

Dr. Jon M. Schwantes

Nuclear Forensic Analysis: Definition, State of Practice, Emerging Applications, and Example

Abstract:

The young science of nuclear forensics was born out of a response to discoveries of weapons-usable nuclear Materials Out of Regulatory Control (MORC) in northern Europe in the early 1990s. This science not only supports law enforcement response to MORC events but represents a key component of nuclear security for any nation with nuclear or radiological materials holdings. Since the birth of nuclear forensic science, efforts like the Nuclear Security Summit, the Global Initiative to Combat Nuclear Terrorism, as well as those by the International Atomic Energy Agency and the Nuclear Forensics International Technical Working Group have strengthened nuclear forensics capabilities worldwide. Here, the capabilities and limitations of nuclear forensic science are described and several examples of applications of nuclear forensics in support of emergency response, law enforcement, and national security are provided.