***Opening remarks for NDIA Qtrly Forum RAD NUC Defense 10 April 2024***

The WMD National Security threats and consequences such as those posed from nuclear or radiological events remain as real today as at any time since the advent of nuclear weapons. For that reason we, forums such as NDIA, have started a series of forums to address the most challenging threats and concerns. We last held this forum addressing Radiological and Nuclear defense this threat on 21 March 2021. The employment of a nuclear weapon would have devasting effects that include blast, thermal, electromagnetic pulse, and radiological fallout. We have seen that radiological hazards can also result from natural disasters that damage nuclear power plants, such as the Fukushima Daiichi contamination following the 2011 tsunami in Japan or its predecessor Chernobyl in the former Soviet Union current day Ukraine. While blast and thermal effects are immediate challenges, perhaps the greatest military and civil operational challenges of a radiological or nuclear event are identifying radiological hazards, monitoring potential exposure, and diagnosing and treating radiation injuries and exposures. As radiation exposure comes in many forms, including external and internal exposure to radioactive isotopes (either deposited on the skin externally or internally through inhalation or ingestion), or from external exposure to ionizing radiation energy alone, one of the most essential elements of mass casualty management is diagnosis and triage of radiation injury. As radiation is essentially invisible to the naked eye, a large population of “worried well” are expected to overwhelm existing medical resources. These “worried well” are those persons in the affected population who do not have other physical injuries but are concerned to the point of incapacitation about whether they have received a radiation exposure. There is much to be done to improve radiological defense capabilities and the efforts require a collaborative effort between industry and government. Defining requirements provides the direction for where capabilities can be improved, but consistent centralized management and resourcing is critical to deliver solutions and sustain the unique elements of the industrial base associated with this mission area. Capabilities and solutions must include medical and non-medical aspects and ultimately lead to more timely decisions to protect personnel and accomplish the mission.

Since the events of 9/11, comprehensive emergency planning and preparedness guidelines for management of a radiological or nuclear event in the United States have been developed at the Federal level. Federal guidelines for emergency response have been developed, such as “Planning Guidance for Response to a Nuclear Detonation,” “Key Response Planning Factors for the Aftermath of Nuclear Terrorism” and the Department of Homeland Security’s “Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans” and “Radiological Dispersal Device (RDD) Response Guidance: Planning for the First 100 Minutes. There are also web-based resources now available from the Centers for Disease Control and Prevention (CDC) and the Radiation Emergency Medical Management (REMM) portal managed by the Department of Health and Human Services (HHS), which provide “just in time” information for management of radiation injury. These efforts include protective action recommendations, proposed systems for mass casualty management and triage, development and licensure of new medical countermeasures, and comprehensive playbooks to guide emergency response. Military and Civil defense capabilities to respond to radiological and nuclear threats has greatly advanced at both the federal, state, and local level over the last several decades as demonstrated via post Nunn-Lugar-Domenici Act Domestic Preparedness Program training, exercises, and focused assessments. However, these advancements have not kept pace with the evolving threat and operational environments. Effective response requires enhanced detection, identification, and protection technologies; dramatically improved medical countermeasures; along with repetitive training, education and exercises to ensure that local, state, and federal organizations have the capabilities and proficiency to mitigate the effects of a radiological or nuclear incident.

To promote increased awareness about the radiological and nuclear capabilities required for the Joint Force to effectively operate against this threat and stimulate collaboration across government and industry to deliver improved capabilities, NDIA’s CBRN Division proudly sponsored a Radiological and Nuclear passive defense workshop on 24 Mar 2021 just as we are doing with this forum today.

The workshop then and what I hope we highlight today that radiological and nuclear passive defense technologies are required to maintain a competitive security and defensive advantage in the current and anticipated global competitive environment and also to effectively respond to accidental release of radiological material such as was seen during response to the nuclear accident at Fukushima Daiichi. These same capabilities would be used to respond to a nuclear event in the U.S. homeland. However, contrary to many assumptions, new technologies exist to improve the Joint warfighter’s ability to survive and operate in a radiological contaminated environment and work is being done to improve and enhance existing legacy capabilities.

Several themes emerged from the workshop and were woven throughout. The first was the need to modernize and improve upon existing capabilities within U.S. DoD. Capability improvements depend on our ability to capture and validate requirements that drive change. These requirements are foundational in guiding the identification of new technologies or focusing the engineering enhancements for proven technologies to improve radiological detection, monitoring, and identification. An added benefit of well-defined requirements is that they facilitate dialogue between DoD developers, users, and industry to ensure timely, cost effective and sustainable modernization of radiological defense capabilities. Exercising realistic and demanding radiological effects into training events increases organizational readiness and provides an excellent source of information to define new requirements to improve capabilities.

Another key theme was the value of centralized advocacy and resourcing to ensure compatibility across the joint force where missions are similar; as is the case with chemical, biological, and radiological events. Without a consistent advocate, funding profiles fluctuate and increase the time and cost to deliver new solutions to the warfighters and disincentives industry to invest in this area, leading to a weak industrial base and supply chain. Additionally, centralization facilitates partnerships with other Federal agencies that increase compatibility, reduce costs, and foster collaboration to find the best solutions. Even civilian nuclear safety operations provide opportunities to collaborate.

The workshop also highlighted that advances in communications and decision support technologies provide a great opportunity to increase understanding of a radiological hazard sooner. Faster and more effective decision making could prevent loss of life or equipment, and even avoid long term health effects. Advanced technologies such as data analytics and cloud-based computation is being leveraged to improve integrated early warning and enhanced decision making for chemical and biological threats and should also be required to account for radiological effects.

The workshop did not focus on radiological health effects, but the discussions did highlight that medical countermeasures are a critical component of rad / nuc defensive capabilities since physical protection options are limited. It also highlighted that there are valuable lessons learned that can be applied from the occupational and public health communities and the US COVID mitigation response that can be applied to improve our rad / nuc defense capabilities to protect and treat individuals.

In summary, there is much left to be done to improve radiological defense capabilities and the efforts require a collaborative effort between industry and government. Defining requirements provides the direction for where capabilities can be improved, but consistent centralized management and resourcing is critical to deliver solutions and sustain the unique elements of the industrial base associated with this mission area. Capabilities and solutions must include medical and non-medical aspects and ultimately lead to more timely decisions to protect personnel and accomplish the mission.

“To speed military technology and reduce lead times I suggest the following simple reforms; in order of importance:  
  
“First: Make power coincide with competence; recognize that ‘pure’ administrative capability alone does not fit a man to direct complex technical work performed by highly trained professionals; that even a technically trained manager needs time to familiarize himself with the work; short assignments must therefore be avoided.  
  
“Second: Make power coincide with responsibilities; hold men all along the line responsible for the directions they give; keep managers of technical projects in office long enough so they can be judged by their success or failure.  
  
“Third: Recognize that routines do not give rise to new ideas and technical developments; therefore creative workers should be freed from unnecessary routines; recognize that such freedom is essential if they are to do their work and does not constitute a pampering of eggheads.  
  
“Fourth: Change the administrative structure to permit technical experts the right to their own professional judgement; unless this professional right is preserved, such men are degraded to the status of mere technicians and technicians will not win us the race with the Russians.  
  
“Above all, in this period of danger to our country, let not devotion to the “ways of the organization” hold back capable professional men with creative ability. Superior intellect is essential to all organizations, none more than to a democratic [state]”  
  
ADM H.G. Rickover, “Intellect in Democracy,” Anniversary Dinner of the American Nobel Anniversary Committee, Waldorf Astoria, New York City, January 8, 1961.