Ionizing Radiation
Dose Ranges
(Sievert)

Life Span Study (A-bomb survivor epidemiology)
Whole body, acute: G-I destruction; lung damage; cognitive dysfunction (death certain in 5 to 12 days)*

Total Body Irradiation (TBI) Therapy
Whole body, acute: circulating blood cell death; moderate G-I damage (death probable 2-3 wks)*

Acute Radiation Syndromes
Whole body, acute: marked G-I and bone marrow damage (death probable in 1-2 wks)*

Acute Radiation = all at once; chronic = hours, days, years

Dose Equivalent: 1 Sievert = 100 rem = (absorbed dose x radiation quality) 
NRC cleanup criteria for site decommissioning / unrestricted use: 0.25 mSv/yr
DOE, NRC dose limit for the public: 1 mSv/yr (100 mrem/yr) (ICRP, NCRP)

Medical Diagnostics (A-O)

X-ray films
A – Chest (PA & Lat) 0.14
B – Dental Panoramic 0.7
C – Lumbar-Sacral Spine 2 – 3
D – Mammogram 2 – 4

Radiotracer Imaging
E – Heart Stress (Tc-99m) 6 – 12
F – Bone (Tc-99m) 4 – 15
G – Dual Isotope Stress Test 40 – 45
H – PET: F-18 FDG (bladder) 55 – 80

CT Scans (X-ray)
(multiple scan average dose)
I – Chest CT 20 – 30
J – Head CT 30 – 50
K – Abdominal CT 22 – 60
L – Full Body CT 50 – 100

Fluoroscopy/Procedures
M – Barium Contrast G.I. 10 – 22
N – Cardiac Catheterization 12 – 40
O – TIPS Procedure 400 – 1400

Charged particle event
(Solar flare) dose on moon, no shielding

Estimated dose for 3-yr Mars mission
(current shielding)

DHS emergency guideline to save a life: 250 mSv

Acute Radiation

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