The Boice Report #61

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After the Bomb—Who Responds?

Scary times. North Korea is going ballistic. "Fire and fury" sounds like the popular action movies ("Fast and Furious") and echoes President Harry Truman's statement after the Hiroshima bomb was dropped (and before the surrender terms were accepted): ". . . expect a rain of ruin from the air, the like of which has never been seen on this earth." Everyone wants a diplomatic solution. No one wants a nuclear exchange. But we all must prepare for the worst. We must have a radiological emergency response plan.

What should you do when you see the cloud? Get inside. Stay inside. Stay tuned. Don't clog the roads or go after your children or family or head for the hills. Getting and staying inside is called **"sheltering in place."** Always wait and listen for instructions from emergency and public health officials. Watch Robert Levin (Ventura County, California) discuss "Are We Prepared?"

Who is an emergency responder? He or she is a worker who responds to a radiological or nuclear incident. Most emergency workers have jobs that do not routinely expose them to radiation significantly greater than background levels. Emergency workers are not traditional radiation workers (i.e., those whose occupations involve exposure to radiation and who are part of an occupational radiation dose monitoring and protection program). First responders include firefighters, law enforcement, and emergency medical service providers. Early responders also include drivers and crews of vehicles used for evacuation and members of the public who participate as volunteers.

What National Council on Radiation Protection and Measurements (NCRP) guidance exists? Guidance on response to nuclear terrorism includes:

- Report No. 138, *Management of Terrorist Events Involving Radioactive Material* (2001).
- Commentary No. 19, *Key Elements of Preparing Emergency Responders for Nuclear and Radiological Terrorism* (2005).
- Report No. 161, *Management of Persons Contaminated With Radionuclides* (2008).
- Report No. 165, *Responding to the Aftermath of Radiological and Nuclear Terrorism: A Guide for Decision Makers* (2010).

The title of the 2017 NCRP Annual Meeting was "Assessment of National Efforts in Emergency Preparedness for Nuclear Terrorism: Is There a Need for Realignment to Close Remaining Gaps?" Video presentations are available.

The proceedings will be published in the *Health Physics* Journal and a commentary summarizing the decisions and discussions is being prepared. A summary of the meeting appeared in the April 2017 issue of *Health Physics News*.

What NCRP guidance is coming? NCRP Scientific Committee (SC) 3-1 has prepared a report on emergency response dosimetry that provides guidance on the accrual and control of radiation dose and focuses on the following questions: (1) With minimal dosimetry resources, how do responders make decisions to control the total dose and associated risk? (2) How are doses assigned to responders when not every responder is issued a dosimeter before exposure occurs? (3) What is the regulatory framework for responders who are not trained as radiation workers? This report stresses the importance of following the Incident Command System and the need to be prepared to collect and communicate dosimetry and other incident information to a wide range of audiences.

Why is dosimetry important? Radiological or nuclear terrorism can occur anywhere, at any time, and without warning. There is a critical lack of consistent guidance, standards, and regulations for managing dosimetry issues in the early phase of a radiological emergency. Dose assessment is needed for worker safety (the key issue), early protection of the public (issue appropriate protec-

tive actions), medical management (triage those you can treat, make comfortable those you can't), medical surveillance (for delayed effects in individuals), epidemiology (to study late-occurring health effects in populations), liability and compensation claims, and reassurance. Biodosimetry, a measure of biological response, is also of import. Inconsistencies and confusing guidance on dosimetric issues might result in public-safety agencies compromising their mission to save and sustain life in order to comply with legal dosimetry regulations.

Is Guam preparing for the unthinkable? Yes, Guam has recently released guidance to prepare residents for a North Korean nuclear strike. Guam's Office of Homeland Security has updated the informative fact sheet "In Case of Emergency–Preparing for an Imminent Missile Threat."

Does the United States conduct periodic exercises for emergency response? Yes, exercises are a key component of the National Preparedness System, which provides officials and stakeholders across the community with the opportunity to assess and validate capabilities, improve coordination, and identify areas for improvement. In April, for example, the Gotham Shield 2017 exercise was conducted. The exercise simulated a 10 kT improvised nuclear device (IND) detonating on the New Jersey side of the Lincoln Tunnel. Participants included operational program subject-matter experts in health and social services, housing, infrastructure systems, agriculture, and economic recovery; local, state, and federal authorities; and more.

The loss of two giants. Two of the world's leaders in radiation protection and science died recently. A. Everette James (78) was a world-class radiologist and a renaissance man. He authored over 540 scientific articles. Everette was a Vietnam veteran, Kentucky Colonel, and Tennessee Squire. He wrote 20 books on medicine, law, ethics, art, and folklore and was a popular novelist. He was consultant to the Smithsonian's National Zoo and traveled worldwide to study exotic animals, including to South American forests to x-ray tamarin monkeys! Jack Schull (95) was one of the world's great scientists and an expert on radiation genetics. Jack went to Hiroshima in 1949, and he and Jim Neel were credited with developing the genetics program at the Atomic Bomb Casualty Commission (now the Radiation Effects Research Foundation). Their work led to the surprising conclusion that no significant heritable effects of preconception radiation exposure could be detected among 70,000 children born to atomic bomb survivors. Jack was also a popular author: "Song Among the Ruins" was a lyrical account of his early experiences in Japan in the 1940s and 1950s. Both Everette and Jack were NCRP council members.

SC 3-1 on Emergency Response Dosimetry, New York City, 2015

Left to right: Jill Lipoti (NCRP council member), Steve Musolino (cochair, Brookhaven National Laboratory), Bill Irwin (Vermont Department of Health), Richard Schlueck (New York City Fire Department), Dave Schauer (International Commission on Radiation Units and Measurements), Adela Salame-Alfie (cochair, Centers for Disease Control and Prevention), Judith Bader (U.S. Department of Health and Human Services), Ruth McBurney (Conference of Radiation Control Program Directors), Helen Grogan (Cascade Scientific), Brooke Buddemeier (Lawrence Livermore National Laboratory), and Gregory Komp (U.S. Department of Defense). Not pictured: Daniel Blumenthal (National Nuclear Security Administration/U.S. Department of Energy), William Haley (consultant, Emergency Management Services International, Inc.), Gladys Klemic (U.S. Department of Homeland Security), Jeanine Prud'homme (New York City Department of Environmental Protection), Jessica Wieder (U.S. Environmental Protection Agency), and James Smith (staff consultant, Smith and Braselton)
Photo taken on New York City Fire Department Fireboat 343 courtesy of Dave Schauer