**John Mauro, PhD, CHP, Sr. Vice President, SC&A Inc**

**Commissioner of Radiation Protection for New Jersey**

Dr. Mauro holds a Ph.D. in Health Physics from New York University Medical Center/Institute of Environmental Medicine (1973), is certified by the American Board of Health Physics since 1976, in 2004 was appointed by the Governor of New Jersey as a Commissioner of Radiation Protection, is a member of the Conference of Radiation Control Program Directors, and was appointed by the National Institute and Science and Technology to the Community Resilience Panel. He also holds Patent No. US 10,031,060 B2 July 24, 2018. “Continuous, Real time Monitor for Airborne Depleted Uranium Particles in the Respiratory Range and Corresponding Method of Uuse.”

Dr. Mauro’s career, which spans over 40 years, has been dedicated to the protection of workers, members of the general public, and the environment from the potential harmful effects of ionizing radiation and radioactive materials in the workplace and the environment. One of his areas of specialization is emergency planning for radiological incidents, including nuclear power plant accidents, radioactive dispersal devices (RDDs), and improvised nuclear devices (INDs).

Dr. Mauro’s primary clients have been the Environmental Protection Agency, the Nuclear Regulatory Commission, the National Institute of Occupational Safety and Health, the Centers for Disease Control and Prevention, the Department of Energy, and the Republic of the Marshall Islands.

Last year Dr. Mauro attended a 3-day set of training courses given by the Office of Homeland Security (FEMA/National Preparedness Directorate) on radiological/Nuclear WMD Operations, nuclear awareness train-the-trainer, and radiation instrument operation and employment.

Of particular relevance to this project is the work he recently performed for the Radiation Studies Branch (RSB) of the Centers for Disease Control and Prevention (CDC). The work product, which was delivered in August 2019, is titled “Draft Report to the Radiation Studies Branch (RSB) on Matters Pertaining to Potential Internal Exposures to the Staff of Community Reception Centers (CRCs) Following the Detonation of an Improvised Nuclear Device (IND).” The work was initiated based some of the questions that emerged from the 2017 Operation Gotham Shield exercise conducted by the United States Federal Emergency Management Agency (FEMA), which tested civil defense response capabilities to a nuclear weapons attack against the New York metropolitan area.

Our work addressed the level of contamination of survivors of a ground-level burst of a 10-kiloton (kt) nuclear detonation in an urban setting and the need for respiratory protection for personnel who staff Community Reception Centers (CRCs) following such incidents.  In order to address this issue, the output of HotSpot was coupled to the surface contamination levels provided in the “Hicks tables.” Hicks tables were originally developed for virtually every nuclear test performed at the Nevada Test Site. They were developed so that field teams could go downwind from a test (typically many miles) and take radiation survey readings using hand-held survey meters that read out in milliroentgen per hour (mR/hr). Given knowledge of (1) the mR/hr reading at a given location and (2) the time after the detonation, the Hicks tables provide the radionuclide concentration levels in the fallout deposited on the ground from the passing plume. Hence, by combining HotSpot, which provides dose rate as a function of distance downwind from a detonation (mrem/hr), with appropriately selected Hicks tables, we estimated the contamination levels (microcuries per square meter (µCi/m2)) deposited on soil and on survivors located outdoors for virtually every fallout radionuclide at any time and location downwind from a detonation.

Using existing guidance provided primarily by the EPA, we developed triage criteria for individuals who required relocation for definitive medical intervention and those that can be sent to a Community Reception Center (CRC). For those survivors who were sent to a CRC, we evaluated the potential internal exposures of CRC personnel located in the CRC reception center and had the potential to experience internal exposure to fallout radionuclides that might slough off the survivors. We developed a list of the radionuclides that had the greatest potential to result in internal exposure to CRC personnel assuming that the survivors entered the CRC 24 hours after the incident and the CRC staff served a 12-hour shift. We also developed a chart that relates the output of hand-held survey meters, expressed in units of mR/hr, to the internal effective dose commitment of CRC personnel manning the reception area of the CRC for 12 hours (mem).

Dr. Mauro had previously performed similar studies for the RSB for a Radiological Dispersal Device (RDD) and supported the EPA in the development of Protective Action Guides (PAGs), including the recently revised manual of protective action guides for water. His prior experience included the preparation of emergency plans and implementing procedures for nuclear utilities and reconstructing the external and internal exposures of workers seeking compensation under Energy Employee Occupational Illness Compensation Program Act (EEOIPCA). The latter involved collecting internal and external radiation exposures experienced by workers at the nuclear weapons complex and Atomic Weapons Employees (AWEs), derive the exposures experienced by these workers, and then derive the probability that the radiation exposure were more likely than not the cause of the cancers experienced by the workers.