Perspective

Health Effects of Radiation

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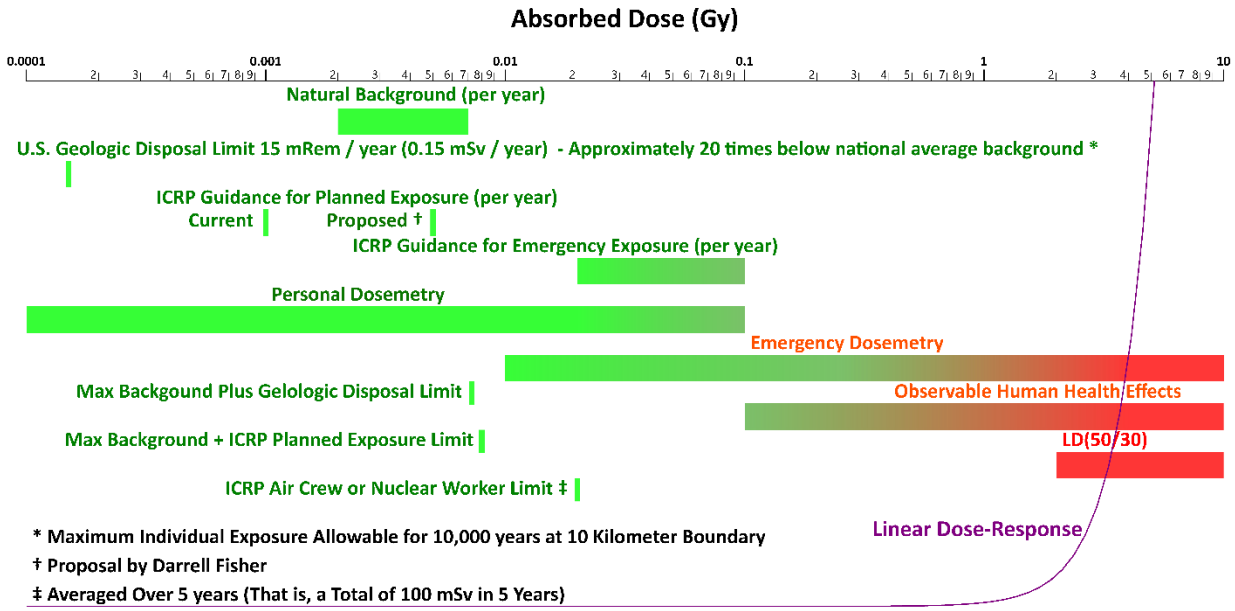
Health effects from radiation exposure are a continuum: very high levels are fatal, whereas health effects from very low levels are buried in noise. Exposure values showing green on the graphic below are so low that health effects have not been observable; exposures showing red should be avoided. A plethora of scientific data suggest that exposures below the red area and above the green can have both beneficial and negative health effects, the ratio of which determines the net-outcome of detriment. These data should be available to affected people to help them make their own decisions with respect to radiation protection and should be considered when responding to specific radiological release situations in which numerical guidance may be exceeded.



Current U.S. regulations require that no one within 10 KM of a geologic disposal site receive an annual dose greater than 0.15 mSv / year over a 10,000 year period (second line on the chart). But the 10,000 year requirement has effectively been changed by regulatory negotiations to prevent that exposure until after the calculated dose has reached its maximum; that is, one million years, and the contaminant of concern is Uranium – the material that we took out of the ground in the first place.

Risk assessment requires complex calculations that are difficult to understand. Risk due to low level radiation is confounded by the need to deal with radiation levels that vary over many orders of magnitude; easy to deal with mathematically, but difficult for many people to comprehend.

When performing risk assessments, a dose of about 15 mrem/year generally calculates to an increased probability of cancer of about 0.000001, one in a million. But the probability of anyone getting cancer is 40%. So we are spending billions of dollars to avoid increasing the probability of anyone getting cancer over the next million years from 0.400000 to 0.400001. Even assuming the LNT, it is impossible to calculate a risk of cancer due to 0.15 mSv / year that is even theoretically detectable.