

JUST-IN-TIME: NUCLEAR DETONATION – 10 RULES FOR EMERGENCY RESPONDERS

Adapted by: Homeland Security Committee of the Health Physics Society - <http://hps.org/hsc/>

① **Duck & cover when you see a flash.** Stay down behind cover for at least two full minutes. Any type of cover could prevent serious burns and injuries from flying and falling debris such as broken glass. Keep eyes closed during the bright light to prevent blindness.

② **Go in. Stay in. Tune in.** Shelter-in-place by going underground or to the center of the middle floor of a nearby, stable large building. Minimize the time exposed to radiation (Rule 9). Maintain communications (Rule 5).

③ **Radioactive fallout** occurs soon after the detonation and it will fall and accumulate on the ground. The direction of the fallout plume spread is dependent on surface AND upper level winds. Generally, stay upwind especially if you can see the direction of the plume's movement. Fallout may or may not be visible on the ground. Radioactive fallout can be detected ONLY by using radiation monitoring instruments.

④ **Use the "Inverse" 7/10 Rule:** Fallout loses 90% of its radioactivity in the first 7 hours after a detonation and an additional 90% for every 7-fold increase in time. It is reduced: by 90% in the first seven hours; by 99% in 49 hours (two days); and, by 99.9% in 343 hours (two weeks)

⑤ **Maintain communications** with local, tribal, and state authorities and other response elements; provide a scene assessment for the regional situation assessment center (e.g., EOC). Report visible fallout and approximate radiation levels in the area and the times they were taken at regular intervals. Monitor the media including radio, TV, and the Internet.

⑥ **PPE for emergency responders.** External fallout contamination will collect on outer garments and exposed body parts. No PPE will protect responders from external gamma radiation. Although inhalation and ingestion are a secondary concern compared to external gamma radiation exposure, masks or improvised respiratory protection may be used during fallout plume passage, for smoke and dust, and for high indoor radiation levels.

⑦ **Contamination removal.** Most external contamination can be removed by taking off the outer layer of clothes, wiping exposed hair and skin areas, and/or by taking a shower.

⑧ **Fight fires.** The detonation will cause fires in the area where populations are sheltered; take actions to slow the spread of fire.

⑨ **Responders with radiation monitoring instruments** should initially shelter using these instruments to monitor shelter conditions and not exit the shelter if it requires entering a dangerous radiation zone (>10 R/hr) unless there is a time critical safety issue such as avoiding fire, a building collapse, or an evident lifesaving mission. Provided outdoor radiation levels are below 10R/hr, perform scene assessment of the immediate area for hazards. Stay close to shelter locations and closely monitor radiation levels and immediately shelter if radiation levels increase rapidly. Responders without radiation monitoring equipment should shelter as long as practical or until informed that they are not in the dangerous radiation zone (> 10 R/hr).

⑩ **Establish safe evacuation routes** from dangerous radiation zones (>10 R/hr) and identify evacuation priorities. Establish triage, decontamination, and casualty collection points outside of dangerous fallout zones (in areas <10mR/hr).