

Detection of Highly Enriched Uranium through Active Interrogation

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We describe how Highly Enriched Uranium (HEU) can be detected through use of active interrogation probes, such as incident neutrons, or bremsstrahlung photons, followed by the detection of delayed neutrons or gamma rays. These delayed particles are a signature for the presence of special nuclear materials. We describe the development of radiation transport simulation tools (the MCNP code) together with underlying databases that are needed to simulate these processes, and to support experimental detector development work at Los Alamos. We describe the underlying physics advances in modeling and representing the fission process, to allow us to accurately simulate these processes. These capabilities allow the determination of which isotopes are present, and can also tell us about the amount of material present.