

Guide to Incorporating Electronic Resources in Population Monitoring Planning



About NACCHO's Radiation Preparedness Program

The National Association of County and City Health Officials (NACCHO), with support from the Radiation Studies Section at the Centers for Disease Control and Prevention (CDC), helps to ensure that local health departments (LHDs) are connected to the most up-to-date and relevant radiation preparedness resources and information. Over the course of 2016–2018, NACCHO conducted a variety of research activities on data management systems for radiation population monitoring and assisted LHDs with implementing newly developed electronic population monitoring data management systems as part of preparedness planning and exercise activities.

This guide highlights practices and resources to help state and local health departments incorporate electronic population monitoring data management systems into their radiation preparedness planning and exercises.

Overview

As part of their public health preparedness efforts, many health departments across the country are preparing for radiation emergencies. Radiological emergencies can be caused by transportation accidents, nuclear power plant accidents, explosive radiological dispersal devices (dirty bombs), radiation exposure devices, and improvised nuclear devices (INDs). To prepare for these types of events, health departments are working with partners in their communities to define the public health role in response efforts and develop radiation population monitoring plans. Population monitoring is the process of identifying, screening, and monitoring people for exposure to radiation or contamination with radioactive materials. To conduct population monitoring, jurisdictions often stand up sites known as community reception centers (CRCs). As part of population monitoring, jurisdictions collect a variety of individual-level data on each person that is processed at a CRC including contact and demographic information, radiation contamination information, and referral information. Jurisdictions may use paper-based and/or electronic systems to collect, manage, store, and utilize population monitoring data. From 2017–2018, both the CRC eTool and the RadResponder Population Monitoring Module were released to help jurisdictions with population monitoring data management. Table 1 describes general characteristics of each tool.



Population monitoring is the process of identifying, screening, and monitoring people for exposure to radiation or contamination with radioactive materials.

TABLE 1. CRC eTOOL AND THE RADRESPONDER POPULATION MONITORING MODULE FEATURES

Features	CRC eTool	RadResponder
Developer	CDC Health Studies Branch	Chainbridge Technologies, in collaboration FEMA, Department of Energy's National Nuclear Security Administration, and the Environmental Protection Agency
Intended uses	The CRC eTool can be used to collect, analyze, visualize, and transfer radiation population monitoring data collected from CRCs. The CRC eTool is designed to capture individual-level records from each CRC visitor.	RadResponder is an electronic data management system that is primarily used for environmental radiological data management and visualization. The population monitoring module allows for the management and visualization of aggregate population monitoring data and CRC facility data.
Target audiences	The CRC eTool can be used by LHDs and other agencies planning to collect and manage population monitoring data at CRCs.	The RadResponder population monitoring module can be used by LHDs responsible for establishing CRCs, state health departments, emergency management, incident command decision-makers, and federal partners.
Special features	<ul style="list-style-type: none"> Database fields are based on data elements captured on paper CRC forms Customizable dashboard can summarize statistics in real-time by population age, gender, percentage of contaminated persons, and other selected variables Data can be exported securely in a variety of formats Capabilities to operate through a cloud-based server, over Wi-Fi, or without internet through local area networks 	<ul style="list-style-type: none"> Data elements include information about CRC site capabilities, CRC operational status, and aggregate population information Allows for real-time data analysis and visualization using mapping and tabular data display features Data export is available in a variety of formats The RadResponder Population Monitoring Module can be used on Windows PCs and does not have functionality in the RadResponder App

Epi Info™ CRC eTool

The following section describes information on getting the CRC eTool set up, some useful pointers for using the CRC eTool, strategies for incorporating the tool into exercises, and an example of how the tool is being used by LHDs.

Getting Started, Things to Know

Step 1: What to Know Before Beginning?



When to use

The CRC eTool can be used as part of CRC operations to capture population monitoring data from CRC visitors as they advance through each station in a CRC. Alternatively, the CRC eTool can also be used after CRC operations as a database to electronically store population monitoring records that were previously captured on paper-based forms. The CRC eTool questionnaire can be printed out to serve as paper-based forms as well.



Staff needs

The CRC eTool can be used by any health department staff or volunteers who have gone



Resource needs

To collect data as persons move through each station of the CRC, a laptop, tablet, or smart device connected over a local area network is needed at each station to enter information. For backend data entry after CRC operations, at least one laptop, tablet, or smart device will be needed. Paper back-up data collection forms should also be considered in the event of IT system failures. Copies of the CRC eTool JITT, CRC eTool deployment guide, and CRC eTool user guide should also be available for reference during CRC operations.



IT needs

Specific hardware and software requirements can be found on pages 5–6 of the Community Reception

Center Electronic Data Collection Tool – Deployment Guide. These requirements include having updated Web and database servers, a wireless router, a gigabit switch, and Ethernet cables in the event of wireless connectivity issues.



Timeframe to implement

The implementation timeframe will vary depending on the availability of existing IT resources and staff to be trained on use of the CRC eTool for CRC operations. Additional time may also be needed if CRC eTool forms need modification prior to implementation. Though just-in-time download and set-up of the CRC eTool is possible for a no-notice event, a safer rule of thumb would be to begin installation and set-up of the CRC eTool system at least three months prior to a planned event or exercise.

Step 2: Where to Find the Tool?

The CRC eTool and supporting documents can be found on the following on the CDC website at <https://emergency.cdc.gov/radiation/crcetool.asp>.

Step 3: Installing and Setting Up the Tool

After downloading and installing the CRC eTool, the Community Reception Center Electronic Data Collection Tool - Deployment Guide contains step-by-step set-up instructions for IT professionals. The deployment guide includes topics related to installation, configuration, connectivity testing, and troubleshooting. The user guide also contains instructions for using the CRC eTool system once it is set up, installed, and configured.

Step 4: How to Get Training?

- The CDC Health Studies Section (HSS) is also available to provide technical assistance and training to potential and current CRC eTool users. The HSS can be contacted at 770-488-3410 for questions on using the CRC eTool.



- A webinar training on use of the CRC eTool and the RadResponder Population Monitoring Module during functional exercises can be found at <http://toolbox.naccho.org/pages/tool-view.html?id=5370>.

Step 5: What Resources are Available to Assist?

The deployment guide, user guide, CRC eTool JITT presentation, and CRC eTool Questionnaire Bank can be used as training resources to orient staff to set-up and use of the CRC eTool System.

Using the System: Key Points

- A unique record and ID will get created for each individual in the CRC eTool database
- New records can only be created at the beginning of the CRC process/initial sorting station
- Families can be tracked in the database by adding different letters after each ID number
- There are station-specific instructions for data entry for each CRC station in the CRC eTool
- There are built-in skip patterns to reduce the amount of data entry that is needed for each person
- The CRC eTool contains a customizable dashboard that summarizes CRC visitor characteristics across many variables including age, sex, number screened, contamination status, referral location, etc.

Building the CRC eTool into Response Plans

Planning Considerations

- The CRC eTool operates on laptops, tablets, and smart devices
- Laptops with the CRC eTool software installed will be needed for each CRC eTool data collector
- Use of the CRC eTool will reduce or eliminate the need for additional backend data entry of population monitoring records after CRC operations have ended
- Use of the CRC eTool for data collection as part of CRC operations will likely take more time than standard paper-based data collection processes
- The CRC eTool dashboard display can provide CRC summary statistics, which can inform situational awareness or operational decision-making and coordination

Exercise Considerations

- 1. Discussion-Based Exercise:** During a tabletop exercise, discussion regarding the planning considerations for CRC eTool usage can occur. Discussion topics may include securing resources to set up and use the system, roles and responsibilities for using the system, how the system usage would impact existing plans, policies, procedures, and protocols, data usage functions, and data sharing considerations.
- 2. Functional Exercise:** During a functional exercise, plans, protocols, and procedures for using the CRC eTool can be evaluated through actual set-up and use of the CRC eTool to process mock CRC visitors. Steps to download, install, and configure the CRC eTool should begin at least three months preceding the exercise to allow for time to work through any

IT issues and train staff who will be using the system during the exercise. At least one dry run of the system testing the laptops, local area network, and connectivity should occur prior to the exercise to ensure system functionality. When possible, testing should be done with the actual equipment and systems that will be used for the exercise. Users should attempt to set up equipment and use systems as they would during a real event. JITT for the staff using the CRC eTool should occur as close to the start of the exercise as possible. JITT should also allow CRC eTool users to practice entering information. When possible, assessment of CRC throughput (number of visitors processed per hour) can be useful to estimate capacity during real-world events. NACCHO and CDC have developed drill resources to plan, execute, and evaluate CRC functional exercises (found at <http://toolbox.naccho.org/pages/tool-view.html?id=5741>).



Best Practices in Implementing the CRC ETool: Harris County Public Health

LHD Overview

Harris County Public Health (HCPH) is the county health department for a fast-growing jurisdiction of approximately 2.2 million people, covering 1,700 square miles, around Houston. HCPH conducted a full-scale Community Reception Center (CRC) exercise in response to a radiological incident. HCPH used both the CRC eTool and RadResponder during the exercise. The CRC eTool was used at each station within the CRC to collect data from each individual. After completing two runs/shifts within the CRC, exercise data was collected from the CRC eTool and entered into RadResponder to provide awareness of the overall operation.

Why HCPH Used the System

The CRC eTool was used to efficiently collect, secure, and maintain accurate data on the affected population to conduct surveillance and population monitoring after the immediate response.

Benefits of Use

There are a number of benefits to using the CRC eTool. The tool was created in Epi Info, which is a commonly used platform by HCPH Epidemiology staff. Also, the CRC eTool allowed multiple staff members to collect population monitoring data electronically, in real-time. Lastly, the data is securely maintained within the database for future use.

Lessons Learned

The CRC eTool collects a number of data points that go beyond what HCPH typically collects for population monitoring. The more data fields that are collected in the CRC eTool, the longer that data entry will take during the exercise. Also, JITT could be improved by allowing users to practice using the CRC eTool before the exercise begins.

Future Activities

Future activities include creating a standard operating guide (SOG) and revising resources such as the user guide and JITT, as well as providing training and hands-on experience for HCPH staff.

RadResponder Population Monitoring Module

The following section describes information on accessing the RadResponder Population Monitoring Module, some useful pointers for using the Population Monitoring Module, strategies for incorporating the module into exercises, and an example of how the module is being used by LHDs.

Getting Started, Things to Know

Step 1: What to Know Before Beginning?



When to use

Upon activating a CRC, the RadResponder Population Monitoring Module can be used to capture aggregate level population monitoring data after each shift or full day of CRC operations. RadResponder is flexible and scalable, and thus can be used for small-scale, relatively contained responses, as well as for large-scale radiological incidents, such as an IND, that necessitate the coordination of a multijurisdictional response. The aggregate data collected can be used to provide situational awareness to state, local, and federal partners and agencies.



Staff needs

In addition to the standard number of staff required to set-up and maintain a CRC, it is recommended that the role of RadResponder Incident Administrator be designated as well.

The RadResponder Incident Administrator will ensure that the RadResponder Population Monitoring Module is used in a way to provide maximum support to an emergency response. The person in this role should have administrator privileges in RadResponder and will have the ability to create, edit, and delete events, approve and add organizations and users, and add and remove roles. This person will also be responsible for entering the aggregate-level data after each shift or full day of CRC operations. If possible, an additional one to two back-up persons should be designated to collect and enter data.



IT/resource needs

To capture and input aggregate-level data into the RadResponder Population Monitoring Module, at least one laptop will be needed and the device will need to be able to access the internet. In the event of emergency, where internet access is unavailable, aggregate data can be collected on paper forms and entered into RadResponder once internet access is restored.



Timeframe to implement

In an internet-accessible environment RadResponder can be rapidly deployed, but the implementation timeframe will vary depending on if staff require training on the use of RadResponder and the RadResponder Population Monitoring Module.

Step 2: Where to Find the Tool?

The RadResponder Population Monitoring Module and supporting documents can be found at <https://radresponder.net/>.

Step 3: Installing and Setting Up the Tool

Establishing an Account with RadResponder

- Before the RadResponder Population Monitoring Module can be deployed or used, your RadResponder Incident Administrator will need to request an account on radresponder.net to obtain access to the network.
- Note that if your jurisdiction already uses the RadResponder system for managing radiological data, the incident administrator may be able to join an existing “organization” in the system. If your jurisdiction is not already in the system, the incident administrator will need to request access as new “organization.”

Data Sharing via Standing Partnerships

- Organizations should establish standing partnerships with other organizations that they anticipate sharing data with during an emergency. The incident administrator will be responsible for requesting and approving standing partnerships in the RadResponder system.



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Step 4: How to Get Training?

RadResponder also offers technical assistance and live training webinars on a regular basis. Events and a webinar training schedule are posted on the RadResponder home page. To request technical assistance or additional training, e-mail support@radresponder.net.

Step 5: What Resources are Available to Assist?

- Guidance on how to create CRCs and screened population records within RadResponder Population Monitoring Module

are available on the RadResponder website, <https://www.radresponder.net>.

- General RadResponder training videos can be accessed at <https://www.radresponder.net/app/index#resources/training/index>; training on the use of the CRC eTool and the RadResponder Population Monitoring Module during functional exercises can be found at <http://toolbox.naccho.org/pages/tool-view.html?id=5370>.



Best Practices in Implementing RadResponder: The Southeast Region Office in Tennessee

LHD Overview

The Southeast Region Office is a 10-county region in Southeast Tennessee. Each county contains an LHD that receives administrative oversight from Southeast Regional Office. Five of the 10 counties are part of the Multi-Jurisdictional Radiological Response Plans for Sequoyah Nuclear Power Plant and/or Watts Bar Nuclear Power Plant, which are both operated by the Tennessee Valley Authority.

Why the Southeast Region Office Used the System

The Southeast Region Office wanted to begin working with RadResponder to become familiar with it if it were used in a real event. It was also beginning to develop an electronic database for population monitoring data and wanted to design that system so it could more easily inform RadResponder.

Benefits of Use

Using RadResponder helped the LHDs better understand the type of information CDC might request after a release from a nuclear power plant or, possibly, any radiological event. In this way, the Southeast

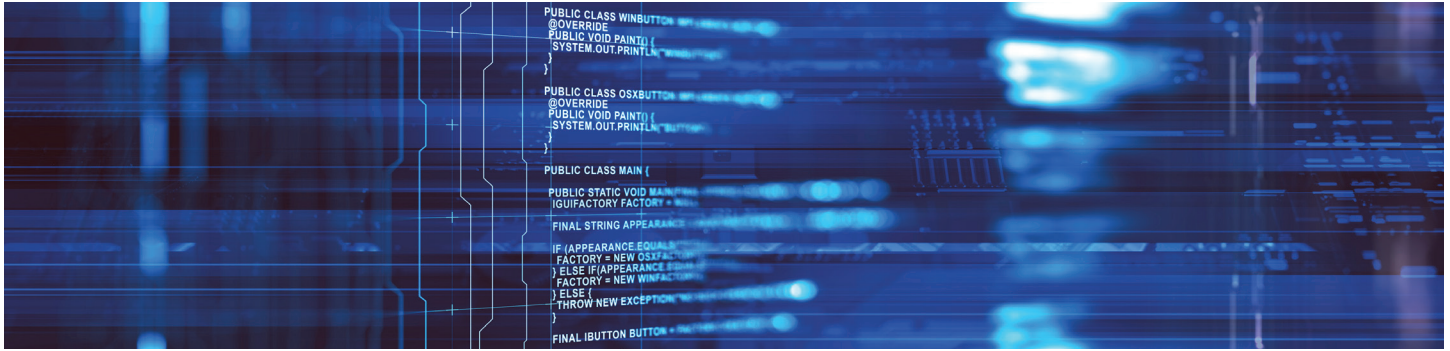
Region Office was able to develop a database from which data can be efficiently exported to satisfy the information requests.

Lessons Learned

While preparing for the exercise, the Southeast Region Office learned that it would need to develop a database that would produce aggregate numbers in order to satisfy RadResponder data elements. This allowed it to design its paper form to best capture the data needed for RadResponder while also being easily entered into its electronic database from the paper form. Because there is not a way to import directly from its database, the office designed a database that can show in near real-time the information needed in RadResponder through pre-defined reports.

Future Activities

The Southeast Region Office will continue to work with appropriate partners to better incorporate RadResponder into the region's radiological response plans. It plans to conduct an exercise during which population monitoring data is entered into its electronic database while personnel in its Central Office who have access to the database extract real-time data to import into RadResponder.



Using the System: Key Points

- Use of RadResponder is free to use by all local, state, and federal stakeholders
- To enter records in RadResponder, first create or join an organizational account
- If your organization does not initially have population monitoring functionality, contact support@radresponder.net to request functionality
- Events must also be set-up to support population monitoring, which can be adjusted in the event details page.
- The RadResponder Population Monitoring Form contains fields that correspond to data fields that can be populated in the population monitoring module of RadResponder
- In RadResponder, a CRC facility needs to be added to an event before aggregate population monitoring records can be entered
- New aggregate population records automatically add together over the course of the response to display response totals at each CRC site
- The event dashboard summarizes information on all activated CRCs and displays the percentage of CRC visitors that are contaminated each site

Building RadResponder into Response Plans

Planning Considerations

- The RadResponder Population Monitoring Module can only operate on a laptop with access to the internet.
- Aggregate data should be collected utilizing the paper form if access to the internet is not available.
- Data uploaded into the module can be shared with approved

organizations/entities to provide situational awareness or inform operational decision-making and coordination regarding CRC operations.

Exercise Considerations

1. **Discussion-Based Exercise:** A discussion on integration of the RadResponder Population Monitoring Module in CRC plans can occur during a tabletop exercise. Within that discussion, participants should discuss topics such as use of the system, roles and responsibilities within the system, data sharing across jurisdictional lines, how the system uses would impact existing plans, policies, procedures, and protocols, and data sharing considerations.
2. **Functional Exercise:** During a functional exercise, plans, protocols, and procedures for using the RadResponder Population Monitoring Tool can be evaluated through summarizing CRC and enter aggregate population monitoring data into RadResponder. Steps related to creating a RadResponder account should be done in advance of the exercise to allow time for users to be added and approved. Also allow an opportunity for JITT for staff that will be using the system during the exercise.

Additional Resources

Population Monitoring Planning Resources

- [Population Monitoring in Radiation Emergencies: A Guide for State and Local Public Health Planners, Second Edition, April 2014](#) [document]
- [Community Reception Center Overview](#) [video]
- [Virtual Community Reception Center \(vCRC\)](#) [training tool]
- [RealOpt CRC](#) [website, video, and model]
- [CRC Simulation Tool for Evaluation and Planning \(CRC-STEP\)](#) [website]
- [National Library of Medicine Population Monitoring Resources](#) [website]

[GUIDE]

September 2018



Community Reception Center Exercise Resources

- [CRC Drill Toolkit](#) [exercise toolkit]
- [Radiation Response Volunteer Corp Exercise Resources](#) [website]
- [Training for using RadResponder Population Monitoring Module and CRC eTool](#) [training]
- [National Alliance for Radiation Readiness Exercise Resources](#) [website]

Other Radiation Preparedness Resources

- [A Guide to Operating Public Shelters in a Radiation Emergency, First Edition, February 2015](#) [document]
- [Radiological Sheltering Tabletop Exercise Toolkit](#) [exercise toolkit]

Resource Clearinghouses

- [NACCHO Radiation Toolkit](#) [website]
- [CDC Radiation Emergency Training and Education Resources](#) [webpage]
- [National Alliance for Radiation Readiness](#) [website]
- [National Library of Medicine – Radiation Emergency Medical Management](#) [website]
- [Radiation Response Volunteer Corps](#) [website]

References

1. The Centers for Disease Control and Prevention. (2014). Population Monitoring in Radiation Emergencies: A Guide for State and Local Public Health Planners. Retrieved on June 19, 2017 from <https://emergency.cdc.gov/radiation/pdf/population-monitoring-guide.pdf>

Acknowledgments

This report was supported by Cooperative Agreement #5U38OT000172-05 from the Centers for Disease Control and Prevention. NACCHO is grateful for this support. The contents do not necessarily represent the official views of the CDC. NACCHO does not promote or endorse any product or service mentioned in this document.

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NACCHO

National Association of County & City Health Officials

The National Connection for Local Public Health



The mission of the National Association of County and City Health Officials (NACCHO) is to improve the health of communities by strengthening and advocating for local health departments.

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