

Reference Values for Emergency Responder Radiation Safety

| Terminology | Accumulated Dose | Recommended Application or Action | Document |
|-------------------------------|--|--|---|
| Response worker guidelines | 5 rem (50 mSv) 10 rem (100 mSv) ≥25 rem (≥250 mSv) | All occupational exposures Protect critical infrastructure Lifesaving or protection of large populations | PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents (EPA, 2017) |
| Decision dose | 50 rad (0.5 Gy) | Decide whether to remove responder or continue mission, based on operational awareness and mission priorities | NCRP Report No. 165, Responding to a Radiological or Nuclear Terrorism Incident: A Guide for Decision Makers (NCRP, 2010) |
| Turn-back dose guidance | 50 rem (500 mSv) 100 rem (1 Sv) | Prevent severe health effects or injuries Lifesaving actions | Manual for First Responders to a Radiological Emergency (IAEA, 2006) |
| Cold zone ("outer perimeter") | ≤0.01 R h ⁻¹ (~0.1 mGy h ⁻¹) | Alarm threshold | Key Elements of Preparing Emergency Responders for Nuclear or Radiological Terrorism (NCRP, 2005) |
| Hot zone | >0.01 R h ⁻¹ (~0.1 mGy h ⁻¹) | Routine response activities performed with personal protective equipment, including active radiation monitoring | Key Elements of Preparing Emergency Responders for Nuclear or Radiological Terrorism (NCRP, 2005) |
| Dangerous-radiation zone | ≥10 R h ⁻¹ (~0.1 Gy h ⁻¹) | Restrict actions to time sensitive, mission critical such as lifesaving | NCRP Report No. 165, Responding to a Radiological or Nuclear Terrorism Incident: A |

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| | | | Guide for Decision Makers (NCRP, 2010) |
| Turn back | 200 R h ⁻¹ (~2 Gy h ⁻¹) | Responders should turn back, even when working on life saving missions | Handbook for Responding to a Radiological Dispersal Device: First Responders Guide — The First 12 Hours (CRCPD, 2006) |

Note: Local agencies may have alternate guideline values for responder operations.

Source: [Guidance for Emergency Response Dosimetry](#) (NCRP Report 179), National Council on Radiation Protection and Measurements, Bethesda, MD, 2017, Table 4.1.