

NACCHO/RITN Gap Analysis: Understanding the Shortfalls within Radiation Preparedness



Introduction:

If a large-scale radiation emergency were to occur in the United States, it would be critical to have effective coordination between the public health and healthcare communities in order to adequately manage the increased demand for radiation healthcare-related services from populations in impacted areas. Though many local health departments (LHDs) have developed radiation preparedness plans, there are still significant gaps with respect to coordination with healthcare partners as well as the inclusion of Radiation Injury Treatment Network (RITN) components into LHD preparedness efforts. In order to address radiation preparedness gaps at the local level, a solid understanding of what the gaps are and why they occur first must be established.

Project Goals and Objectives:

For the 2017-2018 project year, the National Association of County and City Health Officials (NACCHO) partnered with RITN to identify and understand the gaps that exist in public health, health care, and radiation control regarding outreach, training, and programmatic activities, and in turn create recommendations to address identified gaps.

Project Activities:

In order to reach this goal, NACCHO and RITN convened a subset of key stakeholders in public health, health care, and radiation control who met regularly to discuss existing plans and strategies, in addition to identifying inconsistencies and shortfalls with existing programs. The information and feedback obtained from this group helped to inform and guide the discussion for an in-person workshop, held at the 2018 NACCHO Preparedness Summit. This in-person workshop consisted of those from the smaller working group and other stakeholders whom worked in public health, health care, and/or radiation control and focused on creating recommendations and ways to address the gaps. The feedback from this event helped to inform this gap-analysis document, which will later be used by both RITN and NACCHO to address the inconsistencies and shortfalls highlighted through training opportunities, technical assistance, and advocating for changes on a federal level regarding radiation preparedness.

Current State of Public Health Radiation Preparedness Programs:

In the event of a nuclear/radiological emergency, public health can play a significant role in the response efforts, including: making shelter-in-place/evacuation recommendations, establishing shelters, identifying exposed and contaminated persons, setting up community reception centers for population monitoring, conducting and assisting with decontamination, conducting environmental sampling, and providing information to medical

providers and the public¹. A subset of local health departments preparedness coordinators was surveyed and asked what priority radiation preparedness was given at the local level, more than 50% answered “low or minor” or “very low or none.”² When asked reasons why this was given a low priority, many local health departments responded that there were very Limited Resources, Radiation Risk is not high on their Hazard Vulnerability Assessment, there is little guidance, and/or the funding is not allocated for radiation preparedness³. For those local preparedness coordinators who work on radiation preparedness, the top radiation priority areas include: distributing medical countermeasures, supporting mass care operations, providing information to the public, and conducting population monitoring⁴. The same group of local health departments were asked how prepared they were in the event of an accidental nuclear/radiation release and more than 50% responded that they felt “slightly prepared” or “not at all prepared.” When asked what types of plans they have in place, 17% responded that they did not have any type of plan in place, and only 8% responded that they had plans that were coordinated with RITN.⁵ Due to the lack of prioritization of radiation preparedness and lack of preparedness for a nuclear/radiation event, it is more important than ever to seek to understand where the gaps exist and how to address them in order to improve radiation preparedness at the local level and beyond.

Programmatic Activity Planning, Outreach, and Training Gaps and Their Root Causes

Based on previous studies conducted by NACCHO and ASTHO, it was determined that the largest gaps existed in planning programmatic activities, outreach, and training, which was validated by the both the working group and the workshop attendees.

Difficulties with Planning Programmatic Activities:

Both groups discussed the difficulties related to planning programmatic activities, outreach, and training. The working group, which consisted of subset of key stakeholders in public health, health care, and radiation control, met virtually to discuss the difficulties associated with planning. Among their concerns:

- a limited understanding of public health and healthcare roles as it is related to radiation preparedness,
- partners only consider power plant scenario,
- high partner contact turnover and low local level partner interest,
- difficulty recruiting volunteers,
- continuity is not built into initial planning efforts, and
- political/leadership resistance.

The stakeholders whom attended the in-person workshop echoed some of these statements, but also expressed additional difficulties including:

- the lack of clarity in the guidance causes gaps regarding planning,
- the lack of capabilities in rural areas where radiation is not high on the hazard assessment,
- the lack of communication with federal agencies, laboratories, or other agencies, and
- the use of “old” equipment, which may not be calibrated.

Some stakeholders also expressed the need for additional guidance regarding all-hazards planning, and guidance detailing local public health’s role in non-Radiological Emergency Preparedness (REP) responses.

¹Population Monitoring in Radiation Emergencies: A Guide for State and Local Public Health Planners. (2014). Retrieved from <https://emergency.cdc.gov/radiation/pdf/population-monitoring-guide.pdf>

² Puerini, R., Misner, H., Smith, T., & Case, C. (2016). A Summary of National Radiation Preparedness Awareness and Activities.

³ Mills, C., Beattie, L., Rose, P. & Case, C. (2015). A Summary of Radiation Emergency Preparedness in the 50 mile EPZ surrounding Nuclear Power Plants

⁴ Puerini, R., Biesiadecki, L. (2017). A Mixed-Methods Approach to Understanding Radiation Preparedness within Local Health Departments

⁵ 2016 NACCHO Preparedness Profile Assessment

Difficulties with Outreach:

During the in-person workshop it was apparent that attendees knew which partners were important to engage with for radiation preparedness planning, but not everyone was clear on what roles each partner would play in the planning process. When asked what barriers were present that made outreach difficult specific to public health radiation preparedness efforts, attendees of the working group and the in-person workshop agreed that:

- it is hard to get everyone in the room,
- there is not a clear understanding of who should call who in a radiation situation,
- the complexity of radiation emergencies overall,
- silos and/or competition between organizations,
- lack of knowledge and/or training, and
- local health departments are not always included in RITN hospital drills.

Difficulties with Training:

Stakeholders of the working group and the in-person meeting were asked about what training resources exist currently for public health staff regarding public health and what training topics have yet to be developed or are missing. Attendees were able to mention a variety of resources and trainings currently available. In regards to what is missing, they expressed the need for:

- Community Reception Center (CRC) plan templates that discuss how to create and train people on CRCs, in addition to training on dose assessment;
- radiation resources for addressing those with access and functional needs (e.g. factsheet or toolkit), and
- resources related to radiation medical countermeasure distribution

Root Causes of Gaps:

The goal of this project was to identify the gaps that existed in radiation preparedness, but in order to obtain a better understanding of these gaps it was important to try and determine the root causes of these gaps. The stakeholders that attended the in-person workshop were challenged to think through the difficulties they expressed regarding planning, outreach and partnerships, and training, and determine the overarching root causes of these existing gaps. Attendees came up with various root causes which were then grouped into five concise root cause themes:

1. Lack of Radiation Awareness Campaign
 - Need for regular radiation drills
 - Public communication
 - Fear of radiation
2. Lack of Perceived Risk & Consequences
 - Radiation is a low likelihood event; low priority with limited funding
 - Limited knowledge due to lack of real world response
 - “Never going to happen”
 - Education and training does not always impact willingness
3. Organizational Silos
 - Not working across disciplines
 - Ego (not working across agencies)
 - Defined roles and responsibilities
 - Lack of common language
 - Concept of operations discrepancies between local, state and the federal responsibilities

4. Competing Priorities
 - Need for guidance from federal agencies
 - Lack of sustainability of training and planning
 - Limited Time
 - Limited Staff
5. Funding

Discussion:

Recommendations and Strategies:

In an effort to address the gaps that were presented, the stakeholders at the in-person meeting were asked for recommendations and strategies that could contribute to programmatic activities, outreach efforts, and trainings in the future. Stakeholders openly discussed the importance of raising awareness among the general public but also among healthcare providers, government officials and partners. Often, much of the general public are unaware or misinformed about radiation and the effects of it, which in turn causes public fear. It was also noted by stakeholders that there are healthcare providers who shared a lot of the same fears regarding radiation. The existing fear and lack of education highlights the need for a more concerted effort to occur that aims to inform the public and providers.

Stakeholders expressed that while many of their organizations conduct annual drills and trainings, there is still a need for more training and better resources. Training and drills/exercises should be consistent and happen concurrently with the increased efforts to raise awareness. Some stated that they have old equipment, and the current materials and resources lacked clarity, which left staff feeling ill-prepared and unsure of the roles they should play in the event of a radiation emergency. Regarding drill/exercises, many discussed their difficulty with getting all of their partners (federal, state, and local) to the planning table. Understanding the importance of an all-hazards approach, and in an effort to understand the role each agency should play in order to best protect the public, it is more important than ever that all responding agencies conduct drills/exercises together. Despite working together towards raising awareness and increasing training and drills, stakeholders all expressed the need for organizations that can advocate on their behalf to continue and amplify their efforts to change policies and in turn increase funding for radiation preparedness work.

The stakeholders provided a lot of great recommendations that address some of the root causes of the existing gaps. (*To see the individual recommendations, see Appendix*) Some of the recommendations from the stakeholders included collaborating with other organizations or government agencies to create a day centered around radiation preparedness to raise awareness; educating and training health providers on the health risks associated with radiation; cross training and collaboration with other departments or organizations to remove existing silos; and working with state, local and federal government agencies to prioritize radiation preparedness through policy change and increased funding.

NACCHO worked to create some actionable strategies based on priority of the previously stated recommendations and feedback received from stakeholders.

1. Collaborate with Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), Centers for Disease Control and Prevention (CDC), state, and local government to create and promote an Annual National Radiation Preparedness Day. This day could include a nationwide radiation drill and other events that will educate and increase the awareness around radiation for the general public. This annual event can help the public to feel more secure and increase their confidence in the state, local, and federal

governments' ability to respond and protect the public in the event of a radiation emergency.

- Due to the known fears of radiation caused by a lack of awareness, an alternate strategy to raise awareness can include slowly integrating radiation into daily work and regular drills/exercises. This could include the creation of a "CERT Training Day," which focuses on training individuals to respond during an emergency, but being sure incorporate radiological emergencies into the training.
 - As the goal to develop an Annual Radiation Preparedness Day will be a long process, NACCHO can convene stakeholders from radiation preparedness and public health to discuss the steps required to plan this type of annual event. The stakeholders can be convened during the Preparedness Summit or the National Alliance for Radiation Readiness (NARR) Meeting, which will allow both time and opportunity to discuss how the event will happen, the timeline, and how to get federal agencies involved.
 - In addition to the alternate strategies previously mentioned, NACCHO in collaboration with RITN can develop a Radiation Preparedness Day Toolkit. This toolkit will be designed for local health departments who want to develop an annual awareness day in their jurisdiction. The toolkit can include resources on marketing, social media recommendations, guidance, and recommendations on how to integrate hospitals.
2. NACCHO, in collaboration with federal agencies and/or state and local agencies, should create more templates and training materials/resources that can be used to train staff in the health department and health providers at local hospitals. Training materials should be sure to detail the role that public health plays in the event of a radiation emergency.
 3. State and Local organizations and government agencies, such as FEMA, DHS, CDC, local law enforcement, emergency medical services (EMS), Fire, hospitals, health departments, etc. need to work together to coordinate mutual radiation exercises. These exercises should include many partners in order to understand the roles each play during a response and to remove the silos in order to have a more collaborative and concerted effort in the event of a radiation event.
 4. State and Local Health Department should collaborate with non-governmental organizations (NGOs) who can advocate and raise awareness for policy change that prioritizes radiation preparedness and increases funding for state and local health departments.

Key Challenges:

As previously discussed, difficulties such as a lack of communication amongst agencies, lack of training/knowledge, competing priorities, increasing requirements with sustained or reduced funding, lack of sustained long-term planning efforts, and lack of understanding regarding the role each agency plays during a radiation event, will contribute to the challenges that will arise when attempting to execute the recommendations and strategies mentioned above. As an example, in Ventura County, when creating the public information campaign, there was fear about radiation and how the public would react to a campaign regarding radiation emergencies. Despite these challenges and difficulties, the campaign was highly successful due to consistent communication and collaboration with agencies (i.e. hospitals, public health, federal government, and EMS). Through similar efforts of communication and collaboration, health departments can help to ensure buy in and assuage existing fears related to radiation when attempting the strategies and recommendation listed. It is important to note that this effort was also not without challenges. Gaining leadership support to continue the public information campaign after the initial push was a challenge as other topics became a priority and staff capacity was limited to continue at the same level of effort.

Developing new strategies and resources to overcome similar challenges will be critical to the effort's long-term success and sustainment.

Promising Practices:

A valuable resource when creating plans for radiological and nuclear events is the use of stories from the field where plans have been implemented and proven to be best or promising practices. The stories of real life application provide knowledge and evidence of what works in regards to programmatic planning, outreach, and partnerships. Despite the data showing that radiation emergency planning is low priority for many health entities, the workgroup, consisting of stakeholders from public health, health care, and radiation control, were able to provide some great examples of best/promising practices they have implemented in the fields of healthcare, public health, and radiation control.

Healthcare Promising Practices:

- **Spectrum Health – Consistent staff training and education.** Spectrum Health performs annual exercises, and agreed to perform at least one RITN based tabletop every six months. Utilizing the local Emergency Preparedness team as subject matter experts, the RITN exercises have been proven to increase staff knowledge on National Disaster Medical System (NDMS) protocol, as well as increase community involvement. This promising practice allows for RITN concepts to remain at the forefront of the organization.
- **University of Iowa Hospitals and Clinics (UIHC) – Established partnerships with RITN, NDMS, and power plants to plan full scale exercise.** Due to the proximity to power plants, UIHC is the designated treatment center (per Memorandum of Understanding (MOU)) for NextEra Energy. UIHC participates in FEMA-evaluated patient decontamination drills as they could receive patients from a plant and would have to manage acute radiation decontamination. UIHC also participates in annual nuclear emergency evacuation/reception center drills with about 40,000 evacuees. This promising practice was found to improve community response, and enhance preparedness training and equipment.
- **Children's Mercy Pediatric Health System – Coordinated a Regional Health Care Coalition.** The coalition consists of representatives from hospitals, EMS, Public Health, State/Local/Federal EM, Law Enforcement, and Fatality Management, who met and exercised regularly. Through these meetings, the coalition was able to improve communication amongst their agencies which has allowed for an all-hazards approach which benefits radiation responses. Additional education and training that has been done through the coalition included the medical staff and bone marrow transplant staff.

Local Public Health Promising Practices:

- **Ventura County, CA – Created a public information campaign to communicate with the public to prepare them to respond to nearby nuclear event.** Ventura County's campaign included town hall meetings, curriculum plans for teachers, pocket sized guides, and a [website](#) with more information and educational videos. The goal of the campaign was to disseminate information to the public that would familiarize the phrase "Get inside, stay inside, stay tuned."
- **Callaway County, MO – Established positive partnerships federal agencies, organizations, and other state and local agencies to plan for radiation events.** Through trainings provided by the Missouri Department of Health and Senior Services, FEMA, Nuclear Regulatory Commission (NRC), and the Radiation Response Volunteer Corps, partners such as Local Police, Fire, Emergency Medical Dispatchers (EMDs), Emergency Medical Associates (EMAs),

Non-Governmental Organizations (NGOs) and community partners have continually increased their knowledge regarding the responsibilities of their respective agencies. By establishing these partnerships, Callaway County Health Department can effectively stand up a Decontamination/Reception Center within a short period of time to receive patients.

Local Radiation Control Promising Practices:

- **Kansas Department of Health and Environment (KDHE), KS – Created local Radiation Response Volunteer Corps (RRVC).** Recruited and trained radiation professionals (includes industrial radiation professionals, but majority are medical radiation professionals) in population monitoring, decontamination and risk communication. The RRVC was tested through a large scale national exercise, Amber Waves, which was based on a Radiological Dispersal Device (RDD) detonation. RRVC proved to be a huge asset for local health departments specifically for staffing during CRC operations. KDHE worked to create Standard Operating Procedures (SOPs) for CRCs, templates for planning purposes that are available for local health departments and local emergency managers to adopt for local CRC plans.

Tools:

When going through the process of building plans and best practices for radiation preparedness, the utilization guidance documents, templates, tools, partners, etc. can all be a valuable asset. Stakeholders in the working group described some of the resources that assisted them with building their promising practices. Their responses included using:

- [RITN website](#), which has many tools such as sample tabletop exercises (TTX), software for predicting fallout patterns and exposure;
- [Centers for Disease Control and Prevention \(CDC\) website](#), which also has many resources such as the virtual CRC tool, and CRC toolkit;
- Conference of Radiation Control Program Directors ([CRCPD](#));
- National Oceanic and Atmospheric Administration's ([NOAA](#)) National Weather Service who assisted with predicting wind patterns;
- Consultants from the Federal Emergency Management Agency ([FEMA](#)); and
- Local radiation control programs and power plants.

Attendees from the in-person workshop also expressed that the Radiation Emergency Medical Management ([REMM](#)) website, Medical Reserve Corps (MRC) listservs, and [NACCHO Radiation Toolkit](#) were all valuable resources when building radiation preparedness plans.

Next Steps

The in-person workshop proved to very beneficial in allowing stakeholders to think through the process of radiation preparedness regarding planning, outreach and partnerships, and training as well as the gaps that currently exist. Using this information will inform the creation of recommendations that would best address these gaps. The information and feedback obtained from the stakeholders will be used by both RITN and NACCHO to address the inconsistencies and shortfalls discussed and highlighted through training opportunities, technical assistance, and advocating for changes on a federal level regarding radiation preparedness.

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NACCHO would like to acknowledge the stakeholders of the working group and those who attended the in-person meeting for their insight and contributions in the field of radiation preparedness.

Appendix:

The table below includes the individual recommendations and the root causes of gaps that aligned to recommendations as provided by the stakeholders during the in-person workshop. The table has been formatted to include a number indicating the priority, the levels of agencies involved, and whether the recommendation most aligned to programmatic planning, outreach or training.

Stakeholder Recommendations from In-Person Workshop				
Priority	Recommendation	Root Cause	Level	Programmatic Planning, Outreach, or Training
1	Coordinate an Annual National Radiation Preparedness Day	<ul style="list-style-type: none"> Lack of Radiation Awareness Campaign Lack of Perceived Risk & Conscience 	All Levels	Programmatic Planning
1	Create a Risk Communication Package/Campaign	<ul style="list-style-type: none"> Lack of Perceived Risk & Conscience 	State/Local Level	Programmatic Planning
1	Increase awareness of real/potential radiation events	<ul style="list-style-type: none"> Lack of Radiation Awareness Campaign Lack of Perceived Risk & Conscience 	All Levels	Programmatic Planning
2	Find common skill sets, then add/escalate skills to include radiological events	<ul style="list-style-type: none"> Organizational Silos Competing Priorities 	All Levels	Programmatic Planning
2	Encourage mutual exercises	<ul style="list-style-type: none"> Organizational Silos Competing Priorities 	All Levels	Programmatic Planning
2	Define Response Roles	<ul style="list-style-type: none"> Organizational Silos 	Local Level	Training
2	Coordinate radiation focused trainings and exercises	<ul style="list-style-type: none"> Organizational Silos Competing Priorities 	All Levels	Training
2	Cross training across disciplines	<ul style="list-style-type: none"> Organizational Silos Competing Priorities 	All Levels	Training
2	Need more public health templates	<ul style="list-style-type: none"> Competing Priorities 	State/Local Level	Training
2	Educate Healthcare Providers on health risks associated with radiation	<ul style="list-style-type: none"> Lack of Perceived Risk & Conscience 	National and State/Local Levels	Training
2	Need for resources to train and explain risks to providers	<ul style="list-style-type: none"> Competing Priorities Funding 	State/Local Level	Training
3	Public outreach campaign	<ul style="list-style-type: none"> Lack of Perceived Risk & Conscience 	All Levels	Outreach
3	Coordinate stakeholder meeting to address the silos that exist	<ul style="list-style-type: none"> Organizational Silos 	All Levels	Outreach
4	Encourage political lobbying to increase perceived risks	<ul style="list-style-type: none"> Lack of Perceived Risk & Conscience 	State/Local Level	Outreach
4	Build in requirements that make radiation a priority	<ul style="list-style-type: none"> Lack of Perceived Risk & Conscience Competing Priorities 	Federal/National Level	Outreach
4	Advocate for policy change	<ul style="list-style-type: none"> Funding 	Federal/National Level	Outreach
4	Increase Funding	<ul style="list-style-type: none"> Funding 	Federal and State Level	Outreach