

Radiation limits for radioactive cargo

- No person shall offer for transportation or transport aboard a passenger-carrying aircraft any radioactive material unless that material is intended for use in, or incident to, research, medical diagnosis or treatment (CFR 49-173.448f).
- The dose rate in any occupied space on the aircraft from radioactive cargo must not exceed 0.020 mSv per hour, unless the crew is operating under a state or federally regulated radiation protection program and any persons under their control who enter such a space are wearing radiation monitoring devices. Otherwise, to exceed this limit the flight must be an exclusive use flight and the special permission for the shipment must be given by the Associate Administrator. (CFR 49-173.441)
- A package with a transport index greater than 10 must not be shipped by air (Transport index = $100 \times$ the maximum dose rate in millisieverts measured at a distance of 3 feet from the external surface of the package).
- No package with a transport index greater than 3 may be shipped on a passenger carrying aircraft. (CFR 49-175.700)
- The specifics of calculating transport indices and placement of radioactive cargo in passenger carrying aircraft are summarized in FAA-AM-82-12 “Transport Index Limits for Shipments of Radioactive Material in Passenger Carrying Aircraft.”

Radiation limits for crewmembers

- If not pregnant: 50 mSv in any one year and a five-year average of 20 mSv per year.
- If pregnant: 1 mSv to the conceptus during pregnancy and 0.5 mSv to the conceptus in any one month (limits apply after pregnancy is declared to management).
- In addition, there are limits to areas of the body.

Exposed Area	Annual Equivalent Dose Limit
Skin, Hand, or Foot	500 mSv
Eye lens	150 mSv

Limits for crewmembers include doses from external sources and committed doses from ingested radionuclides, if any. Exposures as part of medical or dental procedures are not subject to recommended limits. However, the conceptus should be considered when planning any exposure of a pregnant woman. For more details see the American Conference of Government Industrial Hygienists’ handbook “2010 TLVs and BEIs.”