |  |  |  |
| 3 | Note 2 |  |  |  |  |  |  | X |  |  | X |
| 4.1 | Note 2 |  |  |  |  |  |  |  |  |  | X |
| 4.2 | Note 2 |  |  |  |  |  |  | X |  |  |  |
| 4.3 | Note 2 |  |  |  |  |  |  |  |  | X |  |
| 5.1 | Note 2 |  |  | X |  | X |  |  |  |  | X |
| 5.2 | Note 2 |  |  |  |  |  |  |  |  |  |  |
| 8 | Note 2 |  |  |  |  |  | X |  |  |  |  |
| 9 See X.3.5.3 | Note 2 | X |  | X | X |  |  | X |  |  |  |

An “X” at the intersection of a row and column indicates that packages containing these classes of dangerous goods may not be stowed next to or in contact with each other, or in a position which would allow interaction in the event of leakage of the contents. Thus, a package containing Class 3 dangerous goods may not be stowed next to or in contact with a package containing Division 5.1 dangerous goods.

**Note 1:** See the table below detailing the separation of explosive substances and articles.

**Note 2:** This class or division must not be stowed together with explosives other than those in Division 1.4, Compatibility Group S.

**Note 3:** Packages containing dangerous goods with multiple hazards in the class or divisions which require segregation in accordance with the above table need not be segregated from other packages bearing the same UN number.

**Note 4:** UN 3528, Engines, internal combustion, flammable liquid powered, Engines, fuel cell, flammable liquid powered, Machinery internal combustion, flammable liquid powered and Machinery, fuel cell, flammable liquid powered need not be segregated from packages containing dangerous goods in Division 5.1.

### X.3.3 **Loading of Dry Ice**

Dry ice (Carbon dioxide, solid; UN1845) may be carried onboard aircraft to keep food and medicine or biological materials (as cargo) in a frozen or chilled condition. Carbon dioxide gas produced by the sublimation of dry ice is an asphyxiant and will reduce the amount of available oxygen to breathe. Dry ice sublimation producing excess CO2 gas may be dangerous in confined spaces where there is an absence of ventilation or ventilation rates are low. The signs and symptoms of CO2 poisoning are similar to those that precede lack of oxygen, namely headache, dizziness, muscular weakness, drowsiness, and ringing in the ears. CO2 poisoning does have a greater effect on breathing than simple lack of oxygen, causing a significant increase in the rate and depth of breathing as an early symptom. 10% carbon dioxide in air can be endured for only a few minutes whereas 12% to 15% would cause unconsciousness.

**\*Ground staff must be informed that dry ice is being loaded or is onboard the aircraft.**

**Editorial Note:** Dry ice when shipped by itself or when used as a refrigerant for other commodities may be carried provided the operator has made suitable arrangements dependent on the aircraft type, the aircraft ventilation rates, the method of packing and stowing, whether animals will be carried on the same flight and other factors. To prevent the incapacitation of ground crew, aircraft operators must specify maximum safe quantities of dry ice in the compartment of the various aircraft types operated in accordance with the above criterion and where applicable, in accordance with the information published by the applicable aircraft manufacturer(s).

Additionally, in the case that the cargo compartment is not ventilated, the operator must specify the maximum amount of Dry ice that can be carried, taking into consideration the sublimation rate and the potential build up of pressure in the cargo compartment during the flight.

**Editorial Note:** Where dry ice is contained in a unit load device prepared by a single shipper in accordance with Packing Instruction 954 and the operator, after acceptance, adds additional dry ice, then the operator must ensure that the information provided to the pilot-in-command reflects that revised quantity of dry ice.

### X.3.5 **Loading of Magnetised Material**

Packing Instruction 953 allows the carriage of such material when the magnetic field strength at a distance of 4.6 m causes a compass deflection of not more than 2 degrees (equivalent to 0.418 A/m or 0.00525 Gauss measured at a distance of 4.6 m). Material with a magnetic field strength exceeding these limits may only be carried with the prior approval of the State of Origin and the State of the Operator.

Magnetised material must be loaded so headings of aircraft compasses are maintained within the tolerances prescribed by the applicable aircraft airworthiness requirements and, where practical, in locations minimising possible effects on compasses.

**Note:** Masses of ferromagnetic metals such as automobiles, automobile parts, metal fencing, piping and metal construction material, even if not meeting the definition of magnetised materials, may affect aircraft compasses. As may packages or items of material which individually do not meet the definition of magnetised material, but cumulatively may have a magnetic field strength of a magnetised material.

**Editorial Note:** Operators should consider whether consignments of large quantities of ferromagnetic metals should be stowed as if they were classified as magnetised material. Operators, particularly of small aircraft, must establish adequate procedures to ensure that consignments described above are identified and loaded in a manner that will not affect aircraft instruments.

### X.3.6 **Loading of Radioactive Material**

**Editorial Note 1:** Should there exist a policy not to carry radioactive material (stated within X.1.1) this section may be omitted.

X.3.6.1 Radioactive materials are articles or substances which spontaneously and continuously emit ionising radiation, which can be harmful to the health of humans and animals and can affect photographic or X-Ray film. Whilst packagings used for the transport of radioactive material must provide protection from radiation, there is likely to be residual activity from packages offered for air transport.

Operators in the ’Specific’ category, may only carry radio-active materials in excepted packages.

**Editorial Note 2:** Operators that have a policy to carry radioactive materials must provide instructions on the loading of such dangerous goods based on the requirements for separation from persons, live animals during storage and undeveloped photographic film during transport below:

X.3.6.2 The transport of radioactive material must be subject to a Radiation Protection Programme (RPP), which must consist of systematic arrangements aimed at providing adequate consideration of radiation protection measures (see Technical Instructions 1;6.2 and IAEA Safety Standards Series No. TS-G-1.3).

**Editorial Note:** The RPP documents must be available, on request, for inspection by the relevant competent authority. The CAA monitors the RPP of UK Air Operators that transport radioactive material. Operators should identify the RPP document reference and location.

### X.3.7 **Loading of UN 2211, Polymeric beads, expandable or UN 3314, Plastics moulding compound**

### A total of not more than 100 kg net mass of expandable polymeric beads (or granules), or plastic moulding materials, referenced to Packing Instruction 957, may be carried in any cargo compartment on any aircraft.

**Editorial Note:** Operators should explain how the above restriction is complied with.

### X.3.8 **Notification to Remote Pilot-in-Command (NOTOC)**

As early as practicable before departure of the aircraft, but in no case later than when the aircraft moves under its own power, the operator of an aircraft in which dangerous goods are to be carried must:

i) provide the remote pilot-in-command with accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo; and

ii) provide personnel with responsibilities for operational control of the aircraft, or designated ground personnel responsible for flight operations) with the same information that is required to be provided to the pilot-in-command (e.g. a copy of the written information provided to the pilot-in-command). This is to facilitate notifying emergency services and authorities of the dangerous goods on board in the event of an aircraft accident or incident.

**Editorial Note:** The operator must specify the personnel (job title or function) to be provided this information in accordance with X.3.9. The process of ground personnel transmitting this information to personnel with responsibilities for operational control of the aircraft also needs to be explained.

**Note:** This includes information about dangerous goods loaded at a previous departure point and which are to be carried on the subsequent flight.

This information must include the following:

* 1. the date of the flight;
  2. the air waybill number (when issued);
  3. the proper shipping name (the technical name(s) shown on the dangerous goods transport document is not required) and UN Number or ID number;
  4. the class or division, and subsidiary hazard(s) corresponding to the subsidiary hazard label(s) applied, by numerals, and (in the case of Class 1) the compatibility group;
  5. the packing group shown on the dangerous goods transport document;
  6. the number of packages and their exact loading location. For radioactive material see (g) below;
  7. the net quantity, or gross mass if applicable, of each package, except that this does not apply to radioactive material or other dangerous goods where the net quantity or gross mass is not required on the dangerous goods transport document. For a consignment consisting of multiple packages containing dangerous goods bearing the same proper shipping name and UN number, only the total quantity and an indication of the quantity of the largest and smallest package at each loading location need to be provided. For consumer commodities, the information provided may be either the gross mass of each package or the average gross mass of the packages as shown on the dangerous goods transport document;
  8. for radioactive material, the number of packages, overpacks or freight containers, their category, their Transport Index (if applicable) and their exact loading location;
  9. whether the package must be carried on cargo aircraft only;
  10. the aerodrome at which the package(s) is to be unloaded;
  11. where applicable, an indication that the dangerous goods are being carried under a State exemption; and
  12. signed confirmation, or some other indication, from the person responsible for loading the aircraft that there was no evidence of any damage to or leakage from the packages or any leakage from the unit load devices loaded on the aircraft.

**Note 1:** For UN 1845 Carbon dioxide, solid (dry ice), the information detailed above may be replaced by the UN number, proper shipping name, class, total quantity in each cargo compartment on the aircraft and the aerodrome at which the package(s) is to be unloaded.

**Note 2:** For UN 3480 (**Lithium ion batteries**) and UN 3090 (**Lithium metal batteries**), the information detailed above may be replaced by the UN number, proper shipping name, class, total quantity at each specific loading location, the aerodrome at which the package(s) is to be unloaded and whether the package must be carried on cargo aircraft only. A full NOTOC is required when such batteries are carried under an exemption.

**Editorial Note:** The telephone number where a copy of the information to the remote pilot-in-command can be obtained during the flight is additionally required on the NOTOC should it be intended to make it possible for the pilot-in-command to provide the appropriate Air Traffic Services Unit with a telephone number instead of details about the dangerous goods on board the aircraft in the event of an in-flight emergency or accident.

The following dangerous goods need not appear on the NOTOC:

|  |  |  |
| --- | --- | --- |
| *UN Number* | *Item* | *TI Reference* |
| n/a | Dangerous goods packed in excepted quantities | 3;5.1.1 |
| UN 2807 | Magnetized material with field strengths causing a compass deflection of not more than 2 degrees at a distance of 4.6 m | Packing Instruction 953 |
| UN 2908 | Radioactive material, excepted package — empty packaging | 1;6.1.5.1 a) |
| UN 2909 | Radioactive material, excepted package — articles manufactured from natural uranium or depleted uranium or natural thorium | 1;6.1.5.1 a) |
| UN 2010 | Radioactive material, excepted package — limited quantity of material | 1;6.1.5.1 a) |
| UN 2911 | Radioactive material, excepted package — instruments or articles | 1;6.1.5.1 a) |
| UN 3091 | Lithium metal batteries contained in equipment (including lithium alloy batteries) when meeting the requirements of Packing Instruction 970, Section II | Packing Instruction 970, Section II |
| UN 3091 | Lithium metal batteries packed with equipment (including lithium alloy batteries) when meeting the requirements of Packing Instruction 969, Section II | Packing Instruction 970, Section II |
| UN 3164 | Articles, pressurized, hydraulic containing non-flammable gas when meeting the requirements of Packing Instruction 208 a) | Packing Instruction 208, a) |
| UN 3164 | Articles, pressurized, pneumatic containing non-flammable gas when meeting the requirements of Packing Instruction 208 a) | Packing Instruction 208, a) |
| UN 3245 | Genetically modified micro-organisms | Packing Instruction 959 |
| UN3245 | Genetically modified organisms | Packing Instruction 959 |
| UN 3373 | Biological substance, Category B | Packing Instruction 650, sun-paragraph 11 |
| UN 3481 | Lithium ion batteries contained in equipment (including lithium ion polymer batteries) when meeting the requirements of Packing Instruction 967, Section II | Packing Instruction 967, Section II |
| UN 3481 | Lithium ion batteries packed with equipment (including lithium ion polymer batteries) when meeting the requirements of Packing Instruction 966, Section II | Packing Instruction 966, Section II |

X.3.9 **Availability of NOTOC on the Ground for the Duration of Flight**

A legible copy of the information to the remote pilot-in command must be available for transmission to relevant emergency response teams. Where more than one remote pilot is involved in the operation of one flight, the same information must be provided to all remote pilots. This copy must have an indication on it, or with it, that the remote pilot-in-command has received the information.

**Editorial Note:** Where a flight is operated by more than one remote pilot, Operators should define procedures for handover of the information contained in the NOTOC to always ensure that the remote pilot which is responsible for the safe operation of the flight is informed of what dangerous goods are being carried on board the aircraft.

X.3.10 **Retention of Documents**

At least one copy of the documents appropriate to the transport by air of a consignment of dangerous goods (including consignments that fail their acceptance check) must be retained for a minimum period of three months, or such other period as specified by the States concerned, after the flight on which the dangerous goods were transported. As a minimum, the documents which must be retained are the dangerous goods transport document (Shipper’s Declaration), the acceptance checklist (when this is in a form which requires completion) including identification of the person who completed it, and the NOTOC (if the goods were carried).

**Editorial Note:** Operators should indicate where the documents appropriate to the transport by air of a consignment of dangerous goods are to be retained, e.g. within a flight file, or within the files of a handling agent(s), etc. If this to be carried out by a handling agent, procedures need to be in place, particularly for adhoc operations when these are carried out.

### X.3.11 **Ad Hoc Operations**

**Editorial Note:** Operators may wish to utilise external specialised organisations acting as agents, to discharge certain duties with regards to the carriage of dangerous goods by air, e.g. conducting acceptance checks, NOTOC preparation and administration, aircraft loading, retention of documents, etc. Should such operators wish to undertake ad hoc operations involving the carriage of dangerous goods between stations where ongoing cargo handling agreements are not in place, it would be necessary for duties to be properly assigned to the external organisations concerned in advance of the operation of flights. Furthermore, should the agent at the station of departure not operate 24 hours a day, it must also be ensured that a copy of the NOTOC is readily available on the ground in the event of an emergency, e.g. by instructing the agent to fax or e-mail a copy of the completed NOTOC to the operator as soon as possible after the departure of the aircraft. Procedures for assigning such duties to external organisations.

X.3.12 **External Carriage of Dangerous Goods**

When dangerous goods are prepared for open external carriage (e.g. suspended from a UAS or in open external carrying devices), consideration should be given to the type of packaging used and protection of those packagings where necessary from the effects of airflow and weather (e.g. by damage from rain or snow).

When dangerous goods are carried suspended from a UAS, the operator must ensure that consideration is given to the dangers of static discharge upon landing or release of the load.

### **X.4 Recognition of Undeclared / Hidden Dangerous Goods**

### X.4.1 **‘Hidden’ Dangerous Goods**

Personnel must be alert to indications that undeclared dangerous goods are present within cargo, mail or stores.

The following is a list of general descriptions that are often used for items in cargo or in passengers’ baggage and the types of dangerous goods that may be included in any item bearing that description.

*Aircraft on ground (AOG) spares* — may contain explosives (flares or other pyrotechnics), chemical oxygen generators, unserviceable tyre assemblies, cylinders of compressed gas (oxygen, carbon dioxide or fire extinguishers), fuel in equipment, wet or lithium batteries, matches.

*Automobile parts/supplies (car, motor, motorcycle)* — may include engines (including fuel cell engines), carburettors or fuel tanks that contain or have contained fuel, wet or lithium batteries, compressed gases in tyre inflation devices and fire extinguishers, air bags, flammable adhesives, paints, sealants and solvents, etc.

*Battery-powered devices/equipment — may contain wet or lithium batteries.*

*Breathing apparatus —* may indicate cylinders of compressed air or oxygen, chemical oxygen generators or refrigerated liquefied oxygen.

*Camping equipment* — may contain flammable gases (butane, propane, etc.), flammable liquids (kerosene, gasoline, etc.) or flammable solids (hexamine, matches, etc.).

*Cars, car parts* — see automobile parts, etc.

*Chemicals* — may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidisers, organic peroxides, toxic or corrosive substances.

*Consolidated consignments (groupages)* — may contain any of the defined classes of dangerous goods.

*Cryogenic (liquid)* — indicates refrigerated liquefied gases such as argon, helium, neon, nitrogen, etc.

*Cylinders* — may contain compressed or liquefied gas.

*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 contain cylinders of compressed gas (e.g. air or oxygen). May also contain high intensity diving lamps that can generate extreme heat when operated in air. In order to be carried safely, the bulb or battery should be disconnected.

*Drilling and mining equipment* — may contain explosive(s) and/or other dangerous goods.

*Dry shipper (vapour shipper)* — may contain free liquid nitrogen. Dry shippers are only not subject to the Technical Instructions when they do not permit the release of any free liquid nitrogen irrespective of the orientation of the packaging.

*Electrical/electronic equipment* — may contain magnetised materials, mercury in switch gear, electron tubes, wet or lithium batteries or fuel cells or fuel cell cartridges that contain or have contained fuel.

*Electrically-powered apparatus* (wheelchairs, lawn mowers, golf carts, etc.) — may contain wet or lithium batteries or fuel cells or fuel cell cartridges that contain or have contained fuel.

*Expeditionary equipment* — may contain explosives (flares), flammable liquids (gasoline), flammable gas (camping gas) or other dangerous goods.

*Film crew and media equipment* — may contain explosive pyrotechnic devices, generators incorporating internal combustion engines, wet or lithium batteries, fuel, heat-producing items, etc.

*Frozen embryos* — may be packed in refrigerated liquefied gas or dry ice (solid carbon dioxide).

*Frozen fruit, vegetables, etc*. — may be packed in dry ice.

*Fuel control units* — may contain flammable liquids.

*Hot-air balloon* — may contain cylinders with flammable gas, fire extinguishers, engines (internal combustion), batteries, etc.

*Household goods* — may contain items meeting any of the criteria for dangerous goods. Examples include flammable liquids such as solvent-based paint, adhesives, polishes, aerosols (for passengers, those not permitted under ICAO Technical Instructions 8;1.1.2), 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 items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidisers, organic peroxides, toxic or corrosive substances, lithium batteries, cylinders of compressed gas, etc.

*Machinery parts* — may contain flammable adhesives, paints, sealants and 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 magnetised material.

*Medical supplies/equipment* — may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidisers, organic peroxides, toxic or corrosive substances, lithium batteries.

*Metal construction material* — may contain ferro-magnetic material which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments.

*Metal fencing* — may contain ferro-magnetic material which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments.

*Metal piping* — may contain ferro-magnetic material which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments.

*Pharmaceuticals* — may contain items meeting any of the criteria for dangerous goods, particularly radioactive material, flammable liquids, flammable solids, oxidisers, organic peroxides, toxic or corrosive substances.

*Photographic supplies/equipment* — may contain items meeting any of the criteria for dangerous goods, particularly heat-producing devices, flammable liquids, flammable solids, oxidisers, organic peroxides, toxic or corrosive substances, lithium batteries.

*Racing car or motorcycle team equipment* — may contain engines (including fuel cell engines), carburettors or fuel tanks that contain fuel or residual fuel, wet and lithium batteries, flammable aerosols, nitromethane or other gasoline additives, cylinders of compressed gases, etc.

*Refrigerators* — may contain liquefied gases or an ammonia solution.

*Repair kits* — may contain organic peroxides and flammable adhesives, solvent-based paints, resins, etc.

*Samples for testing* — may contain items meeting any of the criteria for dangerous goods, particularly infectious substances, flammable liquids, flammable solids, oxidisers, organic peroxides, toxic or corrosive substances.

*Semen* — may be packed with dry ice or refrigerated liquefied gas (see also dry shipper).

*Sporting goods/sports team equipment —* may contain cylinders of compressed or liquefied gas (air, carbon dioxide, etc.), lithium batteries, propane torches, first aid kits, flammable adhesives, aerosols, etc.

*Swimming pool chemicals* — may contain oxidising or corrosive substances.

*Switches* in electrical equipment or instruments — may contain mercury.

*Toolboxes* — may contain explosives (power rivets), compressed gases or aerosols, flammable gases (Butane cylinders or torches), flammable adhesives or paints, corrosive liquids, lithium batteries, 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 container or cylinder of flammable gas.

*Vaccines* — may be packed in dry ice.

X.4.1.1 **Identification of Dangerous Goods Through X-Ray Screening**

Persons conducting security screening of cargo should be alert to the presence of dangerous goods within packages that are not marked and labelled as dangerous goods and/or not accompanied by a Shipper’s Declaration. In particular, items such as aerosols, ammunition, gas cylinders (camping gas, cylinders attached to life-jackets, etc.), cigarette lighters wet acid batteries, lithium ion batteries and lithium metal batteries can be readily identified from x-ray images. Information provided on an air waybill or marked on a package often indicates that a consignment contains no dangerous goods. In the absence of such annotation by the shipper, if suspicions are raised by the size and shape of the contents of a package, consideration should be given to opening and hand-searching the consignment to verify that no undeclared dangerous goods are present.

Consignments of dangerous goods that have been properly marked, labelled and declared to the operator (where approved for carriage) are commonly processed separately from general freight. Should consignments bearing UN numbers, proper shipping names or hazard labels be discovered within general freight, when separate arrangements exist, this should be queried. It may be that no shipper’s declaration accompanies the consignment; as such the consignment of dangerous goods would be considered ‘undeclared’.

X.4.1.2 **Safety Data Sheets**

REACH (**R**egistration, **E**valuation, **A**uthorisation & restriction of **Ch**emicals) is a European Union regulation controlling chemicals in Europe. REACH requires for many substances and mixtures, a Safety Data Sheet (SDS) to be provided either before or at the time of first delivery. Section 14 of the EU format SDS provides basic classification information, i.e. UN number, proper shipping name, Class/Division and Packing Group.

X.4.1.3 **GHS Consumer Labelling (Overview)**

Some everyday household items bear consumer warning labels which may or may not indicate they are classified as dangerous goods in air transport. All over the world there are different laws on how to identify the hazardous properties of chemicals (called ‘classification’) and how information about these hazards is then passed to users (through consumer supply labels and safety data sheets for workers). This can be confusing because the same chemical can have different hazard descriptions in different countries. For example, a chemical could be labelled for supply as ‘toxic’ in one country, but not in another. For this reason, the UN brought together experts from different countries to create the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The GHS has been implemented within Europe by the Regulation on Classification, Labelling and Packaging of Substances and Mixtures (known as the CLP Regulation).

X.4.1.4 **GHS Labels**

Products bearing the following GHS labels ARE classified as dangerous goods:

|  |
| --- |
| acid_redAquatic-pollut-redrondflamflammeskullbottleexplos |
| **Note:** A product bearing the GHS corrosive label (depicted far right above) is NOT classified as dangerous goods if the signal word ‘Danger’ and hazard statement ‘causes serious eye damage’ applies. |

Products bearing the following GHS labels (and none of the above) are NOT classified as dangerous goods:

|  |
| --- |
| exclam silhouete |

## X.5 Emergency Situations

### X.5.1 **Provision of Information for Use in Responding to In-Flight Emergencies**

For those dangerous goods for which a dangerous goods transport document is required, the commander of an aircraft carrying such goods must be provided with information which can be used on board to assist in planning the response to an emergency arising in-flight involving the dangerous goods.

**Editorial Note:** This information can be provided by the ‘Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods’ (Doc 9481), which is published by the International Civil Aviation Organization, or by another document giving similar information. Operators should establish what information is to be made available to Remote pilots operating the aircraft.

X.5.2 **Special Notification Requirements in the Event of an Accident or Occurrence When Dangerous Goods are Being Carried or Have Been Offered for Air Transport Without Having Been Prepared and Declared in Accordance with the ICAO Technical Instructions)**

X.5.2.1 **Information to be Provided by the Remote Pilot-In-Command in the Event of an In-Flight Emergency**

If an in-flight emergency occurs and the situation permits, the commander must inform the appropriate Air Traffic Services Unit of any dangerous goods on board. This information should include the proper shipping name, class/division, identified subsidiary hazard(s), compatibility group for explosives, quantity and location on board.

**Editorial Note:** If it is the operator’s policy to provide remote crew with a telephone number where detailed information on dangerous goods on board may be obtained (on the NOTOC) this procedure should be explained.

### X.5.2.2 **Information to be Provided by the Operator in the Event of an Aircraft Accident or Serious Incident Where Dangerous Goods Carried as Cargo may be Involved**

If an aircraft carrying dangerous goods as cargo is involved in an accident or serious incident where the dangerous goods may be involved, the operator must provide information, without delay, to emergency services responding to the accident or serious incident about the dangerous goods on board, as shown on the copy of the information to the pilot-in-command (NOTOC). The information must be sufficient to enable any hazards created by the dangerous goods to be minimised and include the proper shipping name, UN number, class/division, any identified subsidiary hazard(s), the compatibility group for explosives, the quantity and the location on board the aircraft. As soon as possible, the operator must also provide this information to the CAA Dangerous Goods, team and the appropriate authority of the State in which the accident or serious incident occurred. In the first instance, the CAA Dangerous Goods team should be alerted to the incident or accident by phone using the following number:

Telephone: +44 (0) 330 022 1915

Out of hours: +44 (0) 330 022 1500

### X.5.2.3 **Information to be Provided by the Operator in the Event of an Aircraft Incident**

In the event of an aircraft incident, the operator of an aircraft carrying dangerous goods as cargo must, if requested to do so, provide information without delay to the emergency services responding to the incident and to the appropriate authority of the State in which the incident occurred, about the dangerous goods on board, as shown on the copy of the information to the pilot-in-command (NOTOC). For aircraft accidents and serious incidents, see X.5.2.2.

### X.5.2.4 **Dangerous Goods Accident and Incident Reports (AN(DG)R Article 19)**

*Definitions:*

*Dangerous goods accident:* An occurrence associated with and related to the transport of dangerous goods by air which results in fatal or serious injury to a person or major property or environmental damage.

*Dangerous goods incident:* An occurrence other than a dangerous goods accident associated with and related to the transport of dangerous goods by air, not necessarily occurring on board an aircraft, which results in injury to a person, property or environmental 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.

**NOTE:** A dangerous goods accident or incident may also constitute an aircraft accident or incident as specified in ICAO Annex 13 — Aircraft Accident and Incident Investigation.

An operator must report dangerous goods accidents and incidents 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.

**NOTE:** This includes incidents involving dangerous goods that are not subject to all or part of the Technical Instructions through the application of an exception or of a special provision (e.g. an incident involving the short circuiting of a dry cell battery that is required to meet short-circuit prevention conditions in a special provision of 3;3).

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

a) dangerous goods are discovered to have been carried when not correctly loaded, segregated, separated or secured in accordance with Part 7;2 or

b) dangerous goods are discovered to have been carried without information having been provided to the pilot-in command (when required) in accordance with Part 7;4.1.

An operator must report any occasion when undeclared or misdeclared dangerous goods are discovered in cargo or mail. 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 report any occasion when dangerous goods that are not permitted are discovered by the operator (or the operator is advised by the entity that discovers the dangerous goods). Such a report must be made to the appropriate authority of the State in which this occurred.

In addition to the requirements of the ICAO Technical Instructions for the reporting of dangerous goods occurrences **any incident** which endangers or which, if not corrected, would endanger an aircraft or any other person is reported to **CAA Safety Data**. Dangerous goods occurrences reportable under the Mandatory Occurrence Reporting Scheme include:

* Dangerous goods found not to have been secured to prevent movement
* Damage to packages of dangerous goods
* NOTOC errors where dangerous goods have not been stowed in accordance

with loading instructions

A dangerous goods accident or dangerous goods incident must be reported to dgo@caa.co.uk within 72 hours, unless exceptional circumstances prevent this. If necessary, a subsequent report shall be made as soon as possible giving all the details that were not known at the time the first report was sent. If a report has been made verbally, written confirmation shall be sent as soon as possible. Any type of accident or incident must be reported irrespective of whether the dangerous goods are in cargo, mail, or stores.

**Editorial Note:** In accordance with UK Regulation (EU) No. 376/2014on the reporting, analysis and follow-up of occurrences in civil aviation aircraft operators are required to store occurrence reports on a database capable of producing an output that is ECCAIRS compatible. Organisations need to submit Mandatory Occurrence Reports to the CAA in this format. Dangerous goods occurrences are to be reported to [dgo@caa.co.uk](mailto:dgo@caa.co.uk) using the following forms:

**CAA Form** [SRG 2808](http://www.caa.co.uk/srg2808) may be used to report a dangerous goods occurrence involving cargo.

The first and any subsequent report shall be as precise as possible and contain such of the following data that are relevant:

* Date of the incident or accident or the finding of undeclared or misdeclared dangerous goods.
* Location, the flight number and flight date.
* Description of the goods and the reference number of the air waybill, pouch, baggage tag, ticket, etc.
* Proper shipping name (including the technical name, if appropriate) and UN/ID number, when known.
* Class or division and any subsidiary hazard.
* Type of packaging, and the packaging specification marking on it.
* Quantity of dangerous goods.
* Name and address of the shipper, passenger, etc.
* Any other relevant details.
* Suspected cause of the incident or accident.
* Action taken.
* Any other reporting action taken.
* Name, title, address and telephone number of the person making the report.

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

**NOTE: IF SAFE TO DO SO, THE DANGEROUS GOODS INVOLVED IN THE ACCIDENT OR INCIDENT SHOULD BE HELD PENDING CAA INVESTIGATION.**

**Editorial Note:** Operators should describe their procedures for reporting dangerous goods incidents, accidents and undeclared dangerous goods to the CAA. Where applicable, this information should be provided to handling agents so that, as a minimum, they are advised to whom non-MOR events should be submitted (UK Regulation (EU) No. 376/2014 places a direct legal duty upon a person who performs a function in respect of the ground handling of aircraft to report to the CAA any incident which endangers or which, if not corrected, would endanger an aircraft, its occupants or any other person).

### X.5.2.5 **Removal of Contamination**

In the event of a spillage or leakage of dangerous goods within an aircraft, the position where the dangerous goods were stowed on the aircraft must be inspected for damage or contamination and any hazardous contamination removed. The hazard of the dangerous goods within packages concerned may be established by checking the entry on the NOTOC for that loading position or from hazard labels applied to the packages. Where applicable, the hazard classes and divisions of dangerous goods within a ULD may also be identified from the NOTOC or otherwise where package labels are not visible, from the ULD tag bearing red hatchings applied to the outside of the ULD. Persons responding in the event of damage to or leakage of dangerous goods from packages must:

* identify the hazards and wear appropriate protective clothing;
* avoid handling the package or keep handling to a minimum;
* inspect adjacent packages for contamination and put aside any that may have been contaminated;
* arrange for decontamination of the aircraft and equipment; and
* in the case of infectious material, inform the appropriate public health authority or veterinary authority, and provide information to any other countries of transit where persons may have been exposed to danger; and notify the shipper and/or the consignee.

If it is evident that a package containing radioactive material is damaged or leaking, or if it is suspected that the package may have leaked or been damaged, access to the package must be restricted and a qualified person must, as soon as possible, assess the extent of contamination and the resultant dose rate of the package. The scope of the assessment must include the package, the aircraft, the adjacent loading and unloading areas and, if necessary, all other material which has been carried in the aircraft. When necessary, additional steps for the protection of persons, property and the environment must be taken in accordance with provisions established by the relevant competent authority, to overcome and minimise the consequences of such leakage or damage.

An aircraft which has been contaminated by radioactive materials must be immediately taken out of service and not returned until the dose rate at any accessible surface and the non-fixed contamination are not more than the values specified in the Technical Instructions. In the event of non-compliance with any limit in the Technical Instructions applicable to dose rate or contamination, the operator must ensure the shipper is informed if the non-compliance is identified during transport; take immediate steps to mitigate the consequences of the non-compliance; and communicate the non-compliance to the shipper and relevant competent Authority(ies), respectively, as soon as practicable and immediately whenever an emergency situation has developed or is developing

## X.6 Not used

## X.7 TRAINING SYLLABUS FOR TRANSPORT OF DANGEROUS GOODS

## (OPERATIONS PERSONNEL INCLUDING REMOTE CREW MEMBERS)

### X.7.1 **Approval of Training Programmes**

*Insert Text* [‘Operator XXX’] hold approval for training programmes in the carriage of dangerous goods by air in accordance with the Technical Instructions. This training is identified and described in the following text. Any substantive changes to this training (or proposals for sourcing training from an alternative external company) requires approval by the competent authority and must be submitted to the assigned Inspecting Officer (Dangerous Goods).

**Editorial Note:** Prior to outsourcing the provision of dangerous goods training, operators should establish that the proposed training materials reflect the syllabi contained in this manual and are approved by the Authority.

### X.7.2 **General Requirements Applicable to Dangerous Goods Training Programme**

The goal of competency-based training and assessment (CBTA) is to produce a competent workforce by providing focused training. It does so by identifying key competencies that need to be achieved, determining the most effective way of achieving them and establishing valid and reliable assessment tools to evaluate their achievement

The Operator must ensure that personnel are competent to perform any function for which they are responsible prior to performing any of these functions. This must be achieved through training and assessment commensurate with the functions for which they are responsible. Such training must include:

* general awareness/familiarisation training - Personnel must be trained to be familiar with the general provisions;
* function-specific training — Personnel must be trained to perform competently any function for which they are responsible; and
* safety training — Personnel must be trained on how to recognize the hazards presented by dangerous goods, on the safe handling of dangerous goods, and on emergency response procedures.

Personnel who have received training but who are assigned to new functions must be assessed to determine their competence in respect of their new function. If competency is not demonstrated, appropriate additional training must be provided.

Recurrent training and assessment must be provided within 24 months of previous training and assessment in addition to the remainder of the month of completion to ensure competency has been maintained. If recurrent training and assessment is completed within the final three months of validity of previous training and assessment, the period of validity shall extend from the month of completion, until 24 months from the expiry month of that previous training and assessment.

As with other aviation qualifications an offence against the regulations will be committed if staff continue to work after their training and assessment validity has expired.

**Editorial Note 1:** - Operators with a policy to provide recurrent dangerous goods training at periods of less than 24 months should state that policy.

A record of training must be maintained and must include;

a) the individual’s name;

b) the month of completion of the most recent training and assessment;

c) a description, copy or reference to training and assessment materials used to meet the training and assessment requirements;

d) the name and other information that identifies the organization providing the training and assessment (e.g. registered address); and

e) evidence which shows that the personnel have been assessed as competent.

Training and assessment records must be retained by the employer for a minimum period of 36 months from the most recent training and assessment completion month and must be made available upon request to personnel or the appropriate national authority.

**Editorial Note 3:** Further information on Competency-Based Training and Assessment (CBTA) can be found in ICAO Doc 10147 - Guidance on a Competency-based Approach to Dangerous Goods Training and Assessment.

### X.7.3 **Dangerous Goods Training Syllabi**

The operator must ensure training is provided in accordance with the detailed requirements of Part 1;4 of the Technical Instructions to all relevant employees including those of agencies employed to act on the operator’s behalf, to enable them to carry out the functions for which they are responsible with regard to the transport of dangerous goods, passengers and their baggage, cargo and mail.

Personnel must be trained to recognise the hazards presented by dangerous goods, to safely handle them and to apply appropriate emergency response procedures.

**Editorial Note:** In order to identify the dangerous training and assessment personnel require, the operator should insert the training syllabi for each function involved in the transport of dangerous goods.  To support this, the operator should include:

* an assessment plan;
* a training plan;
* a competency framework for personnel;
* a dangerous goods task list;
* a task/knowledge matrix tool~~.~~

**Editorial Note 2:** As a minimum, the operator should include the personnel identified in *X.2.1 Duties of All Personnel Involved*.

X.7.4 **Instructor Qualifications**

Instructors of initial and recurrent dangerous goods training programmes must have adequate instructional skills and must demonstrate or be assessed as competent in instruction and the function(s) that they will instruct prior to delivering such training..

Instructors delivering initial and recurrent dangerous goods training programmes must at least every 24 months deliver such courses, or in the absence of this attend recurrent training.

**Editorial Note 1:** In addition to the above, operators should detail the experience and aptitudes considered appropriate for the selection of trainers.

**Editorial Note 2:** The above section does not apply to the exclusive use of Computer-Based Training (CBT) and other self-study materials for the delivery of dangerous goods training, i.e. where none of the training is delivered in person. There should, however, exist adequate means to ensure that persons creating and maintaining self-study training materials are competent and their knowledge of the transport of dangerous goods by air remains current.

### X.7.5 **Instructor Qualifications and Competencies**

Instructors of initial and recurrent dangerous goods training programmes must demonstrate or be assessed as competent in instruction and the function(s) that they will instruct prior to delivering such training.

Instructors delivering initial and recurrent dangerous goods training must deliver such courses at least every 24 months, or in the absence of this, attend recurrent training.

**Editorial Note 1:** In addition to the above, operators should detail the experience and aptitudes considered appropriate for the selection of trainers and assessors.

**Editorial Note 2:** Any person assessing competence must be trained and assessed commensurate with this function. This includes the requirement to undertake recurrent training and assessment within 24 months of previous training and assessment.

**Editorial Note 3:** The above section does not apply to the exclusive use of Computer-Based Training (CBT) and other self-study materials for the delivery of dangerous goods training and assessment, i.e. where none of the training and assessment is delivered in person. There must, however, exist adequate means to ensure that persons creating and maintaining self-study training and assessment materials are competent and their knowledge of the transport of dangerous goods by air remains current.  This includes contracted training providers.

X.7.6 **Identification of Training and Assessment Materials**

**Editorial Note 1:** Operators should detail the dangerous goods training and assessmentmaterials that have been subjected to approval, so that they may be readily identified by trainers. The titles and revision numbers of presentations, videos, study books, handouts, visual aids and assessment tools should be included. Additionally, the pass mark for projects, examinations or oral assessments required to achieve competency and procedures to be applied in the event that personnel do not achieve or maintain the required competency should  be established.