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## Trends. Quantitative Versus Qualitative Analysis, Nuclear Reactors, and Security

Editor

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Abstract: This Trends article discusses the possibility of meaningful analysis pertaining to the possibility of terrorist threats against nuclear installations.

“The threat of terrorism cannot be considered when licensing reactors or other nuclear installations because the risk is too speculative.”

This provocative quote is taken from a New York Times article and is presented as a paraphrase of the United States’ Nuclear Regulatory Commission (NRC) position towards licensing Issues concerning several proposals concerning nuclear installations. At Issue is not the accuracy of the Times paraphrase, but instead the logic of the paraphrase as belief.

The paraphrase may be taken to intimate that terrorist threat against a specific installation cannot be quantified in any meaningful way. This quantification problem may, indeed, be significant. To jettison a terrorism calculus of some kind because quantification is problematic may, however, be even more problematic. It is as if the problem is not with an analytic approach but with some real world problem that refuses to conform to the requirements of the analytic approach.

The paraphrase also may be taken to intimate that terrorism is just so unlikely that it should not be part of a calculus addressing the potential threat of a nuclear installation towards the environment. One interesting aspect of this interpretation is that--in essence--some acceptable quantification has occurred and yields the result of some probability too small to warrant the attention of assessors of environmental damage.

The paraphrase also may be taken to direct assessors of threat to take general terrorism-related precautions even if quantifications is not meaningful. However, this interpretation contains a non-sequitur. Without some quantitative stance--even if only using an ordinal scale that can be phrased qualitatively--general precautions cannot be taken as to answering questions such as how much and what kind.

Regardless of the accuracy of the Times report, one should agree that threat assessment for nuclear installations should address terrorism and can be done in a meaningful fashion. (See Rasmussen, J. (1993). Learning from experience? How? Some research Issues in industrial risk management. In B. Wilpert & T. U. Qvale (Eds.). Reliability and safety in hazardous work systems: Approaches to analysis and design. (pp. 43-66). Erlbaum; Umbers, I. G., & Reiersen, C. S. (1995). Task analysis in support of the design and development of a nuclear power plant safety system. *Ergonomics*, 38, 443-454; Wald, M. (January 7, 2003). N.R.C. excludes terrorism as licensing consideration. *The New York Times*, A11; Wardlaw, G. (1983). Psychology and the resolution of terrorist incidents. *Australian Psychologist*, 18, 179-190.) (Keywords: Nuclear Installations, Nuclear Regulatory Commission, Terrorism.)