

6 EMERGENCY HANDLING OF DANGEROUS GOODS

ICAO Doc 9481

6.1 GENERAL PROVISIONS

Dangerous Goods Incidents

Dangerous Goods Incidents, other than Accidents, are any occurrences associated with air transport of hazardous materials. This includes issues found after check-in or security screening.

All incidents and accidents must be reported and recorded as per Riyadh Air's Emergency Response Manual.

Examples of Dangerous Goods Incidents:

1. Spillage, leakage, or emissions from packages or passenger baggage,
2. Failure of receptacles and containment,
3. Radiation leakage,
4. Damage to property/equipment from contents,
5. Injury to persons from contents,
6. Undeclared/mis declared shipments,
7. Contrary to regulations aircraft stowage,
8. Unnotified cargo,
9. Short shipped cargo discrepancies,
10. Evidence of compromised package integrity.

Dangerous Goods Accidents

Dangerous Goods Accidents involve a fatality, serious injury, or major property damage related to air transport of hazardous materials.

GACAR, Part 109.81(a) requires Riyadh Air to provide information to enable flight crew members to respond to emergencies involving dangerous goods.

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6.2	EMERGENCY RESPONSE REQUIREMENTS

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6.2 EMERGENCY RESPONSE REQUIREMENTS

The ICAO Document 9481, titled "Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (ERG)," provides instructions on managing events related to dangerous goods that occur during flight.

This chapter outlines the application of emergency response drill codes found in the ERG. Dangerous goods are each allocated a specific drill code, and occasionally, an associated hazard letter. For guidance on handling a particular dangerous substance, one can consult the corresponding drill code and hazard letter in the list of Emergency Response Drills.

When a procedure requires identification of the emergency response drill code, the subsequent steps should be followed to determine the code.

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6.2.1 Emergency Response Drills

Refer to ICAO Emergency Response Guidance (ICAO Doc 9481) for reference. The appropriate aircraft emergency procedures for each drill code can be found in the below table.

Drill Code	Inherent Risk	Risk to Aircraft	Risk to Occupant	Spill or Leak Procedures	Firefighting Procedures	Additional Consideration
1	Explosion: May cause structural failure	Fire and/or explosion	As indicated by the drill letter(s)	Use 100% oxygen: no smoking	All agents, according to availability; use standard fire procedure	Possible abrupt loss of pressurization
2	Gas, nonflammable: Pressure may create hazard in fire	Minimal	As indicated by the drill letter(s)	Use 100% oxygen; establish and maintain maximum ventilation for "A", "I" or "P" drill letter	All agents, according to availability; use standard fire procedure	Possible abrupt loss of pressurization
3	Flammable liquid or solid	Fire and/or explosion	Smoke, fumes and heat, and as indicated by the drill letter(s)	Use 100% oxygen; establish and maintain maximum ventilation; no smoking; minimum electrics	All agents, according to availability, no water on "W" drill Letter	Possible abrupt loss of pressurization
4	Spontaneously combustible or pyrophoric when exposed to air	Fire and/or explosion	Smoke, fumes, and heat, and as indicated by the drill letter(s)	Use 100% oxygen; establish and maintain maximum ventilation	All agents, according to availability; no water on "W" drill letter	Possible abrupt loss of pressurization; minimum electrics, if "F" or "H" drill letter

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Drill Code	Inherent Risk	Risk to Aircraft	Risk to Occupant	Spill or Leak Procedures	Firefighting Procedures	Additional Consideration
5	Oxidizer: May ignite other materials, may explode in heat of a fire	Fire and/or explosion, possible corrosion damage	Eye, nose and throat irritation; skin damage on contact	Use 100% oxygen; establish and maintain maximum ventilation	All agents, according to availability; no water on "W" drill letter	Possible abrupt loss of pressurization
6	Poison: May be fatal if inhaled, ingested, or absorbed by skin	Contamination with poisonous liquid or solid	Acute poisoning, effects may be delayed	Use 100% oxygen; establish and maintain maximum ventilation; do not touch without gloves	All agents, according to availability; no water on "W" drill letter	Possible abrupt loss of pressurization; minimum electrics if "F" or "H" drill letter
7	Radiation from broken/unshielded packages	Contamination with spilled radioactive material	Exposure to radiation, and personnel contamination	Do not move packages; avoid contact	All agents, according to availability	Call for a qualified person to meet the aircraft
8	Corrosive, fumes: Disabling if inhaled or in contact with skin	Possible corrosion damage	Eye, nose and throat irritation; skin damage on contact	Use 100% oxygen; establish and maintain maximum ventilation; do not touch without gloves	All agents, according to availability; no water on "W" drill letter	Possible abrupt loss of pressurization; minimum electrics if "F" or "H" drill letter

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Drill Code	Inherent Risk	Risk to Aircraft	Risk to Occupant	Spill or Leak Procedures	Firefighting Procedures	Additional Consideration
9	No general inherent risk	As indicated by the drill letter	As indicated by the drill letter	Use 100% oxygen; establish and maintain maximum ventilation if "A" drill letter	All agents, according to availability; no water on "W" drill letter	None
10	Gas, flammable: High fire risk if any ignition source present	Fire and/or explosion	Smoke, fumes, and heat, and as indicated by the drill letter	Use 100% oxygen; establish and maintain maximum ventilation; no smoking; minimum electrics	All agents, according to availability	Possible abrupt loss of pressurization
11	Infectious substances: May affect humans or animals if inhaled, ingested, or absorbed through mucous membrane or an open wound	Contamination with infectious substances	Delayed infection to humans or animals	Do not touch; minimize recirculation and ventilation in affected area	All agents, according to availability; no water on "Y" drill letter	Call for a qualified person to meet the aircraft
12	Fire, heat, smoke, flammable vapor, explosion	Fire and/or explosion	Smoke, fumes, heat	Use 100% oxygen; establish and maintain maximum ventilation	All agents, according to availability; use of water, if available	Consider landing immediately

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6.2.2 Emergency Drill Letters

Drill Letter	Additional Hazard	Drill Letter	Additional Hazard
A	Anesthetic	S	Spontaneously combustible or pyrophoric
C	Corrosive	W	If wet gives off toxic or flammable gas
E	Explosive	X	Oxidizer
F	Flammable	Y	Depending on the type of infectious substance, the appropriate national authority may be required to quarantine individuals, animals, cargo, and the aircraft
H	Highly ignitable	Z	Aircraft cargo fire suppression system may not extinguish or contain the fire; consider landing immediately
I	Irritant/Tear producing		
L	Other hazard low or none		
M	Magnetic		
N	Noxious		
P	Toxic (poison)		

Table 12 Emergency Drill Letters

Dangerous Good drill codes have the following format in the ICAO Doc 9481:

UN Number	Drill Code	Proper Shipping Name
3374	10L	Acetylene, solvent free
3090	12FZ	Lithium metal batteries

Table 13 UN Number and Drill Codes

6.3 GENERAL EMERGENCY RESPONSE CONSIDERATIONS

The following general considerations should guide Riyadh Air's response to any Dangerous Goods Incident or Emergency (Refer to ICAO Doc 9481, Section 2.1):

1. Landing at the nearest appropriate airport should be prioritized as soon as possible. Air traffic control will be informed of any dangerous goods on board.
2. Approved emergency procedures for smoke or fire should be executed, including use of crew oxygen and maximum cabin ventilation.
3. The effect of altitude changes on any fire, explosion risk or rate of leakage should be evaluated. Consider keeping differential pressure low if structural damage exists.
4. Ventilation should be maximized - reducing ventilation to extinguish a fire will not be effective and will risk passenger suffocation.
5. Gas-tight breathing equipment must be worn when responding to any smoke or fumes. Therapeutic oxygen masks should not be relied upon.
6. Water should generally not be applied directly to spills or vapors as it may spread material or increase fuming. Consider electrical hazards when using water extinguishers.
7. Improvise with available items like gloves, bags, blankets when responding. Avoid touching suspicious packages without hand protection.
8. Ensure compatibility before using absorbents on spills. Cover powders and do not disturb.
9. Cool packages after fire is suppressed to prevent reignition.
10. Implement an immediate no smoking ban where vapors or fumes are present.
11. The Pilot-In-Command shall ensure the dangerous goods notification is immediately provided to rescue and firefighting personnel.
12. Consult national chemical emergency response centers for substance-specific incident response advice.

Riyadh Air personnel will be trained to consider these factors during any dangerous goods emergency response. Refer to [Chapter 8](#).

6.4 ACCIDENTS AND INCIDENTS REPORT OF DANGEROUS GOODS

Riyadh Air must report Dangerous Goods Accidents or Incidents to GACA and the State in which the accident or incident occurred, in accordance with the reporting requirements of those appropriate authorities.

This includes reporting any occasion when undeclared or mis declared dangerous goods are discovered in cargo or mail. Such a report must be made to GACA and the State in which this occurred.

Riyadh Air must also report any occasion when dangerous goods not permitted under [Section 3.3](#) are discovered by the airline or is advised by the entity that discovers the dangerous goods, either in the baggage or on the person of passengers or crew members. Such a report must be made to the appropriate authority of the State in which this occurred.

Reporting Accidents and Incidents:

1. Any Dangerous Goods Accident or Incident must be reported to authorities of the State where it occurred and GACA per their reporting requirements.
2. Undeclared or mis declared dangerous goods discovered in cargo/mail must also be reported.
3. Dangerous goods found with passengers/crew contrary to regulations must be reported.

Information Provided in Accidents/Serious Incidents:

1. For Aircraft Accidents or Serious Incidents involving Dangerous Goods Cargo, the operator must immediately provide emergency responders information about the hazardous materials on board as per pilot's notification.
2. This information must also be provided as soon as possible to authorities of the State where it occurred and GACA.

When time permits, as much of the following information should be communicated to ATC, ground personnel and emergency services, as appropriate:

1. Proper shipping name of the item,
2. UN number,
3. Class/Division number,
4. Quantity, and
5. Loading location.

Note: Dangerous Goods may be carried into the cabin by passengers who are unaware of, or deliberately ignore, the requirements of the ICAO Technical Instructions concerning passengers and their baggage. It



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is also possible that an item to which a passenger is legitimately entitled (e.g. an item for medical purposes) may cause an incident.



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6.5	EMERGENCY RESPONSE PROCEDURES IN AIR

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6.5 EMERGENCY RESPONSE PROCEDURES IN AIR

In case of emergency during flight, the following procedures shall be followed (Reference ICAO Doc 9481 chapter 3):

Phase	Action
Initial Action	<ol style="list-style-type: none">1. Pilot-in-command to immediately notify ATC of the emergency, request handling instructions and prioritize landing.2. Set seat belt sign on.3. Flight crew don protective equipment as needed, based on hazards — smoke goggles, oxygen masks, aprons, gloves, etc.4. In case of fire, smoke, fumes, or leakage, identify source and extent. Attempt to contain situation. Apply smoke procedures, as applicable.5. Assess damage to aircraft systems and possible risks.6. Turn off unnecessary electrical equipment.
Mitigation Procedures	<ol style="list-style-type: none">1. Move passengers/crew away from affected area per evacuation protocols, if required.2. Attempts to contain/suppress fire/leakage. Use available on-board firefighting/containment resources.3. Administer first aid to injured persons
Landing and Emergency Ground Assistance	<ol style="list-style-type: none">1. Declare emergency landing to destination airport. Request Aircraft Rescue and Fire Fighting (ARFF) and emergency services readiness.2. Brief passengers and prepare for emergency landing/evacuation.3. Coordinate handling plan with destination airport. Take actions to mitigate further risks.4. After landing, implement emergency evacuation if required. ARFF to control aircraft hazards.
Documentation and Reporting	<ol style="list-style-type: none">1. Make an appropriate entry in the Aircraft Technical Log.2. Flight crew must record details of incident, damage and actions taken.3. Report Accident/Incident to authorities as per Riyadh Air Emergency Reporting requirements.4. Retain on-board documents, photos and evidence pending investigation.

Table 14 Emergency Response Procedures in AIR

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6.6	EMERGENCY RESPONSE PROCEDURES OF DANGEROUS GOODS ACCIDENT OR INCIDENT ON THE GROUND

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6.6 EMERGENCY RESPONSE PROCEDURES OF DANGEROUS GOODS ACCIDENT OR INCIDENT ON THE GROUND

In case a DGR incident or accident occurs on ground, the following procedures should be followed:

Phase	Action
Initial Assessment and Mitigation	<ol style="list-style-type: none"> Ground Operations personnel assess scene, identify hazards and establish Initial Exclusion Zone. Ground Operations personnel to alert nearby workers to evacuate area and assemble upwind. ARFF and airport emergency responders don PPE and attempt to contain fires or leaks.
Notification and Coordination	<ol style="list-style-type: none"> Flight crew notify ATC and airport emergency services, provide details on hazards and location. Riyadh Air IOCC shall also be notified. Cabin crew account for all passengers and crew members, provide medical assistance. Ground Operations share documentation like NOTOC with Emergency Commanders. Airport Operations Center coordinates overall response plan per airport procedures.
Mitigation and Recovery	<ol style="list-style-type: none"> ARFF continues hazard mitigation per Emergency Commander's direction. Airport Operations adjusts Exclusion Zones, coordinates decontamination and ventilation. Ground Operations preserves evidence and damaged packages. Maintenance inspects/repairs any contaminated equipment or facilities. Airport Operations confirms area safe before return to normal activity.
Documentation	<ol style="list-style-type: none"> Incident report should be submitted as per Riyadh Air reporting procedures.

Table 15 Emergency Response Procedures on the Ground