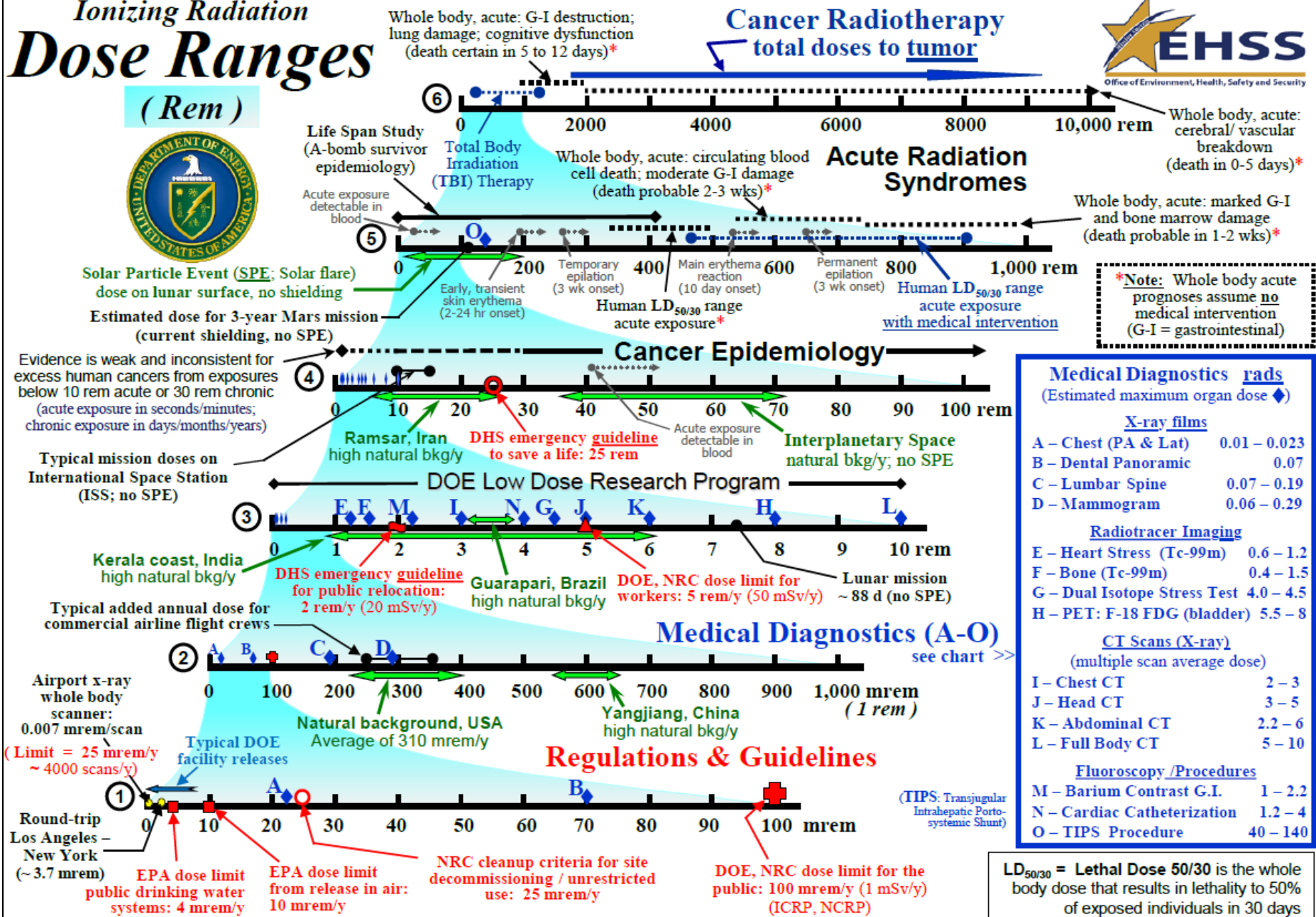


Ionizing Radiation Dose Ranges

(Rem)



***Note:** Whole body acute prognoses assume no medical intervention (G-I = gastrointestinal)

| Medical Diagnostics rads | |
|--------------------------------|--------------|
| (Estimated maximum organ dose) | |
| X-ray films | |
| A - Chest (PA & Lat) | 0.01 - 0.023 |
| B - Dental Panoramic | 0.07 |
| C - Lumbar Spine | 0.07 - 0.19 |
| D - Mammogram | 0.06 - 0.29 |
| Radiotracer Imaging | |
| E - Heart Stress (Tc-99m) | 0.6 - 1.2 |
| F - Bone (Tc-99m) | 0.4 - 1.5 |
| G - Dual Isotope Stress Test | 4.0 - 4.5 |
| H - PET: F-18 FDG (bladder) | 5.5 - 8 |
| CT Scans (X-ray) | |
| (multiple scan average dose) | |
| I - Chest CT | 2 - 3 |
| J - Head CT | 3 - 5 |
| K - Abdominal CT | 2.2 - 6 |
| L - Full Body CT | 5 - 10 |
| Fluoroscopy /Procedures | |
| M - Barium Contrast G.I. | 1 - 2.2 |
| N - Cardiac Catheterization | 1.2 - 4 |
| O - TIPS Procedure | 40 - 140 |

LD_{50/30} = Lethal Dose 50/30 is the whole body dose that results in lethality to 50% of exposed individuals in 30 days

NOTE: This chart was constructed with the intention of providing a simple, user-friendly, "order-of-magnitude" reference for radiation exposures of interest to scientists, managers, and the general public. In that spirit, most quantities are expressed as "dose equivalent" in the more commonly used radiation protection units, the rem and Sievert. Medical diagnostics are expressed as estimated maximum organ dose; as they are not in "effective dose" they do not imply an estimation of risk (no tissue weighting). Dose limits are in effective dose, but for most radiation types and energies the difference is numerically not significant within this context. It is acknowledged that the decision to use these units is a simplification, and does not address everyone's needs. -- (DHS = Department of Homeland Security; EPA = Environmental Protection Agency; NRC = Nuclear Regulatory Commission)
Disclaimer: Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information disclosed.

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Absorbed Dose: 100 rads = 1 Gray
 1 rem ~ 1 rad for x- and gamma-rays
Dose Equivalent: 100 rem = 1 Sievert
 = (absorbed dose x radiation quality)

Source: Office of Public Radiation Protection, Office of Environment, Health, Safety and Security, U.S. Department of Energy
<http://energy.gov/ehtss/environment-health-safety-security>