

Firefighter Challenges in Terrorism

by Captain Andrew M. Trabanco (retired)

Editor's Note: A similar article on terrorism by Captain Trabanco appeared in the May 2003 issue of Fire Engineering. He has tailored each of the five terrorist scenarios to benefit FDNY members. The first scenario focused on the subway and appeared in the 4th/2003 issue of WNYF. The second scenario focused on a movie theater bombing and appeared in the 2nd/2004 issue of WNYF. The third scenario focused on the pipe bomb and appeared in the 3rd/2004 issue of WNYF. The fourth of these five scenarios follows.

Firefighting Challenge 4: The Dirty Bomb

An alarm is received at 4 a.m. for an explosion in front of a hospital on a major thoroughfare. The borough Communications Office (CO) sends a full first-alarm assignment of three Engines, two

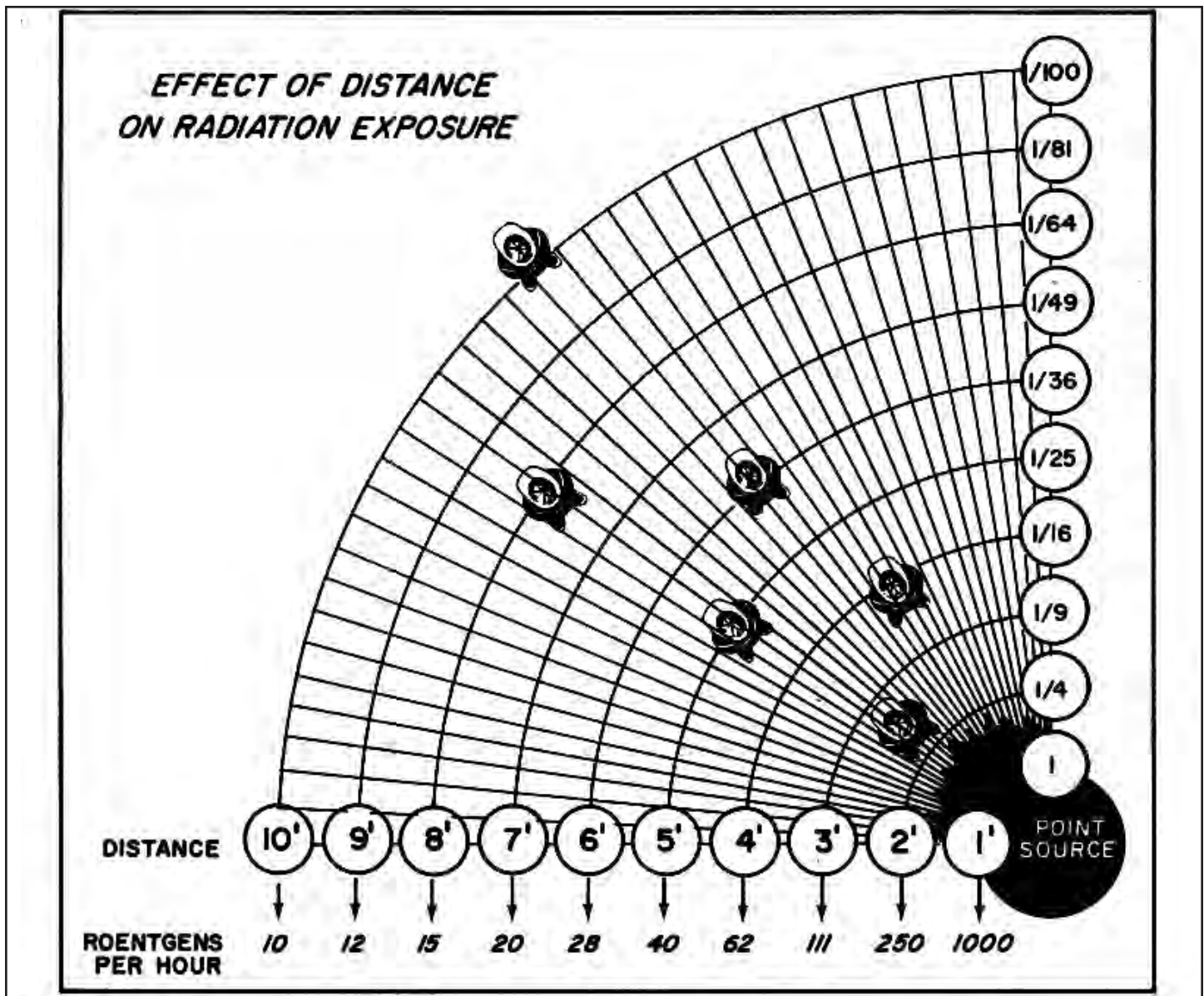
Ladders, one Rescue Company, one Squad Company and a Battalion Chief. Police on the scene confirm an explosion in front of the hospital, with light damage to surrounding structures. Some vehicles have broken windows and flat tires. No fires are burning. The police are victims because they've been exposed to the radiation.

Environment

The temperature is 85 degrees Fahrenheit. The wind is from the east, blowing at 10 mph.

Resources

The full first-alarm fire assignment, as described above, is responding to the Box. There is low fire activity at the time in the affected borough.



This chart shows the concept of the lessening of radiation intensity at various distances from a point source. It can be seen that there is a dramatic "fall off" in the rate of exposure as a person moves away from the source of radiation. Even a little distance from the source is very significant in increasing the safety factor. Conversely, as the distance is closed to the radiation source, the levels of radiation exposure go higher by the same mathematical process.

Tactical Objective

Protect Public (initially)

Option #1: Evacuation

Option #2: Defending in place

Firefighter response

The Chief suspects that this low-yield explosion could be a *dirty bomb*, a device used to put NBC

(nuclear, biological, chemical) agents into the air. The Chief asks the dispatcher to have units approach the scene from the east. The Haz-Mat Company also is requested to respond.

The Chief orders the Rescue, Squad and SOC Support Ladder Companies to be prepared to use their radiation monitoring equipment when they arrive. Company Officers instruct members to don the PD-3I-S dosimeters and turn on and check the Rad-50 detectors.

- On arrival, the Chief sets up his Command Post uphill, upwind and several hundred feet from the reported explosion.
- The Chief orders the Captain from the first-due Ladder Company to contact the hospital's building engineer and have him shut down all vents into the mechanical equipment room and all louvers and dampers serving the building.
- The Rescue Company immediately picks up radiation readings in its detectors.
- The Haz-Mat Officer has Company Officers circle the scene with Rad-50 detectors. A hot line is established with access to this area now denied to all first responders.
- The Haz-Mat Company, together with members of a Haz Tac Ambulance, are setting up a decontamination area away from the incident. Several police officers who have been exposed to radiation are taken to the decon area and gross decon is performed on them. The water is contained for recovery.
- The Chief asks the dispatcher to notify federal authorities. The Chief advises all members that there may be chemical and biological dispersion in addition to radiation.
- Additional police respond and search for other bombs.
- Hospital personnel check the inside of the hospital with radiation detectors. The radiation readings are negative.
- The Chief makes a judgment call not to evacuate the hospital at this time.

Points stressed

- Radiation monitoring should be done as a matter of course at low-yield explosions. The assumption should be that a low-yield explosion is meant to put NBC into the atmosphere.
- The Chief chose not to evacuate the hospital, but to *defend in place*, which is an alternative to evacuation in the hazardous materials protocol. As a precaution, whenever possible, relocate patients to sections of the building that are a safe distance away from the affected area.
- Officers responding to suspected NBC incidents should consider obtaining a weather report. Wind, humidity and temperature may affect strategy considerations and the outcome of operations.

Additional points to consider

- When the radiation present exceeds FDNY's action level of 1.000mR/hour, the Radaalert 50 will sound an alarm, alerting the

Defend In-Place Protection Considerations

- How long will release continue?
- Will existing shelters adequately protect their occupants?
- Is in-place protection more beneficial than evacuation?



Haz Tac Ambulances are the FDNY's EMS component to support the Haz-Mat Group with medical management resources. They support the entry team medically and also enter the Hot and Warm Zone to triage and treat civilians or Firefighters, especially in a WMD/CBRN incident. Currently, there are 22 Haz Tac Ambulances (12 Paramedic and 10 EMT units). All units are trained as Haz-Mat Medical Technicians, Level II, with 80 hours of training. Soon, there will be 35 Haz Tac units City-wide (20 ALS and 15 BLS). Members carry the following CPC equipment: Level A and Level B suits, 60-minute SCBA bottles, PAPRs (powered air-purifying respirators, which are battery-operated respirators) and a set-up to tap a hydrant with a reducer, a wand (a long-handled garden hose nozzle that allows the Firefighter performing decontamination to stand farther away from the patient to avoid back-splash), garden hose and soap to perform decon if other resources are unavailable. Haz Tac Ambulances are indistinguishable from other FDNY Ambulances; the equipment and training level of members identify them.

photo by FDNY Photo Unit

members. The Haz-Mat Officer, in consultation with the Department of Health representative, will advise the Incident Commander of the necessary decon procedures.

- Dirty bombs can be made from x-ray machines used in the construction industry. These devices use radiation to penetrate dense material used to test bridges, buildings and structures.
- Personnel should be rotated frequently to decrease exposure. Time, distance and shielding guidelines should be followed at all times.
- Biological agents may take days and even weeks to manifest themselves through symptoms. Federal response teams are available to deal with monitoring, detecting and mitigating a biological attack.

Historical perspective

The U.S. Navy uses exterior sprinklers and deluge nozzles to decontaminate its ships in an NBC attack. Water is a defense weapon readily available to the fire service.



Members are urged to read "Techniques of Radiological Protection," by Lieutenant Algert F. Krushnauckas, Fire Emergency Division, in the 3rd issue, 1970, of WNYF, and *Fire Tactics and Procedures*, Hazardous Materials 11, Operational Guidelines for Radaalert 50 Radiological Monitor.

About the Author...

Captain Andrew M. Trabanco (retired) is a 27-year veteran of the FDNY. His last FDNY assignment was Captain of Ladder 11. He is an FDNY instructor in terrorism response for the Department of Justice. He has written manuals for FDNY on Ladder Company operations and subway fires. He holds a BS degree in Fire Science from Empire State College. This is his fourth article for WNYF.

