



Radiation Safety Counseling News

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

Dear Reader,

When we make quick safety decisions stereotypes affect the process. 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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Possible Errors of Stereotypes

Kahneman[1] says there may be some truth in stereotypes that allow us to make good predictions about representativeness. However, stereotypes may be false when we do not take into account actual data. For example, I had a supervisor who was unhappy with comments coming from members of the Health Physics Society (HPS). He consequently branded the Society in a derogatory manner. When he described his negative feelings about the Society, I pointed out that I am a member of the HPS and asked if he felt the same way about me. After reflecting on my question, he said, "No, of course not." He later decided to join the HPS. How often do we judge individuals by stereotypes of representativeness? How often do we say, "That's the EPA, or that's the NRC, or that's the HPS?" One time my work involved frequent interactions with antinuclear activists representing the Sierra Club, Greenpeace, Friends of the Earth, and others. While I had misgivings about antinuclear activism, after frequent meetings I discovered that these people were trying to make a living, raise a

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Communication Insights

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family, and pay their bills just like myself. While our views differed, a comparison of our lives at an individual level showed many similarities.

Coherence, Plausibility, and Probability

These notions are easily confused. While evaluations of probability require analysis by our conscious thinking processes, coherence and plausibility are easily derived subconsciously without any detailed analysis. In particular the uncritical substitution of plausibility for probability can have severe effects on judgments when scenarios are used as tools for forecasting. Adding details to a scenario may make it more plausible without changing the probability. For example, how often do people conclude that their health could be at high risk from radiation exposure based on evidence that radiation can cause harm even though the probability for individuals is very low? When told that the likelihood of effects is 1/xxx,xxx many people will conclude plausibly that they could be the one. Then the precautionary principle kicks in and people conclude that, "It is better to be safe than sorry." If people can imagine themselves the victim of radiation, then it does not matter what the scientific probability may be. The logic of probability is easily lost.

Causes Trump Statistics

Base rates or probabilities of radiation effects are typically ignored or undervalued when people consider the health of themselves or their families. Most people do not know the probabilities of radiation effects such as reported by the National Academy of Sciences. Even if they knew, because of general lack of understanding of statistical probabilities, they would likely defer to media stories about "deadly radiation." Even compelling statistics of cause and effect will not change long-held beliefs or beliefs rooted in life experience. Social settings, coherent stories (even when imagined), stereotypes, and plausibility will win every time. Once a view is established by subconscious associations and may be prone to countless errors, the conscious mind resists changes to that view."My mind is made up, don't bother me with the facts."

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

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