Terrorism Awareness: Weapons Of Mass Destruction: Part III, Radiological Weapons

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Abstract

This article written in 4 parts. It covers the fields of terrorism awareness and some of the weapons used by terrorists: chemical, biological, radiological and explosive weapons.

Part 1: Chemical Agents

Part 2: Biological Agents

Part 4: Explosives

RADIOLOGICAL AGENTS

With the Cold War over and supposedly all nations with nuclear weapons disbanding their arsenals, you would think the threat of a nuclear attack would be over. Is it? If you ask some they will say yes, but there are many others that will say NO.

The possibility of a nuclear bomb being detonated is very remote in the United States. However the threat of a small or moderate nuclear or radiological device being detonated is not so far fetched as you might think. The weapon could be in the presence of a small amount of radiological material or may have a large device in the presence of a nuclear power plant.

Radiological material in large quantities is somewhat hard to acquire. In small amounts it could be acquired from medical research facilities, industry, hospitals, power plants or hijacking some type of spent nuclear fuel. The purchasing of some quantities of radiological materials could also occur on the black market.

There are three main types of nuclear radiation emitted from radioactive materials; alpha, beta, and gamma radiation.

Alpha particles are the heaviest and most highly charged radiological particles. They quickly lose their energy and can only travel one to two inches in the air. With its limited penetration power, regular clothing (uniforms) or something as thin as a sheet of paper can usually stop it. Alpha particles present their highest hazard when ingested, by eating, drinking or inhalation. Its target organs are the kidneys, liver, lungs and bones.

Beta particles are smaller, and lose their energy more slowly than alpha particles. They travel approximately ten to fifteen feet in air and can be stopped by most metals, thick plastic, glass, wood and firefighter bunker gear. Beta particles present a hazard to the eyes and bare skin in high doses. When ingested, by eating, drinking or inhalation, it will cause damage to all internal organs. When they contact the skin, they penetrate it but not far enough to reach the vital organs, unless there is an open wound. If the body is exposed to large amounts or a small amount for a long period of time, the skin may be burned.

Gamma particles are pure electromagnetic energy. These particles can travel great distances and can penetrate most materials. This makes them the greatest nuclear threat to all living organisms. Lead or several feet of concrete usually can stop it.

Depending on the type of particles encountered, amount of and length of exposure to the radioactive particles, radiation

sickness can occur. Signs and symptoms of acute (short term / single dose) radiation sickness include but are not limited to; skin irritation, nausea and vomiting, high fever, different types of dermal burns and possible hair loss.

Roentgen (rem) is the unit of exposure to radiation. Mild radiation sickness will occur at an exposure rate of 200 rem. The lethal dose is around 450 to 500 rem.

OSHA CFR 10-835 OCCUPATIONAL RADIATION PROTECTION, FINAL RULE

- The Maximum recommended annual routine dose of radiation to a worker is 5000 Millirem (mrem) or 5 rem.
- The Maximum recommended dose for the emergency protection of property is 10,000 mrem or 10 rem.
- The Maximum recommended dose for the emergency rescue of a patient or to ensure public health is 25,000 mrem or 25 rem.

EXAMPLES OF EXPOSURE RATES:

- A Chest X-ray produces approximately 10 to 30 rem.
- A Flight from LA to Paris produces approximately or 4 to 5 rem.
- Smoking 1 1/2 packs of cigarettes per day produce approximately 8 rem.
- Mild Radiation Sickness will begin at approximately 200 rem.
- A Lethal dose of radiation is approximately 450 to 500 rem.

The age-old guidelines for radiation protection are still Time, Distance and Shielding. This is the best immediate method for protection of the responders and casualties.

- Time relates to the length of exposure, which directly relates to the dose received
- Distance relates to the distance you are from the source. The further away the less dose you may receive.
- Shielding relates to either the Personal Protective Equipment (PPE) or objects between you and the source.

Of course you must still take into account the type of particles being released. Is it Alpha, Beta or Gamma particles? Each poses its own type of hazards.

Radiation cannot be detected by our senses; we must rely on detection equipment. This equipment can give you the amount of absorption per unit of time or the total exposure dose.

The decontamination process is similar to that of any other. Wet the patient down, remove the clothing, flush the skin with Water, Soap and Water or 10:1 Water and Bleach, cover the patient, and with radioactive materials, YOU MUST CONTAIN THE RUN-OFF. Remember the patient's clothing and all personal articles are considered potentially contaminated evidence.

RESOURCES

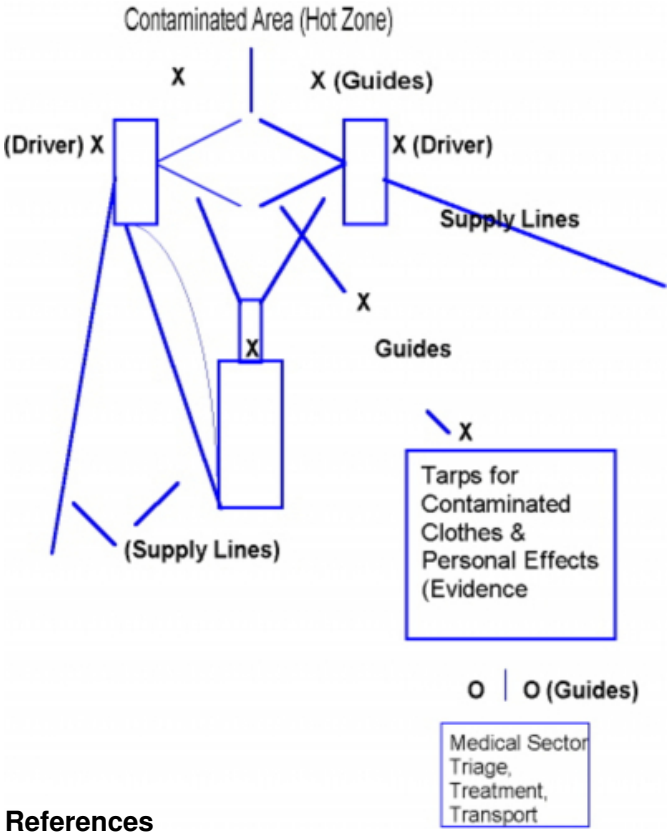
- United States Department of Justice
- Center for Domestic Preparedness
- Office of Justice Programs Manuals
- United States Department of Transportation (DOT)
- United States Environmental Protection Agency (EPA)
- State of Alabama
- Emergency Management Agency
- Anti-Terrorism
- Personal Security Planning Guide
- (Alabama Dept of Public Safety)
- (Alabama National Guard)
- (Georgia Emergency Management)
- (The Federal Bureau of Investigations)
- (The Federal Emergency Management Agency)
- Alabama Department of Environmental Management (ADEM)

- The National Fire Academy
- Emergency Response to Terrorism
- The Mobile Alabama Fire-Rescue Department
- Chemical, Biological and Radiological
- Incident Response Guide
- The History Channel Special Reports and Documentaries
- Journal of American Medical Association August 1997
- Southern Poverty Law Center (SPLC)
- Militia Task Force

APPENDIX

Figure 1

Mobile Fire-Rescue Department: Chemical, Biological, And Radiological Incident Response Guide.



References

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