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ascertained that they can be safely transported;

(3) Comply with the reporting requirement of §§171.15 and 175.31 of this subchapter; and

(4) Notify the consignor or consignee.

Subpart C—Specific Regulations Applicable According to Classification of Material

§ 175.310 Transportation of flammable liquid fuel; aircraft only means of transportation.

(a) When other means of transportation are impracticable, flammable liquid fuels may be carried on certain passenger and cargo aircraft as provided in this section, without regard to the packaging references and quantity limits listed in Columns 7, 8 and 9 of the §172.101 Hazardous Materials Table. All requirements of this subchapter that are not specifically covered in this section continue to apply to shipments made under the provisions of this section. For purposes of this section ''impracticable'' means transportation is not physically possible or cannot be performed by routine and frequent means of other transportation, due to extenuating circumstances. Extenuating circumstances include: conditions precluding highway or water transportation, such as a frozen vessel route; road closures due to catastrophic weather or volcanic activity; or a declared state of emergency. The desire for expedience of a shipper, carrier, or consignor, is not relevant in determining whether other means of transportation are impracticable. The stowage requirements of §175.75(a) do not apply to a person operating an aircraft under the provisions of this section which, because of its size and configuration, makes it impossible to comply.

(b) A small passenger-carrying aircraft operated entirely within the State of Alaska or into a remote area, in other than scheduled passenger operations, may carry up to 76 L (20 gallons) of flammable liquid fuel (in Packing Group II or Packing Group III), when:

(1) The flight is necessary to meet the needs of a passenger; and

(2) The fuel is carried in one of the following types of containers:

(i) Strong tight metal containers of not more than 20 L (5.3 gallons) capacity, each packed inside a UN 4G fiberboard box, at the Packing Group II performance level, or each packed inside a UN 4C1 wooden box, at the Packing Group II performance level;

(ii) Airtight, leakproof, inside containers of not more than 40 L (11 gallons) capacity and of at least 28-gauge metal, each packed inside a UN 4C1 wooden box, at the Packing Group II performance level;

(iii) UN 1A1 steel drums, at the Packing Group I or II performance level, of not more than 20 L (5.3 gallons) capacity; or

(iv) In fuel tanks attached to flammable liquid fuel powered equipment under the following conditions:

(A) Each piece of equipment is secured in an upright position;

(B) Each fuel tank is filled in a manner that will preclude spillage of fuel during loading, unloading, and transportation; and

(C) Fueling and refueling of the equipment is prohibited in or on the aircraft.

(3) In the case of a passenger-carrying helicopter, the fuel or fueled equipment must be carried on external cargo racks or slings.

(c) Flammable liquid fuels may be carried on a cargo aircraft, subject to the following conditions:

(1)(i) The flammable liquid fuel is in Packing Group II or Packing Group III except as indicated in paragraph (c)(1)(iv) of this section;

(ii) The fuel is carried in packagings authorized in paragraph (b) of this section;

(iii) The fuel is carried in metal drums (UN 1A1, 1B1, 1N1) authorized for Packing Group I or Packing Group II liquid hazardous materials and having rated capacities of 220 L (58 gallons) or less. These single packagings may not be transported in the same aircraft with Class 1, Class 5, or Class 8 materials.

(iv) Combustible and flammable liquid fuels (including those in Packing Group I) may be carried in installed aircraft tanks each having a capacity

of more than 450 L (118.9 gallons), subject to the following additional conditions:

(A) The tanks and their associated piping and equipment and the installation thereof must have been approved for the material to be transported by the appropriate FAA Flight Standards District Office.

(B) In the case of an aircraft being operated by a certificate holder, the operator shall list the aircraft and the approval information in its operating specifications. If the aircraft is being operated by other than a certificate holder, a copy of the FAA Flight Standards District Office approval required by this section must be carried on the aircraft.

(C) The crew of the aircraft must be thoroughly briefed on the operation of the particular bulk tank system being used.

(D) During loading and unloading and thereafter until any remaining fumes within the aircraft are dissipated:

(*1*) Only those electrically operated bulk tank shutoff valves that have been approved under a supplemental type certificate may be electrically operated.

(*2*) No engine or electrical equipment, avionic equipment, or auxiliary power units may be operated, except position lights in the steady position and equipment required by approved loading or unloading procedures, as set forth in the operator's operations manual, or for operators that are not certificate holders, as set forth in a written statement.

(*3*) Static ground wires must be connected between the storage tank or fueler and the aircraft, and between the aircraft and a positive ground device.

(2) [Reserved]

(d) The following restrictions apply to loading, handling, or carrying fuel under the provisions of this section:

(1) During loading and unloading, no person may smoke, carry a lighted cigarette, cigar, or pipe, or operate any device capable of causing an open flame or spark within 15 m (50 feet) of the aircraft.

(2) No person may fill a container, other than an approved bulk tank, with a Class 3 material or combustible liquid or discharge a Class 3 material or combustible liquid from a container, other than an approved bulk tank, while that container is inside or within 15 m (50 feet) of the aircraft.

(3) When filling an approved bulk tank by hose from inside the aircraft, the doors and hatches of the aircraft must be fully open to insure proper ventilation.

(4) Each area or compartment in which the fuel is loaded is suitably ventilated to prevent the accumulation of fuel vapors.

(5) Fuel is transferred to the aircraft fuel tanks only while the aircraft is on the ground.

(6) Before each flight, the pilot-in-command:

(i) Prohibits smoking, lighting matches, the carrying of any lighted cigar, pipe, cigarette or flame, and the use of anything that might cause an open flame or spark, while in flight; and

(ii) For passenger aircraft, informs each passenger of the location of the fuel and the hazards involved.

(e) Operators must comply with the following:

(1) If the aircraft is being operated by a holder of a certificate issued under 14 CFR part 121 or part 135, operations must be conducted in accordance with conditions and limitations specified in the certificate holder's operations specifications or operations manual accepted by the FAA. If the aircraft is being operated under 14 CFR part 91, operations must be conducted in accordance with an operations plan accepted and acknowledged in writing by the FAA Principal Operations Inspector assigned to the operator.

(2) The aircraft and the loading arrangement to be used must be approved for the safe carriage of the particular materials concerned by the FAA Principal Operations Inspector assigned to the operator.

§ 175.501 Special requirements for oxidizers and compressed oxygen.

(a) Compressed oxygen, when properly labeled Oxidizer or Oxygen, may be loaded and transported as provided in this section. Except for Oxygen, compressed, no person may load or transport a hazardous material for which an OXIDIZER label is required

under this subchapter in an inaccessible cargo compartment that does not have a fire or smoke detection system and a fire suppression system.

(b) In addition to the quantity limitations prescribed in §175.75, no more than a combined total of six cylinders of compressed oxygen may be stowed on an aircraft in the inaccessible aircraft cargo compartment(s) that do not have fire or smoke detection systems and fire suppression systems.

(c) When loaded into a passenger-carrying aircraft or in an inaccessible cargo location on a cargo-only aircraft, cylinders of compressed oxygen must be stowed horizontally on the floor or as close as practicable to the floor of the cargo compartment or unit load device. This provision does not apply to cylinders stowed in the cabin of the aircraft in accordance with paragraph (e) of this section.

(d) When transported in a Class B aircraft cargo compartment (see 14 CFR 25.857(b)) or its equivalent (i.e., an accessible cargo compartment equipped with a fire or smoke detection system, but not a fire suppression system), cylinders of compressed oxygen must be loaded in a manner that a crew member can see, handle and, when size and weight permit, separate the cylinders from other cargo during flight. No more than six cylinders of compressed oxygen and, in addition, one cylinder of medical-use compressed oxygen per passenger needing oxygen at destination—with a rated capacity of 1000 L (34 cubic feet) or less of oxygen—may be carried in a Class B aircraft cargo compartment or its equivalent.

(e) A cylinder containing medical-use compressed oxygen, owned or leased by an aircraft operator or offered for transportation by a passenger needing it for personal medical use at destination, may be carried in the cabin of a passenger-carrying aircraft in accordance with the following provisions:

(1) No more than six cylinders belonging to the aircraft operator and, in addition, no more than one cylinder per passenger needing the oxygen at destination, may be transported in the cabin of the aircraft under the provisions of this paragraph (e);

(2) The rated capacity of each cylinder may not exceed 1,000 L (34 cubic feet);

(3) Each cylinder must conform to the provisions of this subchapter and be placed in:

(i) An outer packaging that conforms to the performance criteria of Air Transport Association (ATA) Specification 300 for a Category I Shipping Container; or

(ii) A metal, plastic or wood outer packaging that conforms to a UN standard at the Packing Group I or II performance level.

(4) The aircraft operator shall securely stow the cylinder in its overpack or outer packaging in the cabin of the aircraft and shall notify the pilot-in-command as specified in §175.33 of this part; and

(5) Shipments under this paragraph (e) are not subject to—

(i) Sections 173.302(f) and 173.304(f) of this subchapter, subpart C of part 172 of this subchapter, and, for passengers only, subpart H of part 172 of this subchapter;

(ii) Section 173.25(a)(4) of this subchapter; and

(iii) Paragraph (b) of this section.

[72 FR 4456, Jan. 31, 2007, as amended at 72 FR 55099, Sept. 28, 2007]

§175.630 Special requirements for Division 6.1 (poisonous) material and Division 6.2 (infectious substances) materials.

(a) A package required to bear a POISON, POISON INHALATION HAZARD, or INFECTIOUS SUBSTANCE label may not be carried in the same compartment of an aircraft with material which is marked as or known to be a foodstuff, feed, or any other edible material intended for consumption by humans or animals unless:

(1) The Division 6.1 or Division 6.2 material and the foodstuff, feed, or other edible material are loaded in separate unit load devices which, when stowed on the aircraft, are not adjacent to each other; or

(2) The Division 6.1 or Division 6.2 material are loaded in one closed unit load device and the foodstuff, feed or other material is loaded in another closed unit load device.

(b) No person may operate an aircraft that has been used to transport any package required to bear a POISON or POISON INHALATION HAZARD label unless, upon removal of such package, the area in the aircraft in which it was carried is visually inspected for evidence of leakage, spillage, or other contamination. All contamination discovered must be either isolated or removed from the aircraft. The operation of an aircraft contaminated with such Division 6.1 materials is considered to be the carriage of poisonous materials under paragraph (a) of this section.

(c) When unloaded from the aircraft, each package, overpack, pallet, or unit load device containing a Division 6.2 material must be inspected for signs of leakage. If evidence of leakage is found, the cargo compartment in which the package, overpack, or unit load device was transported must be disinfected. Disinfection may be by any means that will make the material released ineffective at transmitting disease.

[71 FR 14604, Mar. 22, 2006, as amended at 71 FR 32263, June 2, 2006]

§ 175.700 Special limitations and requirements for Class 7 materials.

(a) Except as provided in §§ 173.4a, 173.422 and 173.423 of this subchapter, no person may carry any Class 7 materials aboard a passenger-carrying aircraft unless that material is intended for use in, or incident to research (See § 171.8 of this subchapter), medical diagnosis or treatment. Regardless of its intended use, no person may carry a Type B(M) package aboard a passenger-carrying aircraft, a vented Type B(M) package aboard any aircraft, or a liquid pyrophoric Class 7 material aboard any aircraft.

(b) *Limits for transport index and criticality safety index.* A person may carry the following Class 7 (radioactive) materials aboard an aircraft only when—

(1) On a passenger-carrying aircraft—

(i) Each single package on the aircraft has a transport index no greater than 3.0;

(ii) The combined transport index and the combined criticality index of all the packages on the aircraft are each no greater than 50.

(2) On a cargo aircraft—

(i) Each single package on the aircraft has a transport index no greater than 10.0.

(ii) The combined transport index of all the packages on the aircraft is no greater than 200, and the combined criticality index of all the packages on the aircraft is no greater than—

(A) 50 on a non-exclusive use cargo aircraft, or

(B) 100 on an aircraft assigned for the exclusive use of the shipper [offeror] for the specific shipment of fissile Class 7 material. Instructions for the exclusive use must be developed by the shipper [offeror] and carrier, and the instructions must accompany the shipping papers.

(3) The combined transport index and combined criticality index are determined by adding together the transport index and criticality index numbers, respectively, shown on the labels of the individual packages.

(c) No person may carry in a passenger-carrying aircraft any package required to be labeled RADIOACTIVE YELLOW–II or RADIOACTIVE YELLOW–III label unless the package is carried on the floor of the cargo compartment or freight container.

[71 FR 14604, Mar. 22, 2006, as amended at 74 FR 2268, Jan. 14, 2009]

§ 175.701 Separation distance requirements for packages containing Class 7 (radioactive) materials in passenger-carrying aircraft.

(a) The following table prescribes the minimum separation distances that must be maintained in a passenger-carrying aircraft between Class 7 (radioactive) materials labeled RADIOACTIVE YELLOW–II or RADIOACTIVE YELLOW–III and passengers and crew:

Transport index or sum of transport indexes of all packages in the aircraft or predesignated area	Minimum separation distances	
	Centimeters	Inches
0.1 to 1.0	30	12
1.1 to 2.0	50	20
2.1 to 3.0	70	28
3.1 to 4.0	85	34
4.1 to 5.0	100	40
5.1 to 6.0	115	46
6.1 to 7.0	130	52
7.1 to 8.0	145	57
8.1 to 9.0	155	61
9.1 to 10.0	165	65
10.1 to 11.0	175	69
11.1 to 12.0	185	73
12.1 to 13.0	195	77

Transport index or sum of transport indexes of all packages in the aircraft or predesignated area	Minimum separation distances	
	Centimeters	Inches
13.1 to 14.0	205	81
14.1 to 15.0	215	85
15.1 to 16.0	225	89
16.1 to 17.0	235	93
17.1 to 18.0	245	97
18.1 to 20.0	260	102
20.1 to 25.0	290	114
25.1 to 30.0	320	126
30.1 to 35.0	350	138
35.1 to 40.0	375	148
40.1 to 45.0	400	157
45.1 to 50.0	425	167

(b) When transported aboard passenger-carrying aircraft packages, overpacks or freight containers labeled Radioactive Yellow–II or Radioactive Yellow–III must be separated from live animals by a distance of at least 0.5 m (20 inches) for journeys not exceeding 24 hours, and by a distance of at least 1.0 m (39 inches) for journeys longer than 24 hours.

(c) Except as provided in paragraph (d) of this section, the minimum separation distances prescribed in paragraphs (a) and (b) of this section are determined by measuring the shortest distance between the surfaces of the Class 7 (radioactive) materials package and the surfaces bounding the space occupied by passengers or animals. If more than one package of Class 7 (radioactive) materials is placed in a passenger-carrying aircraft, the minimum separation distance for these packages shall be determined in accordance with paragraphs (a) and (b) of this section on the basis of the sum of the transport index numbers of the individual packages or overpacks.

(d) *Predesignated areas.* A package labeled RADIOACTIVE YELLOW–II or RADIOACTIVE YELLOW–III may be carried in a passenger-carrying aircraft in accordance with a system of predesignated areas established by the aircraft operator. Each aircraft operator that elects to use a system of predesignated areas shall submit a detailed description of the proposed system to the Associate Administrator for approval prior to implementation of the system. A proposed system of predesignated areas is approved if the Associate Administrator determines that it is designed to assure that:

(1) The packages can be placed in each predesignated area in accordance with the minimum separation distances prescribed in paragraph (a) of this section; and

(2) The predesignated areas are separated from each other by minimum distance equal to at least four times the distances required by paragraphs (a) and (b) of this section for the predesignated area containing packages with the largest sum of transport indexes.

§ 175.702 Separation distance requirements for packages containing Class 7 (radioactive) materials in cargo aircraft.

(a) No person may carry in a cargo aircraft any package required by § 172.403 of this subchapter to be labeled Radioactive Yellow–II or Radioactive Yellow–III unless:

(1) The total transport index for all packages does not exceed 50.0 and the packages are carried in accordance with § 175.701(a); or

(2) The total transport index for all packages exceeds 50.0; and

(i) The separation distance between the surfaces of the radioactive materials packages, overpacks or freight containers and any space occupied by live animals is at least 0.5 m (20 inches) for journeys not exceeding 24 hours and at least 1.0 m (39 inches) for journeys longer than 24 hours; and

(ii) The minimum separation distances between the radioactive material and any areas occupied by persons that are specified in the following table are maintained:

Transport index or sum of transport indexes of all packages in the aircraft of predesignated area	Minimum separation distances	
	Centimeters	Inches
50.1 to 60.0	465	183
60.1 to 70.0	505	199
70.1 to 80.0	545	215
80.1 to 90.0	580	228
90.1 to 100.0	610	240
100.1 to 110.0	645	254
110.1 to 120.0	670	264

Transport index or sum of transport indexes of all packages in the aircraft of predesignated area	Minimum separation distances	
	Centimeters	Inches
120.1 to 130.0	700	276
130.1 to 140.0	730	287
140.1 to 150.0	755	297
150.1 to 160.0	780	307
160.1 to 170.0	805	317
170.1 to 180.0	830	327
180.1 to 190.0	855	337
190.1 to 200.0	875	344

(b) The criticality safety index of any single group of packages must not exceed 50.0 (as used in this section, the term ''group of packages'' means packages that are separated from each other in an aircraft by a distance of 6 m (20 feet) or less); and

(c) Each group of packages must be separated from every other group in the aircraft by not less than 6 m (20 feet), measured from the outer surface of each group.

[71 FR 14604, Mar. 22, 2006, as amended at 71 FR 54396, Sept. 14, 2006]

§ 175.703 Other special requirements for the acceptance and carriage of packages containing Class 7 materials.

(a) No person may accept for carriage in an aircraft packages of Class 7 materials, other than limited quantities, contained in a rigid or non-rigid overpack, including a fiberboard box or plastic bag, unless they have been prepared for shipment in accordance with §172.403(h) of this subchapter.

(b) Each shipment of fissile material packages must conform to the requirements of §§173.457 and 173.459 of this subchapter.

(c) No person shall offer or accept for transportation, or transport, by air—

(1) Vented Type B(M) packages, packages which require external cooling by an ancillary cooling system or packages subject to operational controls during transport; or

(2) Liquid pyrophoric Class 7 (radioactive) materials.

(d) Packages with radiation levels at the package surface or a transport index in excess of the limits specified in §173.441(a) of this subchapter may not be transported by aircraft except under special arrangements approved by the Associate Administrator.

§ 175.704 Plutonium shipments.

Shipments of plutonium which are subject to 10 CFR 71.88(a)(4) must comply with the following:

(a) Each package containing plutonium must be secured and restrained to prevent shifting under normal conditions.

(b) A package of plutonium having a gross mass less than 40 kg (88 pounds) and both its height and diameter less than 50 cm (19.7 inches)—

(1) May not be transported aboard an aircraft carrying other cargo required to bear a Division 1.1 label; and

(2) Must be stowed aboard the aircraft on the main deck or the lower cargo compartment in the aft-most location that is possible for cargo of its size and weight, and no other cargo may be stowed aft of packages containing plutonium.

(c) A package of plutonium exceeding the size and weight limitations in paragraph (b) of this section—

(1) May not be transported aboard an aircraft carrying other cargo required to bear any of the following labels: Class 1 (all Divisions), Class 2 (all Divisions), Class 3, Class 4 (all Divisions), Class 5 (all Divisions), or Class 8; and

(2) Must be securely cradled and tied down to the main deck of the aircraft in a manner that restrains the package against the following internal forces acting separately relative to the deck of the aircraft; Upward, 2g; Forward, 9g; Sideward, 1.5g; Downward, 4.5g.

§ 175.705 Radioactive contamination.

(a) A carrier shall take care to avoid possible inhalation, ingestion, or contact by any person with Class 7 (radioactive) materials that may have been released from their packagings.

(b) When contamination is present or suspected, the package containing a

Class 7 material, any loose Class 7 material, associated packaging material, and any other materials that have been contaminated must be segregated as far as practicable from personnel contact until radiological advice or assistance is obtained from the U.S. Department of Energy or appropriate State or local radiological authorities.

(c) An aircraft in which Class 7 material has been released must be taken out of service and may not be returned to service or routinely occupied until the aircraft is checked for radioactive contamination and it is determined in accordance with §173.443 of this subchapter that the dose rate at every accessible surface is less than 0.005 mSv per hour (0.5 mrem per hour) and there is no significant removable surface contamination.

(d) Each aircraft used routinely for transporting Class 7 materials shall be periodically checked for radioactive contamination, and an aircraft must be taken out of service if contamination exceeds the level specified in paragraph (c). The frequency of these checks shall be related to the likelihood of contamination and the extent to which Class 7 materials are transported.

(e) In addition to the reporting requirements of (§§171.15 and 171.16 of this subchapter and §175.31 of this part, an aircraft operator shall notify the offeror at the earliest practicable moment following any incident in which there has been breakage, spillage, or suspected radioactive contamination involving Class 7 (radioactive) materials shipments.

§175.706 Separation distances for undeveloped film from packages containing Class 7 (radioactive) materials.

No person may carry in an aircraft any package of Class 7 (radioactive) materials required by §172.403 of this subchapter to be labeled Radioactive Yellow–II or Radioactive Yellow–III closer than the distances shown in the table below to any package marked as containing underdeveloped film.

Transport index	Minimum separation distance to nearest undeveloped film for various times in transit									
	Up to 2 hours		2 to 4 hours		4 to 8 hours		8 to 12 hours		Over 12 hours	
	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet
0.1 to 1.0	0.3	1	0.6	2	0.9	3	1.2	4	1.5	5
1.1 to 5.0	0.9	3	1.2	4	1.8	6	2.4	8	3.3	11
5.1 to 10.0	1.2	4	1.8	6	2.7	9	3.3	11	4.5	15
10.1 to 20.0 ...	1.5	5	2.4	8	3.6	12	4.8	16	6.6	22
20.1 to 30.0 ...	2.1	7	3	10	4.5	15	6	20	8.7	29
30.1 to 40.0 ...	2.4	8	3.3	11	5.1	17	6.6	22	9.9	33
40.1 to 50.0 ...	2.7	9	3.6	12	5.7	19	7.2	24	10.8	36

§175.900 Handling requirements for carbon dioxide, solid (dry ice).

Carbon dioxide, solid (dry ice) when shipped by itself or when used as a refrigerant for other commodities, may be carried only if the operator has made suitable arrangements based 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. The operator must ensure that the ground staff is informed that the dry ice is being loaded or is on board the aircraft. For arrangements between the shipper and operator, see §173.217 of this subchapter. Where dry ice is contained in a unit load device (ULD) or other type of pallet prepared by a single shipper in accordance with §173.217 and the operator after the acceptance adds additional dry ice, the operator must ensure that the information provided to the Pilot-in-Command and the marking on the ULD when used as a packaging reflects that revised quantity of dry ice.

[73 FR 4719, Jan. 28, 2008]

PART 176—CARRIAGE BY VESSEL

Subpart A—General

Sec.

176.1 Purpose and scope.
176.2 Definitions.
176.3 Unacceptable hazardous materials shipments.