



Radiation Safety Counseling News

How We are Prone to Errors in Decisions for Radiation Safety - Part VI

Dear Reader,

When we make quick safety decisions do we ignore public fears? In this series of articles we are looking at how quick decisions for radiation safety are prone to intuitive errors. Making quick decisions for safety is an important function of the subconscious mind for our survival. Such quick decisions, however, are typically based on stored impressions and images which may have little relevance to the real world of radiation. This article will continue to review how biases occur in safety decisions as described in Daniel Kahneman's book.



Ray Johnson

As always, your questions or feedback are welcomed. Feel free to contact us through email, our blog, or our Facebook page.

Regards,

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Radiation Safety Counseling Services

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Can We Ignore Public Fears?

Kahneman[i] says he is uncomfortable with the influence of irrational fears on public policy. However, he notes that, "Rational or not, fear is painful and debilitating, and policy makers must endeavor to protect the public from fear, not only from real dangers." I suspect this may not sit well with most HPs who make radiation safety decisions by logical analysis of the facts. How can we justify the expense of valuable resources for reducing risks that are imaginary? And yet, isn't this actually happening all the time? How many of us in the field of radiation safety are dealing with real (significant) radiation risks? How many people are we protecting from "real" dangers? How much of what we do for radiation protection is driven by public and regulatory ideas of what is needed to assure safety? How many people believe LNT is true all the way down to zero dose? And, if we believe in LNT, is there any level of

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dose for which the risk is acceptable?

How Do We Make Predictions of Risks?

When asked to rank order a series of different risks, we have to go into our subconscious data bank of stored impressions on base rates, probabilities, and stereotypes to answer the question.

Typically people will answer this question by substituting representativeness or similarity to stereotypes in place of judging probability. Questions of probability are more difficult to answer than issues of similarity. Evaluation of probability requires conscious effort, whereas the subconscious can draw conclusions about similarity with no effort. When we are asked to assess statistical probabilities, a shotgun approach is activated subconsciously to evoke many answers to easier questions. While judgments based upon representativeness of stereotypes may be accurate, just as often they will be false, especially when people ignore base-rate information that points in another direction. Consider how people judge the risks of driving to work every day versus the risk of radiation exposures on the job. Or, how do people judge the risks of flying versus weight control and exercise? How do people judge the risks of radon versus other radiation exposures?

Errors of Representativeness

Even when presented with information which shows that radiation risks are small relative to other sources of risks, many will decide that radiation risks are greatest. There also seems to be a general view that naturally occurring sources of radiation and doctor prescribed radiation present lower risks than man-made radiation sources used in industry and research. Thus, even trained radiation workers may believe that the potential for receiving several millisieverts a year from radon in their homes is okay, while a small fraction of a millisievert in the workplace is not okay. Somehow our homes seem to represent a haven of safety while workplaces represent inherent dangers. These notions of representation may then overshadow actual evidence of risk assessments and how we judge or trust the quality of the risk information. Once again our intuitive subconscious processing of risks can lead us astray relative to good scientific data.

[i]Kahneman, D., "Thinking, Fast and Slow." Farrar, Straus, and Giroux, New York, 2011

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