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Radiation Risks in Everyday Life

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Risk means very different things to scientists and the public. Risk, to the scientist, is undesired consequence times probability. It is quantifiable, albeit with appropriate assigned uncertainty. Risk, to the public, sometimes means fear, emotion and outrage, and is definitely not judged in a quantifiable manner. Risk communication gurus warn against the use of quantitative risk comparisons when trying to explain the impact (or non-impact) of environmental issues to the public. For instance we are warned not to compare risk from a Superfund site to the risk of driving because driving is claimed to be a voluntary lifestyle choice (a questionable judgment) whereas living next to a Superfund site is not voluntary. Nevertheless numbers are what scientists and engineers use to communicate with each other. Math is the language of science. Therefore environmental scientists have a real problem with risk communication. This is compounded even more in the health physics and radiation arena where we are required to calculate small “theoretical” radiation risks based on small radiation exposures. Some health physicists believe these theoretical risks, some health physicists do not. The public either believes these theoretical risks, or more usually believes that they are underestimated. Notwithstanding the aforementioned cautionary statements, this paper provides comparisons of various regulated radiation risks vs. various non-regulated radiation risks using the same regulatory methodology. The conclusion is that enormous resources are being spent regulating theoretical radiation risks that are orders of magnitude smaller than theoretical radiation risks we all face in everyday life. It is anticipated that the majority of the intended audience of this paper will already appreciate and understand this material. It is also hoped that at least some of the public may also begin to appreciate the message.