

Characterization of Fallout from an Urban Nuclear Detonation

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A model has been created to describe the airborne particulates following the urban detonation of a small improvised nuclear device. Nuclide inventories (fission products of the depleted bomb material) are calculated via the ORIGEN-S code using updated cross sections. Particulate materials from four sources are considered: vapor condensation, crater ejecta, dust from building collapse, and smoke from fires. These are combined to provide a source term to the atmosphere that includes both particle sizes and components. A sample scenario is considered consisting of a small (10 kt) device delivered at ground level in a modern downtown environment similar to New York City.