

Ionizing Radiation: Interfacing Science and the Courts

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Introduction

Radiation and radionuclides occur naturally in the environment and radioactive materials have been and are continuing to be developed and used for military, energy, and medical applications. Materials may also be diverted for unlawful purposes. These uses and misuses can result in complex legal cases involving intricate or novel scientific and technical evidence concerning cause and effect. The judiciary has not traditionally been identified as vital during stakeholder interactions; however, the rulings of the courts can fundamentally affect organizational and/or governmental decision-making concerning the development and use of radiation sources and radioactive materials.



Objectives

- 1) Provide neutral and independent scientific expertise to educate members of the judiciary on ionizing radiation.
- 2) Explore differences and similarities between scientific and legal causation principles.
- 3) Raise confidence in judicial management of evidence presented by parties with colorable interests in that evidence's interpretation.

Methods

- 1) Evaluate presentation topics and scientific education requests of the judiciary.
- 2) Provide a credible hypothetical scenario including a range of criminal and civil legal issues within which an understanding of radiation science can be applied.
- 3) Select a set of science advisors, establish a detailed scientific agenda, and collect and evaluate a set of background read-ahead materials to be provided to the participants.
- 4) Develop judge/science advisor interactions to augment formal education (e.g., interactive question and answer exercises, panel discussions, demonstration of radioactive particle transport, and historical and experimental displays.)

Results

Presentations for the National Judges' Science School: "Ionizing Radiation and the Courts" provide an overview of ionizing radiation fundamentals, and explore topics such as: natural and man-made sources, decorporation therapy, risk assessment and risk perception, and the current state of knowledge on quantification of health and environment effects associated with exposure. Additional, more tailored, presentations for the attending state and federal judges address cultural differences between science and law, the current state of related US health and environmental standards, and the legal use of epidemiologic evidence for assessing cancer clusters. Each attending judge has an obligation to mentor colleagues on this subject upon return to the Bench.

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