Managing Radiation Emergencies

The greatest threat to emergency response personnel is not nuclear detonation. It is highly doubtful whether any nuclear weapon involved in a transportation accident would, or could, detonate in a nuclear fashion.

Most nuclear weapons will contain conventional high explosives in varying amounts up to many hundreds of pounds. These high explosives constitute the major hazard associated with accidents involving nuclear weapons. Accidents or fires involving such shipments should be treated like similar accidents involving conventional high explosives. If a nuclear weapon is enveloped in the flame of a gasoline fire, the high explosive may ignite, burn, and, in some cases, detonate in one large or several small explosions. Large quantities of burning high explosives are extremely difficult to extinguish, and *torching* (an emergence of jets of white flame from the weapon) might be observed but is not always evident.

Regardless of the nature of fires or detonations of high explosives in nuclear weapons**, the major radiological threat will be the release of plutonium.** When associated with a fire, metallic plutonium may burn, producing radioactive plutonium-oxide particles, which may present serious hazards if inhaled or deposited in wounds. Also, detonation of the high-explosive component in nuclear weapons may pulverize plutonium into very small particles, which can cause contamination over a large area. If the high explosives burn instead of detonating, the amount of plutonium dispersed into the atmosphere usually is small and represents a serious health hazard only in the immediate area and from the smoke cloud. Plutonium is not a radiation hazard if it remains outside the body, because it is an alpha-emitter. While alpha particles have a very short range and lack the ability to penetrate the skin, plutonium contamination can be a very serious hazard if inhaled or ingested.

Unless it is necessary to approach a nuclear weapon to rescue injured individuals, first-on-the-scene responders at such an accident should establish an exclusion zone with a radius of 2,500 feet from the weapon. To reemphasize, no attempt should be made to extinguish fires or otherwise approach a nuclear weapon involved in a transportation accident except to recover injured personnel. Notify the nearest military installation and the Joint Nuclear Accident Coordinating Center (JNACC) of the accident.

JNACC is a combined Defense Nuclear Agency (DNA) and Department of Energy central office for the exchange and maintenance of information regarding radiological assistance capabilities in connection with accidents involving nuclear weapons and other radioactive materials.

Most of this information is courtesy of US Government CDC. In times of an emergency, much of this material may not apply when it comes to specialized care and testing. These are guidelines to help you when that care is not available. Some of this information is very technical and difficult to understand, but hopefully someone will be available for help in treatment and understanding.

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