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16. Abstract Commercial aircraft crewmembers are one of the most occupationally exposed groups, receiving more ionizing radiation per annum than workers in many industries. Galactic cosmic radiation (GCR), which comes from outside our solar system, is the primary source of this radiation exposure. This radiation includes all atomic species as ions stripped of all electrons and traveling at relativistic speeds. These can cause unique biological injuries that remain poorly understood. This presentation describes the latest version of the Federal Aviation Administration's CARI aircrew flight dose calculation software, CARI-7 and CARI-7A, which can be used for career dosimetry and research.  CARI-7 utilizes databases of secondary particle spectra produced by mono-energetic isotropic showers of neutrons and GCR ions up through iron calculated using MCNPX 2.7.0. These databases allow for rapid numerical integration, allowing results almost as quickly as CARI-6 but with greater accuracy. The atmosphere in CARI-7 was modelled from the 1976 U.S. standard atmosphere. CARI-7A includes added options for more research-oriented use such as custom GCR model input and multiple built-in alternative data handling physics models. CARI-7 and CARI-7A results compare well with measurements and other dose and dose rate software calculations at commercial and higher altitudes.		
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