

Background Radiation

Radiation dose or exposure to humans is measured in units of rem or millirem (one thousandth of a rem). Dose rate is measured in millirem per year.

Exposure from natural background radiation averages 300 millirem/year in the U.S. Therefore, in a normal lifetime of 75 years, we could expect to be exposed to approximately 22,500 millirem or 22.5 rem.

This background radiation comes from naturally occurring radionuclides in soil and rock, and the food we eat. It also comes from cosmic rays and indoor radon.

Some typical dose rates from background radiation are provided below. Also shown are the theoretical cancer incidence risks assuming that the linear no threshold model of radiation risk is valid at these low exposures

Radiation Risk from Background/Lifestyle Sources of Radiation	Exposure (mrem/y)	Cancer Risk (75 year lifetime)*
Smoking 1 pack of cigarettes per day (polonium-210)	8,000	684,000 per 1,000,000
Indoor radon	200	17,100 per 1,000,000
Working in granite buildings	100	8,550 per 1,000,000
Soil and rock (Colorado plateau)	90	7,695 per 1,000,000
Cosmic rays (Denver at 5000 ft elevation)	55	4,703 per 1,000,000
Human body (from food we eat)	40	3,420 per 1,000,000
Soil and rock	40	3,420 per 1,000,000
Cosmic rays (at sea level)	30	2,565 per 1,000,000
Living in a brick house	7	599 per 1,000,000
One round trip from LA to NY per year	6	513 per 1,000,000
Sleeping next to one's partner	2	171 per 1,000,000

* Based on BEIR VII radiation risk of 0.00114 per 1,000 mrem