### Probability x Consequence?

### /Navigating the notion of risk when communicating about nuclear to the public

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## Risk does not mean the same thing in engineering as it does to the "public"

- Risk is inherently subjective
- Even PRA is based on a set of subjective expert judgements and informed approximations
- Some consequences are not yet quantifiable, but that doesn't mean they're not real
- Individual interest and tolerance of risks varies greatly
  - Environmental, social, and even biological factors contribute



Risk = probability x consequence

Risk = consequence vs benefit

Hansson, S. O. (2010). Risk: Objective or subjective, facts or values. Journal of Risk Research, 13(2), 231–238. https://doi.org/DOI: 10.1080/13669870903126226 Slovic, P. (1992). Perception of risk: Reflections on the psychometric paradigm. In S. Krimsky & Golding, D. (Eds.), *Social Theories of Risk* (pp. 117--152). Praeger.

-ay public

## Annual fatalities

Catastrophic potential, controllability, threat to future generations, familiarity, equity, being voluntary, novelty, delayed effects, observability, level of scientific understanding

# Risks of a nuclear accident: TMI

- Small radiation exposure to public
- Stricter/costly regulation
- Greater public opposition
- More reliance on fossil fuels
- Increased construction and operation cost
- Decreased interest in building new reactors
- Psychological impacts of evacuation

### One thing the literature is crystal clear on: trust is key

- We rely on heuristics (mental shortcuts) to make up our minds all the time (yes, you!)
- We make up our minds based on people we trust
  - Know your public
- Public engagement alone does not guarantee support or trust
  - You can't ask for trust, you must earn it
  - Start by building shared identity/passion before asking for support



Four Rivers Nuclear Partnership

Trumbo, C. W. (2002). Information Processing and Risk Perception: An Adaptation of the Heuristic-Systematic Model. Journal of Communication, 52(2), 367–382. https://doi.org/10.1111/j.1460-2466.2002.tb02550.x

Malka, A., Krosnick, J. A., & Langer, G. (2009). The association of knowledge with concern about global warming: Trusted information sources shape public thinking. Risk Analysis: An Official Publication of the Society for Risk Analysis, 29(5), 633–647. https://doi.org/10.1111/j.1539-6924.2009.01220.x

Sandman, P. M. (1993). Responding to community outrage: Strategies for effective risk communication. American Industrial Hygiene Association.

Mah, D. N., Hills, P., & Tao, J. (2014). Risk perception, trust and public engagement in nuclear decision-making in Hong Kong. Energy Policy, 73, 368–390, https://doi.org/10.1016/j.engol.2014.05.019

### Are you listening as much as speaking?

- Engagement must be tailored to specific questions and the situation at hand
  - People have Qs for you! If you don't listen you won't address their real concerns
- Validate knowledge AND concerns
- Unless someone asks, don't give a lecture



Covello, V., & Allen, F. (1998). Seven Cardinal Rules of Risk Communication. US Environmental Protection Agency, Office of Policy Analysis. Teräväinen, T., Lehtonen, M., & Martiskainen, M. (2011). Climate change, energy security, and risk—Debating nuclear new build in Finland, France and the UK. Energy Policy, 39(6), 3434–3442. https://doi.org/10.1016/j.enpol.2011.03.041

### People generally perceive risks to be too high

- An informed and consenting population is a good thing!
- Do not argue that other industries "get away with" more accidents, death, environmental contamination so nuclear should too

Coal ash releases more radioactivity than nuclear, producing solar panels uses toxic chemicals so you should stop worrying about nuclear





Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S., & Combs, B. (1978). How Safe is Safe Enough? A Psychometric Study of Attitudes Towards Technological Risks and Benefits. Policy Sciences. 9, 127–152.

I'm glad you care about industrial safety, I do too! Nuclear energy is held to a very high standard, and that's good!

### Want to read more?

### nuclearkatie.com/risk-reading-list

