



A Plan for Incorporating Local Volunteer Radiation Professionals into Existing Health Volunteer Programs to Assist in Population Monitoring



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A Plan for Incorporating Local Volunteer Radiation Professionals into Existing Health Volunteer Programs to Assist in Population Monitoring

Final Report

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RADIATION RESPONSE VOLUNTEER CORPS (RRVC) DEVELOPMENT PROJECT

EXECUTIVE SUMMARY

State and local agencies are responsible for public health and safety during radiological emergencies. In the event of a major radiological incident, including an accident or terrorist activity, state and local resources would be quickly overwhelmed by the large number of citizens needing to be monitored for contamination. One method of supplementing state and local resources is through the use of local volunteer radiation professionals who could perform population monitoring and other assistance at community reception centers, shelters, emergency operations centers, hospitals, and other areas where potentially contaminated persons would gather after such an incident.

The purpose of this project was to evaluate the feasibility of developing self-sustaining volunteer emergency response programs that will include radiation protection professionals, primarily by incorporating radiation professionals into existing volunteer registries and programs, rather than creating entirely new volunteer groups. The Conference of Radiation Control Program Directors established and funded sub-contracts with five state and one local radiation control agencies to:

- Pilot a process for recruiting, managing and training volunteer radiation professionals;
- Promote a volunteer registry of radiation professionals within existing registries and/or programs;
- Develop a publishable plan for effective deployment and utilization of the trained volunteers that will align with existing state and local emergency response plans; and
- Develop an action plan for continued and expanded use of the program.

Members of the CRCPD's Task Force for Volunteer Development and staff of the Office of Director provided information and outreach to radiation professionals at national and local chapter professional organization meetings on the radiation response volunteer effort. Each of the sub-contracting agencies developed a system of planning, recruitment, training, and potential deployment of radiation response volunteers for population monitoring and other related activities.

Through reports from the sub-contracting agencies in which the radiation response volunteer development project was piloted, the committee analyzed the achievements, lessons learned, challenges, and best practices. The significant achievements and best practices were used to create a Model Volunteer Utilization and Deployment Plan that can be recommended to other state and local agencies and volunteer organizations for establishing a volunteer radiation response corps and incorporating volunteers into emergency response plans in their jurisdictions. Many of the tools used by the state and local agencies that were involved in the project are

included with this report as appendices. These include brochures, course outlines, web links, and lists of resources.

Although the initial goals of the radiation response volunteer project were met, that is, the pilot project showed that development of a volunteer emergency response program is feasible in state and local agencies, several technical and logistical issues remain to assure the sustainability of the program. The committee has made recommendations for future actions that will enhance the effectiveness and sustainability of radiation response volunteer programs across the United States. Some of the recommendations in the action plan came from feedback from the pilot radiation control programs. Other recommended actions have come about from committee and staff interactions with radiation professionals, federal agencies, and national level exercise experiences.

BACKGROUND

State and local agencies are responsible for public health and safety during radiological incidents. The National Response Framework has identified population monitoring, among other duties, as a local and state responsibility. In the event of a major radiological incident, state and local radiation control and emergency response program resources would be quickly overwhelmed by the large number of citizens needing evaluation for contamination. One method of supplementing state and local resources is through use of local volunteer radiation professionals who could provide assistance at community reception centers, shelters for displaced populations, emergency operations centers, hospitals, and communications facilities. There are tens of thousands of radiation professionals across the country, living and working in nearly every community, who could volunteer to assist their local and state public health and emergency management authorities in the event of a large nuclear/radiological incident. The infrastructure for such a volunteer effort exists in the Medical Reserve Corps (MRC), which is a part of the Citizen Corps program. There are already 800 MRC units in operation with 180,000 trained volunteer members including active and retired physicians, nurses, and public health professionals as well as other types of volunteers (www.medicalreservecorps.gov). The MRC program has proven to be a valuable asset in local public health preparedness for pandemic influenza and for assisting in operation of Points of Dispensing sites for the purpose of distributing Strategic National Stockpile assets.

There is a need to raise awareness of the benefits and necessity of using volunteer radiation professionals to assist state and local authorities with population monitoring activities during a radiological emergency. Most state radiation control programs and the radiation professionals with whom they interact are not aware that volunteer programs such as MRC exist and how that existing infrastructure can assist them in radiation emergency planning. Additionally, most public health planners are not aware that a large pool of radiation professionals willing to assist exists. Most MRC leaders are not aware of the role their units can play in helping communities respond in a radiation emergency.

A “Volunteer Radiation Professionals Roundtable” was held in February 2009 on the development of a radiological volunteer corps that could be activated by local authorities in the event of a large-scale radiological event. Participants in the Roundtable and the Radiation

Studies Branch (RSB) at the Centers for Disease Control and Prevention (CDC) realized the gaps in awareness described above and supported the need for a project that would evaluate the feasibility and sustainability of recruiting, training and using radiation volunteers to enhance radiological preparedness capabilities. The project would assess the budgetary requirements, legal liabilities of local, state, and federal entities, and other technical and administrative considerations.

Currently, only a few states, such as Florida, Massachusetts, and Pennsylvania, have initiated efforts to mobilize non-state workers to assist in radiation incident response, with preliminary success. The oldest program is believed to be in Massachusetts, where a volunteer group of radiation professionals constitute a Nuclear Incident Advisory Team (NIAT). The NIAT provides expert consultation, support, and assistance on radiation protection issues to the radiation control program and other state and local public safety and health officials responding to an event. The Massachusetts radiation control program maintains the list of those on NIAT.

In Pennsylvania, the Pennsylvania Department of Environmental Protection's Bureau of Radiation Protection (PaDEP/BRP) has implemented a Pennsylvania Radiological Assistance Program (PaRAP) in coordination with the Pennsylvania Emergency Management Agency (PEMA). The PaRAP is a mechanism for augmenting existing PaDEP/BRP radiological technical personnel; the PaRAP also advises the on-scene incident commander in the event of an overwhelming radiological or nuclear incident. The Commonwealth of Pennsylvania's laws and regulations allow for registration of volunteers in state-sanctioned emergency response teams, and have provisions to allow Workman's Compensation and Good Samaritan liability coverage to volunteers of the state.

Florida began its volunteer corps development process in 2008 when it received a modest grant from the Centers for Disease Control and Prevention (CDC) through the Florida Public Health Preparedness Office to develop a Radiation Response Volunteer Corps (RRVC) as a sub-specialty of the existing Medical Reserve Corps (MRC). This effort brought together both state and local health departments, preparedness response specialists, and Bureau of Radiation Control staff with potential volunteers from the radiation safety professional organizations. Many of the volunteers were members of the Florida Chapter of the Health Physics Society (FCHPS) and the Florida Chapter of the American Association of Physicists in Medicine (FCAAPM). Although other states had begun to use volunteers in advisory and monitoring capacities, this is the first program to target medical professions for population monitoring.

The next step needed was to "jump start," implement, and enhance such programs in several states in conjunction with the radiation control programs and the Medical Reserve Corps in those states. Outreach for a pool of volunteers would focus on radiation professionals, including medical professionals who are trained in radiation safety practices and perform some of the same duties that would be necessary in the event of a catastrophic event. As an example, an outreach article about the need for radiation professionals in the MRC was placed in the Region IV MRC Newsletter (see Appendix A).

SCOPE

The purpose of this project was to evaluate the feasibility of developing self-sustaining volunteer emergency response programs that will include radiation protection professionals. Radiation professionals include health physicists, medical physicists, nuclear medicine technologists, radiologic technologists, radiation oncologists, radiation therapists, radiologists, and others. With additional training, as appropriate, these radiation professionals can assist in population monitoring and support of shelter operations in the communities where they live. The intent of this project was to assess the feasibility of incorporating these radiation professionals into existing volunteer registries and programs (i.e., Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP), Medical Reserve Corps, etc.) rather than creating entirely new volunteer groups. This project addresses use of volunteer radiation professionals specifically for purposes of population monitoring and shelter needs during radiological events. Specifically, the project was designed to:

- Raise awareness of the benefits and necessity of using volunteer radiation professionals to assist state and local authorities with population monitoring activities during a radiological emergency,
- Expand existing volunteer recruitment activities to include volunteer radiation professionals for use in population monitoring activities and shelter needs during a radiological event, and
- Develop or enhance collaborations among volunteer radiation professionals and existing health volunteer programs through planning, training and exercising.

GOALS OF THE PROGRAM

The primary goals of the radiation volunteer development program were to:

- Develop a process for recruiting, managing and training volunteer radiation professionals;
- Promote a volunteer registry of radiation professionals within existing registries and/or programs;
- Develop a publishable plan for effective deployment and utilization of volunteer radiation professionals that will align with existing radiation response plans and/or volunteer management plans;
- Develop a sustainable action plan for continued and expanded use of the program;
- Provide status reports, program updates throughout the project period;
- Provide a final summary report on the process and programs and lessons learned, and that incorporated the deployment and utilization plan and action plan described above.

PROCESS

In order to develop a process for recruiting, managing and training volunteer radiation professionals, promoting a volunteer registry of radiation professionals, and evaluating the feasibility of developing self-sustaining volunteer emergency response programs that will include radiation protection professionals, the Conference of Radiation Control Program Directors (CRCPD) solicited proposals from state and local radiation control programs. The selection process is described below. The funding assistance provided through the sub-contracts for state radiological response volunteer corps initiatives could be used for infrastructure needs, outreach to and solicitation of radiation professionals in the state, development of communication systems, survey instrumentation, and provision of training. Outreach and collaboration with the Medical Reserve Corps on a national and state-by-state basis was also considered in the scope of sub-contacts.

A new task force made up of radiation control program staff knowledgeable in radiological emergency preparedness and response was established immediately in the Homeland Security/Emergency Response (HS/ER) Council of CRCPD. The Task Force for Volunteer Development was charged with developing a Request for Proposal (RFP) and criteria for selection of from 5 to 10 state radiation control programs to incorporate volunteer radiation professionals into existing volunteer response programs within the state. Selection criteria for evaluating the proposals are found in Appendix B.

The RFP was developed by the task force and was sent electronically to all radiation control program directors on November 11, 2009. The programs were asked to submit proposals by December 18, 2009. A copy of the RFP is included as Appendix C. CRCPD anticipated the award of up to 10 sub-contracts for an average of \$25,000 each, depending on the availability of funds and the quality and number of proposals received. Once proposals were received from the programs, the task force, with assistance from the Project Manager, evaluated the proposals and determined recipients for the feasibility project.

Those receiving sub-contracts under this project were:

- Florida Department of Health, Bureau of Radiation Control
- Kansas Department of Health and Environment, Bureau of Environmental Health
- New York City Health Department, Office of Radiological Health
- North Carolina Department of Environment and Natural Resources, Radiation Protection Section
- Ohio Department of Health, Bureau of Radiation Protection
- Oregon Public Health Division, Radiation Protection Services Program

Proposed contracts were sent to the agencies by the end of January 2010, and most were completed by the end of February 2010. However, the completion of the contracts took longer in some agencies. Therefore, the start time for the project in those states was delayed somewhat.

Each sub-contracting radiation control program was asked to:

- Incorporate radiation professionals into existing volunteer registries and/or programs.
- Orient volunteer radiation professionals to the emergency response activities and requirements within existing volunteer response organizations. Example: Core Competencies outlined by the MRC at <http://www.medicalreservecorps.gov/TASeries/TrainingCoreCompetencies>.
- Promote a volunteer registry of radiation professionals within existing registries and/or programs.
 - Establish relationships with regional, state, and/or local chapters of radiation professional organizations such as the Health Physics Society (HPS), American Association of Physicists in Medicine (AAPM), Society of Nuclear Medicine (SNM), American Society for Radiology Oncology (ASTRO), National Registry of Radiation Protection Technologists (NRRPT), Conference of Radiation Control Program Directors (CRCPD), and the American Nuclear Society (ANS).
 - Outreach to radiation protection professionals in the state (i.e., health physicists, medical physicists, radiation protection technologists, and nuclear medicine technologists) by email distribution, mail distribution, newsletter announcements, and/or attending local professional meetings or conferences.
- Submit written progress reports on a quarterly basis to CRCPD's Office of Executive Director and to the task force chair, including work performed and costs incurred.
- Submit a written report describing their approach, accomplishments, impediments, and suggestions.
- Provide input to the task force, based on the experience and lessons learned from the project, on a plan for effective deployment and utilization of volunteer radiation professions and methods for developing self-sustaining activities to ensure that the volunteer radiation professionals remain engaged.

SUMMARY OF STATE INITIATIVES

Each of the six sub-contracting programs' approach to the project and activities conducted are described below.

FLORIDA

Planning

1. Identified target audience

The success of this program is in identifying a pool of qualified health and medical physics professionals that can assist in monitoring the population for radioactive

contamination and exposure. Health and medical physicists currently working in radiation environments were a logical source of expertise. The Bureau of Radiation Control (BRC) has participated in their annual meetings as speakers and exhibitors. In addition, the BRC has provided training to nuclear medicine, radiation therapy and radiologic technologists. There are over 22,000 certified radiologic technologists, nuclear medicine technologists and radiation therapists who are trained in radiation safety and could assist in a large scale radiation event. These professions all have representation on the Bureau's Advisory Council on Radiation Protection. The stakeholder community is actively engaged in regulatory issues and the Bureau looks to these professionals to assist in developing regulations, policies and procedures for adequate radiation protection for Floridians.

2. Identified partners for successful implementation

Florida is fortunate to have a well established MRC volunteer structure with support at both the state and local level. Currently there are 33 local MRC units in Florida. With the assistance of Rick Miller, State MRC Coordinator, the BRC has been able to engage with the local MRC coordinators during several conference calls. The BRC has also participated in regional and national meetings, sharing with the MRC coordinators the need for establishing population monitoring capabilities within the MRC. The BRC also discussed the opportunity with emergency management at the state and local level.

3. Developed an on-line registration application

Because of limited staffing at both the state and local MRC units, several staff members of the Bureau developed an on-line registration application.

4. Developed and provided promotional material

The Training and Quality Assurance (TQA) program within the BRC developed printed material, FAQ's and a PowerPoint presentation describing the need and process for volunteering. Information was provided to the state MRC coordinator, who disseminated it.

5. Developed material for target audience

Florida is fortunate to have well qualified emergency response trainers, including 2 Federal Emergency Management Agency (FEMA) certified instructors. These individuals developed 4 hours of didactic training and 3 hours of instructional "hands-on" training for the RRVC volunteers. In addition to the course material, the TQA staff prepared a flash drive to provide attendees with the course material, reference material, and forms to be used for gathering information on individuals monitored during response to a radiological incident.

6. Obtained continuing education credits/acknowledgments

The TQA program was tasked with acquiring continuing education credit for the training; they were successful in securing credit for radiologic technologists and nursing. The

program staff also prepared and mailed continuing education information and a certificate of attendance to each participant of the course.

Implementation of Recruitment and Training Sessions

1. Provided Outreach to Professional Organizations

A PowerPoint presentation was developed to present at professional meetings. The presentation was provided to the Florida Chapter of the Health Physics Society (April 2010), Florida Society of Nuclear Medicine Technologists (May 2010), and the Florida Society of Radiologic Technologists (October 5, 2010). Dr. Armin Ansari provided a presentation in support of the RRVC at the September 2010 joint meeting of the Florida American Association of Physicists in Medicine and the Florida Chapter of the Health Physics Society. Information was also provided to the Florida Advisory Council on Radiation Protection.

2. Involved State MRC Coordinator

Meetings between BRC staff and the state coordinator of the MRC transpired in January, February and March of 2010. BRC staff participated in conference calls to answer questions and encourage participation in training for radiological population monitoring. From the calls, MRC unit coordinators contacted the BRC to express interest in hosting training. A pamphlet describing the opportunity to volunteer and receive training was developed. (Appendix D.) Questions from the MRC unit coordinators were compiled and answers provided in an additional FAQ document that was provided to the MRC state coordinator for dissemination (Appendix E.).

3. Involved Local MRC units

A communication link was developed between the BRC and local MRC coordinators. The coordinators were asked to secure a location for the training and assist in promoting the training to current members of the MRC. The BRC provided the trainers and promoted the opportunity to professional organizations through email notification. In addition, the grant funding provided a \$500.00 stipend to the MRC for meeting facilitation.

Course Delivery

1. Registration

The Registrar was responsible for mailing confirmation of acceptance of the application and a follow up correspondence about one week prior to the course. Approximately 80% of the applicants provided an email address for disseminating information. For others the Registrar had to contact by phone and mail.

2. Training

Emergency Response Trainers for the BRC developed the training and were the primary trainers. The training was divided into two sections. Section 1 was a series of lectures on fundamentals of radiation and radiation detection and then Section 2 was a series of four hands-on activities. The hands-on activities included detection of radiation in the environment, detection with hand-held survey meters, setting up a portal monitor, and setting up a population monitoring location. The MRC recommended and training was provided on Saturdays since many volunteers are employed during the week. The one exception to that was the Miami RRVC training, which was provided on a Friday. Though state radiation training personnel are available for response 24 hours a day, seven days a week, providing training on several Saturdays during a compressed time period was a personal hardship on the trainers. In order to share the workload, additional BRC staff provided training as needed using the developed training material.

KANSAS

Planning

Staff working on the RRVC project met with representatives from the Bureau of Public Health and Preparedness. Information was obtained about the State's Volunteer Emergency Response Registry called K-Serve. This was utilized in obtaining contacts and registering people for the RRVC. Staff also met with county Medical Reserve Coordinators to introduce the project, gather information and ideas, make contacts, and answer questions about RRVC. The project was well received.

A meeting was held with the primary staff responsible for this project on Thursday, July 01, 2010. During that meeting, progress was discussed and more duties were assigned, such as gathering contact information for survey distribution, designing and implementing the survey, creating a fact sheet (Appendix F.), and planning for a roundtable meeting with prospective volunteers that includes a training opportunity.

A fact sheet was created on the KDHE website about the Corps: <http://www.kdheks.gov/radiation/index.html>. A survey was created on www.surveymonkey.com. Postcards were finalized and contact information was compiled. Approximately 3400 mailers were sent out. The survey was open for several months.

The Radiation Response Volunteer Corps was introduced at the FEMA sponsored Radiation Assistance Committee meeting that was held in Kansas City, Missouri on October 19 and 20, 2010. Plans are being made to train the volunteers to be ready to respond during the Amber Waves 2012 exercise, which will involve Kansas, Missouri, and Iowa. This is a Tier II, full-scale, national level exercise that will focus on radiological terrorism. Kansas will host a reception and care center and will utilize the volunteers for population monitoring at that location.

The KDHE continues to make plans for the next phase of the project. Planned activities during the next few months include:

- Organizing the information collected from the online survey and following up with the individuals interested in joining.
- Assuring the readiness of the K-Serve database, used for registering volunteers in the state of Kansas.
- Establishing training locations, duration, and format.
- Partnering with other agencies and volunteer groups in the establishment of community reception centers. Discussions are ongoing on the incorporation of the RRVC into the Amber Waves 2012 exercise. Population monitoring is a major objective for Kansas in this exercise.
- Determining course structure and guest speakers, and obtaining CEU approval.

Implementation

To date, a letter of invite and instructions on how to register for the RRVC training have been distributed to those indicating interest. Four training dates and locations have been set up. The first training was in Kansas City on January 27th. The Dodge City and Wichita training had to be re-scheduled due to inclement weather. The final training date was set in Topeka on February 15th. Training materials have been reviewed and prepared and an itinerary was created. CEU approval was requested and granted for a total of 5 CEUs for the completed one-day course.

The KS-Train database, a learning resource used by professionals who protect the public's health, was utilized to register for the training. K-Serve, an established database to register volunteers in Kansas, will be used to register the volunteers during the training dates. This system will be upgraded for the RRVC by the KDHE IT department at no charge.

An email was established for the RRVC. This email is RRVC@kdheks.gov. Forms, handouts, and other training materials have been created and prepared for the first round of training sessions. Topics will include Population Monitoring and Reception Center Overview, Radiation Fundamentals, Meter Operations, Risk Communications, Survey and Decontamination Techniques, and an Overview of Amber Waves 2012.

The January 27th training was a success. There were 11 volunteers in attendance. The KDHE group received great feedback from the attendees that will guide future training sessions. Volunteers were engaged in the course and the instructors enjoyed the interaction.

Future Activities

The activities planned beyond the date of the final report include continuing training, drills, and communication with the volunteers, making additional contacts and introducing the RRVC to interested parties, beginning preparation for Amber Waves 2012, and continuing research in the area of population monitoring and long-term tracking. Plans and procedures for population monitoring will also be created, practiced, and evaluated.

NEW YORK CITY

The Radiation Unit of the Bureau of Environmental Emergency Preparedness and Response (BEEPR), Division of Environmental Health (DEH) of the Department of Health and Mental Hygiene of New York City (NYC DOHMH) carried out the contract for that agency.

The proposed deliverables by the Radiation Unit of BEEPR were as follows:

- Developing a branch within the New York City Medical Reserve Corps (MRC) system for radiation professionals in cooperation with the MRC Unit of the Office of Emergency Response (OEPR) of the NYC DOHMH.
- Conducting activities focused on the recruitment of volunteers into the radiation branch of the NYC MRC as well as establishing a surge capacity of radiation professionals in the Greater New York Area (including areas of New York, New Jersey and Connecticut).

The above deliverables were and continue to be achieved through the following activities:

- Organizing and conducting two symposiums for health professionals throughout the greater New York area.
- Developing and maintaining a registry of radiation professionals who have volunteered for the reserve corps.
- Instituting quarterly short electronic newsletters to update the volunteer corps of radiation professionals on local, state and federal government radiological news and to assist in maintaining an up-to-date registry of volunteers.

Implementation

The **first symposium** was held June 22, 2010, at Baruch College in New York City with 110 attendees from 160 registrations. The title of the symposium was “Symposium on Developing a Radiological Volunteer Capacity in New York City.” Notable speakers, Dr. Joyce Lipzstein and Dr. Armin Ansari, were successfully recruited to present. The content of the presentations and the reference materials were distributed to attendees on a flash drive. The agenda was the only printed material. Topics covered were the Goiânia radiation incident, population monitoring and the community reception center, and the Medical Reserve Corps.

The professional radiation experience of attendees included:

- 23 Radiation safety/health physics
- 3 Radiation safety/health physics for industry
- 3 Radiation safety/health physics nuclear reactor/fuel cycle
- 8 Radiation safety/health physics, nuclear medicine
- 2 Radiation safety/health physics, medical physics
- 4 Radiation safety/health physics, medical physics, nuclear medicine
- 3 Medical physics

1 Radiologist

33 Unstated

Completed evaluations were provided by 62 of the 110 participants following the symposium. The results are summarized as follows:

- 44 symposium evaluations were excellent
- 15 symposium evaluations were very good
- 3 symposium evaluations were good or less

The noted criticisms included venue problems (trouble hearing or seeing the slides), repetitive content or the need for different content, and speakers reading from slides.

There were 20 individuals who submitted requests to join the radiation professional reserve corps on the day of the symposium.

Second Symposium: The date for the second symposium will be March 25, 2011. The title is “Operating a Community Reception Center: A Workshop for the NYC Radiological Reserve Corps.” The delay in conducting the follow-up symposium is a result of the NYC DOHMH (the whole agency) move to other quarters during the winter of 2011; all large activities had to be delayed. The preparation for the symposium has been underway since late summer.

NORTH CAROLINA

Planning

The North Carolina radiation control program began planning and coordinating activities in early 2010. Their plan made use of an existing volunteer radiation safety organization in North Carolina known as Team of Radiological Emergency Volunteers (TOREV). This organization was chartered by the North Carolina Chapter of the Health Physics Society (NCHPS) in 1992. The mission as defined by the Charter included the following:

- Augmenting the State’s radiation monitoring personnel and resources in some radiological emergencies.
- Provide personnel knowledgeable of radiation safety and monitoring under the sponsorship of the NCHPS.
- Along with its sponsorship, the North Carolina Chapter of the Health Physics Society undertook the administration and oversight of the TOREV as a functional organization within the Chapter.

The proposed plan included:

- Enfolded TOREV under the current infrastructure of the Medical Reserve Corps (MRC);

- Enrolling TOREV members as regional members of the MRC;
- Providing training for members of TOREV appropriate to emergency response activities, including any training required by membership in the MRC;
- Recruiting new members for TOREV and by extension the MRC;
- Establishing a free-standing TOREV Committee in the NCHPS to set objectives for TOREV deployment, to interface with response personnel in other organizations, and find additional educational resources for TOREV personnel. In addition, this Committee would present TOREV information to potential partner organizations.

A presentation was made on the TOREV concept and cooperation with MRC at the North Carolina Health Physics Society meeting, and the TOREV brochures (Appendix G) were distributed. Subsequently, information was also distributed to contacts in the North Carolina Society of Radiologic Technologists, the Southeastern Chapter of the Society of Nuclear Medicine, and the American Association of Physicists in Medicine. Presentations were also made on TOREV to the East Carolina Chapter of the American Nuclear Society and to the State Emergency Response Committee.

A link to TOREV information was placed on the North Carolina Health Physics Society web page.

Implementation

The implementation phase of the North Carolina activities primarily involved outreach and information to other prospective volunteers and training in population monitoring, contamination control, and emergency response procedures to the TOREV volunteers. These activities included the following:

- Gave a presentation on the TOREV concept and cooperation with MRC at the Board Meeting of the North Carolina Society of Radiological Technologists (NCSRT),
- Provided initial training to TOREV members,
- Involved TOREV members in the Brunswick nuclear power plant exercise on 6/22/2010,
- Conducted a conference call briefing from local MRC personnel,
- Performed revisions of the TOREV brochure to produce final copy,
- Purchased supplies for TOREV use, e.g., Tyvek coveralls, shoe covers, and gloves,
- E-mailed “Population Monitoring in Radiation Emergencies” to TOREV members,
- Purchased copies of Dr. Armin Ansari’s book, *Radiation Threats and Your Safety*, for TOREV members.

Follow-Up Activities

The activities conducted during the period from November 1, 2010, through February 1, 2011, predominately focused on adding the necessary administrative support within the state radiation protection section and internal logistics to support the ongoing activities of a volunteer program. Staff planning for the future direction of TOREV, the revised Charter, TOREV Volunteer List access, MRC dual pathway for the TOREV Volunteer took place during this time. Improvements and continuing activities included the following:

- Improved the TOREV volunteer verification process. All new volunteers will apply through the North Carolina HPS TOREV application process and be reviewed by TOREV leadership and sent to the radiation control program director. For those members applying to TOREV as active members of the Southeastern Chapter of the Society of Nuclear Medicine and the North Carolina Society of Radiologic Technologists, active TOREV members who hold leadership positions in those professional organizations were asked to assist with volunteer verification.
- Continued planning and outreach to the radiologic technologist and nuclear medicine technologist community
- Revised the TOREV Charter to delete the requirement for TOREV members to be members of the North Carolina Health Physics Society. This will expand the opportunity for volunteering to other radiation professionals.
- Established a working relationship with State Emergency Management. Discussions were brought up about volunteer liability, the need for a radiation advisor type person to report to the county Emergency Operations Center as a resource in the event of a radiological emergency.
- North Carolina Health Physics Society web page set up a link to route to TOREV information. Also, the East Carolina Chapter of the American Nuclear Society has established a link for TOREV: <http://local.ans.org/ecs/torev.htm>

OHIO

Objectives and Tasks

The project objective as stated in the Bureau of Radiation Protection (BRP) proposal was:

Develop the activities and systems necessary to recruit, train, and manage a cadre of volunteer radiation professionals to assist with population monitoring during a radiological emergency

Proposal component tasks included the following:

- Create an RRVC deployment plan and related procedures
- Initiate awareness and solicit volunteers
 - Contact and meet with regional, state, and local chapters of radiation professional organizations

- Contact facilities that have been issued a radioactive material license or radiation-generating equipment registration to reach individuals outside of the above organizations
- Advise and meet with state and local authorities, volunteer programs, and public health planners
- Organize, register, and train volunteers
 - Utilize the infrastructure of the Medical Reserve Corps (MRC)
 - Develop a registry of radiation response volunteers
 - Provide instrumentation to volunteers without access to such
 - Develop RRVC training and HSEEP-compliant local, regional, and state-level exercises
- Submit quarterly written progress reports, and a final report to CRCPD's Office of Executive Director and the Chair of the Task Force for Volunteer Development

Methods and Results

Task 1 – Create an RRVC deployment plan and related procedures

Since volunteers have not been previously utilized for response to a radiation incident, the creation of a written RRVC deployment plan was a necessary task. The first step was to establish the role of volunteers with respect to State of Ohio functions and authorities, and an Incident Command System (ICS) chart was developed to help demonstrate the relationships and roles as understood at that time.

Initially, RRVC volunteers were seen as support to state resources under the population monitoring branch of the ICS—surveying victims at the scene of an incident, at perimeter locations, or at a local hospital, under the direction of state health physicists. Later, after the Community Reception Center (CRC) concept was better understood, the roles of RRVC volunteers and the associated ICS structure changed to be based on the CDC model. It was seen that RRVC volunteers would work independently of state health physicists, in support of a CRC manager performing survey, medical, and epidemiology functions. The proposed Ohio Community Reception Center Incident Command Structure is Appendix H.

Once the roles were identified, a means for deployment was formulated. The development of the deployment plan took into consideration existing relationships between state and local entities, flow of information, and group responsibilities. This also required the concept of a new entity, Ohio Responds Regional Administrators. The Ohio Responds Regional Administrators would be responsible for core training, maintaining a cache of equipment, local coordination and deployment of volunteers. The Regional Administrators have not yet been identified, but would most likely be regional Metropolitan Medical Response System (MMRS) coordinators. There are six regions in Ohio covering virtually all of the state, with sketchy coverage only in the rural southeast counties. RRVC volunteers would be deployed after a request from a local government or an Incident Commander is forwarded to the state Emergency Operations Center (EOC). The EOC forwards the request for population monitoring through the Ohio Department of Health/ESF-8. ODH/ESF-8 contacts and dispatches the volunteers. The Ohio Responds Regional Administrators are also contacted to

open the CRC and be available for support of the incoming volunteers. A diagram of RRVC volunteer registration, deployment, and support is Appendix I.

Task 2 - Initiate awareness and solicit volunteers

- Radiation Professional Organizations

The goal was to make contact with state or local chapters of radiation professional organizations such as the Health Physics Society (HPS), the American Association of Physicists in Medicine (AAPM), the Society of Nuclear Medicine (SNM), the National Registry of Radiation Protection Technologists (NRRPT), and the American Nuclear Society (ANS) in order to schedule visits at their meetings. During the visit, an overview of the RRVC initiative would be presented and volunteers solicited. In Ohio, the three HPS chapters were readily available and agreed to meet for a presentation. However, AAPM and SNM have larger regional meetings that are held infrequently. None were scheduled in Ohio during the grant period. NRRPT has no actual chapter or group meetings, and ANS membership in Ohio is limited to a student group. Thus, awareness activities with professional organizations were limited to the HPS chapters in Ohio.

- Licensees and Registrants

The proposal indicated that letters would be sent to Ohio licensees and registrants as a contact and awareness method. Instead of drafting letters to all licensees and registrants, it was decided to use electronic means to approach these potential volunteers. The Ohio Department of Health (ODH) maintains an email server known as BRadiation for communications with licensees, registrants, and the public that will be used to distribute RRVC information as well. The Ohio Responds Web site has specific information and links about RRVC; it was implemented in February. It links to the Ohio Responds Volunteer Mobilizer database, where volunteers register and their accounts are managed. Currently, RRVC information is not posted on the Ohio Department of Health Web site because the program is not fully up and running. More funding is necessary to completely implement the RRVC program. BRP staff does have administrative access to the Ohio Responds RRVC website.

The current registration database is on the “Ohio Responds” Web site:

<https://www.ohioresponds.odh.ohio.gov/VolunteerMobilizer/Admin/Manage/InfoResources.aspx>

To date, contact with radioactive material licensee and radiation-generating equipment registrants have not taken place due to the need to establish a plan for moving forward.

- State and Local Authorities, Volunteer Programs, and Public Health Planners

Informational presentations were provided to BRP staff, ODH Office of Health Preparedness staff, the Ohio Emergency Management Agency, the Utility Radiological Safety Board Working Group, and the Columbus Metropolitan Medical Response System (CMMRS). The CMMRS encompasses a 15 county region with representatives from public health, emergency management, hospitals, non-governmental/volunteer organizations, police, and fire. CMMRS has agreed to assist in coordinating information with the other MMRS regions in the state.

Task 3 - Organize, register, and train volunteers

- Utilize the infrastructure of the Medical Reserve Corps (MRC)

BRP was to coordinate with local MRC unit leaders to assist the volunteers in becoming local volunteers after the volunteers registered with *Ohio Responds* as members of the Medical Reserve Corps. MRC unit leaders were to provide an orientation to the MRC, IS 100 and IS 700 and the MRC Core Competencies, as well as verify credentials of each volunteer and approve him/her as a member of a local MRC unit. It was learned later in the process that the RRVC could partner with MRC, but due to credentialing and database requirements, they would not be able to register as MRC volunteers. It is hoped that MRC core training can still be utilized, but it is uncertain at this time. The need for MRC unit leaders to support RRVC volunteers was replaced with the Ohio Responds Regional Administrator concept of the plan.

- Develop a registry of radiation response volunteers

Initial collaboration was with ODH Office of Health Preparedness and the Ohio Community Service Council (OCSC). These entities maintained Ohio's Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) registry. This state-based registry contains the names and credentials of all of the state's registered Ohio Citizen Corps (OCC) volunteers of which the Medical Reserve Corps (MRC) is included. The registry is referred to as *Ohio Responds* and is used to call up and activate volunteers in a disaster. The Ohio Community Service Council served as the database administrator until the organization was abolished in August 2010, when the operation of the database had to be assumed by the ODH Office of Health Preparedness. This event caused some delay. Regardless, the use of the database has been developed. Current access is through the *Ohio Responds* website. This allows volunteers to apply, BRP staff to review and verify credentials, and the later ability to contact the volunteers for service.

- Provide instrumentation to volunteers without access to such

The initial intent of the radiation volunteer project was to provide instrumentation to those volunteers not in possession of such. It was expected that most volunteers would provide their own instrumentation for this purpose. BRP has a supply of survey instruments available. They have been checked and calibrated. The instrumentation distribution concept was changed from an individual focus to provision of instruments to a Regional Administrator who can ensure the instruments are maintained for use and are readily available for volunteers when they arrive.

- Develop RRVC training and HSEEP-compliant local, regional, and state-level exercises

BRP's plan is to provide specific training and/or exercising of volunteers on state emergency response plans and the radiation volunteer's role during a radiological emergency. Volunteer specific training would be based on the state's deployment plan and existing state procedures. However, the program has not yet developed to the point of training or exercising volunteers.

Task 4 - Submit written quarterly reports

Written quarterly reports were provided to CRCPD's Office of Executive Director and the Chair of the Task Force for Volunteer Development as required.

Implications and Discussion

The Ohio proposal, as submitted, over-reached the scope specified in the RFP. The goals as stated in RFP were: 1) raise awareness; 2) expand recruitment activities to include radiation volunteers; 3) develop/enhance collaborations between volunteers and existing volunteer programs; 4) develop a publishable plan for effective deployment of radiation volunteers in alignment with existing response plans; 5) develop a plan for ongoing development and use of the program. The emphasis was on the development of plans and relationships. The Ohio proposal included implementation steps, which would be appropriate for a more developed program, but not for initial development.

The published CDC models for Community Reception Centers and Population Monitoring were adopted into the program.

The collapse of Ohio Community Service Council as a viable organization, restrictions on functioning as part of MRC, difficulties with the Emergency System for Advance Registration of Volunteer Health Professionals database set up, website and brochures provided unplanned limitations and delays.

The meetings with various groups provided questions that will need to be worked out for long-term operations.

- Are CE credits available to volunteers?
- Instrumentation for in vivo and in vitro bioassay?
- Responsibility for the waste generated, and what will we do with it?
- Portal monitors to borrow for screening purposes?
- Credentials for Volunteers? Ability to travel/enter areas.

Other identified questions and issues include:

- Involvement of local agencies in development is critical
- Better coordination is needed within and across agencies
 - It is difficult for a radiation protection program to accomplish all aspects (promotion; web design; links to established systems; selection, direction and training of volunteers; maintenance of the program).
- Community Reception Centers (CRCs)
 - RRVC volunteers function as health physicists *only*
 - Balance of CRC (e.g., screeners, CRC Manager, Logistics section, mental health professionals, epidemiologists, Public Information Officer, etc.) will need to be staffed
 - There is currently no plan in place to stand up CRCs.

OREGON

Planning

The Working Group core members have been formed, to include the Grant Manager and Grant Coordinator from Oregon Radiation Protection Services, Grant Consultant from Oregon Toxicological Consultation Services, and Grant Consultant from Public Health Emergency Preparedness. The Grant Coordinator will act as Group Lead. Several key radiological personnel have been identified by the Core Working Group members to add expertise through consultation and information dissemination of the Work Group's findings. These added Work Group participants include individuals from State universities, area hospitals, emergency services, Medical Reserve Corps volunteers, and former State Radiation Services.

A recruitment brochure has been completed and printed, and target audiences for dissemination were identified (Appendix J).

Implementation

Recruitment

The radiological volunteer recruitment brochure was provided to 51 potential volunteers by the Grant Coordinator through the Oregon Environmental Health Association Annual Meeting on September 12, 2010. Volunteers included members of State Environmental Health sections, Local Health Departments, Public Health Emergency Preparedness, and state executive management.

The recruitment brochure is currently being disseminated:

- state-wide among radiation volunteers recognized by the up-to-date roster and identified by the Working Group.
- to Radiation Safety Officers at all 64 hospitals in the state of Oregon.
- to 18 Medical Reserve Corps Program Coordinators in the 15 represented counties of Oregon.

Training

A training course for radiological population monitoring has been completed. Training includes radiation basics, personnel safety, equipment usage, definitions and communications skills, and rapid monitoring and crowd control.

An up-to-date roster of 103 potential candidates for the RRVC has been developed (June 30, 2010). The potential volunteers include individuals from a diverse background of medical, emergency response, security and safety, agricultural and federal service professions. Radiological training was provided for 27 potential volunteers for Three Rivers Hospital in Grants Pass, Oregon on June 15, 2010. Radiological training was provided for 76 potential volunteers by the Counter Terrorism Operations Support team through the Department of

Energy, National Nuclear Security Administration on June 21-24, 2010. Trainees included members of State Agencies, MRC, federal services, emergency response personnel, universities and selected private organizations.

Incorporation into Emergency Response Structure

The Oregon radiological population monitoring volunteer program was added to the EPA Region 10 emergency response services structure in November 2010.

Other

The Oregon radiological population monitoring volunteer program was requested by the State of Kansas and the State of Washington for use as a model for their future state volunteer programs.

ADDITIONAL ACTIVITIES

In addition to providing support for the radiation response corps development in the sub-contracting states, CRCPD is also providing some support and is working with the State of Mississippi and the Florida Chapter of the Health Physics Society in their radiation volunteer recruitment and training efforts.

In Mississippi, the Division of Radiological Health of the Mississippi State Department of Health formed the Mississippi Radiation Response Volunteer Corps (MRRVC). The MRRVC was established as a sub-group of the National Med-Corps Network, which is sponsored by the Office of the United States Surgeon General. The Unit was chartered as a Med-Corps Unit on January 28, 2011. This collaboration among volunteer radiation professionals in emergency preparedness is set to be one of the strongest networks of radiation professionals in the state. The safety and well-being of every citizen of the state is foremost and at the core of plans to be set forth by the MRRVC.

The mission of the MRRVC is to support first responders during a radiological emergency by assisting with the radiological needs of population monitoring. The MRRVC's goal is to recruit and register volunteer radiological professionals whose highly technical skills will prove valuable to emergency response operations during a large-scale radiological incident. While the group seeks to recruit radiological professionals with knowledge of radiation protection and radiological contamination and control, the Unit will gladly register non-radiation professionals to assist in other roles during a radiological emergency. The MRRVC uses the Mississippi State Department of Health's Volunteers in Preparedness Registry database to register all volunteers. To date 30 professionals have been registered.

Radiation protection staff members at the University of Mississippi Medical Center Hospital have submitted letters of support to the MRRVC. Their support will prove vital to the training sessions that are planned to be conducted at the hospital. In addition, staff from the Baptist Hospital in Memphis, Tennessee, has agreed to help in Mississippi's regional efforts in radiological volunteer preparedness. This state-to-state collaboration will ensure that any secondary response is in place and ready to respond if called upon.

For sustainability of the project, the MRRVC was recently awarded funding for the development and administration of the unit through a Building Capacity Grant of the Mississippi State Department of Health.

Recruitment and training efforts are currently in process. The MRRVC has submitted a training module to the Information Technology Department of the Mississippi State Department of Health (MSDH), to be included on the MSDH Website. The training module is now in the review process. Recruitment of volunteers will take place at Radiation Fundamental Courses taught by the Mississippi Emergency Management Agency. In addition, the MMRVC, in conjunction with the Grand Gulf Nuclear Power Station, will host a community fair to register volunteers, and to enlighten the community on safety plans for radiological incidents.

The Florida Chapter of the Health Physics Society is working to support the volunteer recruitment and training efforts of the Florida Department of Health. The Chapter plans to provide a one-day training workshop for 50 health and medical physicists on Saturday, March 19, 2011.

SIGNIFICANT ACCOMPLISHMENTS OF THE RRVC PROJECT

BROAD ACCOMPLISHMENTS

The Radiation Response Volunteer Corps Development Project has resulted in several successful accomplishments and more that are promising as the radiation control programs continue their efforts in incorporating radiation volunteers into their emergency preparedness plans. The accomplishments identified for the overall project are as follows:

- 1) Increased awareness of the need to develop a system for population monitoring among the radiation control community. Through outreach sessions and discussions at the national, state, and local level, both the regulatory community and the radiation professional societies have become more aware of the need for radiation volunteers in radiological emergency preparedness and response.
- 2) Identified professionals and individuals with the existing skills to provide such services. The HS/ER-10 Committee and contracting state and local radiation control programs identified a potential pool of volunteers from radiation professionals in the medical, industrial, and academic areas that could be targeted for recruitment and training to be used specifically for population monitoring and reception center assistance in the event of a major radiological incident.
- 3) Identified various methodologies for mobilization of volunteers to assist with population monitoring and shelter needs. The approaches taken by each of the contracting programs differed somewhat in implementation, but were in keeping with the jurisdictional needs and emergency response plans of each agency. The flexibility in the program to allow for the variety in implementation methods resulted in greater innovation, and given time, greater sustainability.

- 4) Conducted training of volunteers to assist with population monitoring and shelter needs through workshops and seminars. The hands-on training and awareness of the roles and responsibilities of radiation professional volunteers increased both the knowledge and interest of the volunteers to stay involved. Some trained volunteers participated in drills and exercises, which will be key to the long-term success of the project.
- 5) Established a collection of training material and programs for use by other states. Many of the training materials are provided and/or listed in the Appendices.
- 6) Initiated a process to register trained volunteers who could be called upon to respond in a national radiological emergency. MRC's are called upon to respond to other national emergencies, such as hurricanes and earthquakes, and can be deployed to areas of greatest need. Likewise in a radiological emergency, trained radiation volunteers could be called on to respond locally and become part of a national database of MRC volunteers that could be used in other areas.
- 7) Established a secure site within the CRCPD's web site for pilot state and local agencies to share resources developed by other pilot agencies. These included training resources, flyers, promotional ideas, reports of activities, and presentations.
- 8) Performed outreach to radiation professional societies and Medical Reserve Corps (MRC) meetings. Outreach was provided through exhibits and presentations at national meetings of CRCPD, HPS, AAPM, and the American Society for Radiation Oncology (ASTRO) and MRC. A brochure explaining the program and containing ways to volunteer was developed and disseminated at exhibit booths and in face-to-face meetings with society committees. CRCPD members also interfaced with local emergency management agencies to include volunteers in local plans. The brochure and exhibit poster are included in Appendix J.

SIGNIFICANT CONTRACTING STATE/CITY ACCOMPLISHMENTS

In addition to the broad accomplishments made for the project, each sub-contracting state/local agency identified several key accomplishments of their individual projects. Examples of tools and products created by the sub-contracting agencies are found in Appendix K. These include brochures, course outlines, web links, and lists of resources.

Florida

- 8 training programs provided over a 5 month period of time
- 300 individuals trained in population monitoring
- 554 interested in training and registered
- 5 additional MRC local units have requested the training



Florida Radiation
Volunteer Logo Button

Kansas

- Training dates and times have been established for the initial RRVC volunteers and all training material has been developed. There are currently 44 volunteers signed up for training.
- Partnering with other agencies and volunteer groups in the establishment of CRCs. Continuing training, drills, and communication with the volunteers, making additional contacts and introducing the RRVC to interested parties, begin preparing for Amber Waves 2012, and continuing research in the area of population monitoring and long-term tracking.
- The KS-Train database, a learning resource used by professionals who protect the public's health, was utilized to register for the training during the training dates. K-Serve, an established database for registry of volunteers in Kansas, will be used to register volunteers for the RRVC. The system will be upgraded for the RRVC by the Kansas Department of Health and Environment's IT department. An email distribution list was also established for the RRVC.
- Forms, handouts, and other training materials were created and prepared for the first round of training sessions. Topics will include Population Monitoring and Reception Center Overview, Radiation Fundamentals, Meter Operations, Risk Communications, Survey and Decontamination Techniques, and an Overview of Amber Waves 2012.

New York City

- Two symposiums were developed and one was held. Collaborative effort with local chapter of the Health Physics Society (NYC HPS), the American Nuclear Society (ANS), and the American Association of Physicists in Medicine (AAPM).
 - Symposium #1- Symposium on Developing Radiological Volunteer Capacity in New York City June 22, 2010.
 - Symposium #2- Operating a Community Reception Center for the NYC Radiological Reserve Corps will be held March 25, 2011 NYC, NY. Didactic information sessions will encompass response to a radiological dispersal device, execution of a Community Reception Center (CRC), and full set-up and operations of a CRC.
- To date 30 radiation professionals have been registered in the RRC, a branch of the NYC Medical Reserve Corps administered by the Department of Health and Mental Hygiene.
- The content of the presentations at both symposiums and reference materials were developed and handed out by notable speakers. Dr. Joyce Lipztein and Dr. Armin Ansari were successfully recruited to present on their expertise.

North Carolina

- Added state radiation protection administrative personnel to enhance and support the Team of Radiological Emergency Volunteers (TOREV) activities.

- Improved the TOREV volunteer verification process.
- Established a working relationship with State Emergency Management.
- North Carolina Health Physics Society web page linked to TOREV information.
- Activated TOREV to experience Brunswick Nuclear Power Plant drill and had 11 TOREV volunteers participate.
- Explored nonconventional training opportunities with “real world response.”
- Completed TOREV web page on North Carolina Department of Environment and Natural Resources web site.
- Provided outreach to 14 nuclear power plant host and risk counties.
- Developed and implemented an organizational chart for TOREV activities and membership.
- Revised and tested training program.
- Increased TOREV membership.
- Provided “Radiation Threats and Your Safety: A Guide to Preparation and Response for Professionals and Community” as reference material to TOREV members.

Ohio

- Completion and implementation of web based volunteer registry currently being managed by Ohio Bureau of Radiation Protection. Ohio demonstrated great commitment to the project by taking over the registry when the original registry manager, Ohio Community Service Corps, was abolished.
- Completion of mobilization and deployment plan for RRVC volunteers. Ohio has stated that they need to do more work, but the description of work accomplished indicates a plan is in place that could successfully deploy volunteers.
- Diagram of RRVC registration, deployment and support.

Oregon

- The Oregon radiological population monitoring volunteer program was added to the EPA Region 10 emergency response services structure in November 2010.
- Radiological population monitoring training was developed and has been completed. Training includes radiation basics, personnel safety, equipment usage, definitions and communications skills, and rapid monitoring and crowd control.
- Future recruitment and training of volunteers will be accomplished through utilization of well-established annual organizational meetings to promote the volunteer radiological training and expand the registry.

LESSONS LEARNED

FLORIDA

- **Electronic reference material provides instant resources.** Each participant in the population monitoring course received a flash drive that contained the PowerPoint presentations from the training, useful links to resources and contacts, information on the use of instruments, a template for gathering population monitoring information, and other reference material that would be helpful in a response. The Bureau also developed flashcards on the equipment that would be used in a response to assist with the “just-in-time” training that would be needed.
- **Charge a nominal registration fee to cut down on number registering but not attending training.** Charge a nominal fee for registration to cover incidentals. Because training and continuing educational credits were free, the participant did not fully invest in participating in the training. Research suggests that even a nominal \$10.00 registration fee would have increased participation.
- **Trainer burnout and the need to have more qualified trainers can be an issue.** The Bureau of Radiation Control (BRC) trained additional instructors and now has a group of instructors that have the knowledge, skills and abilities to provide the training. These instructors are located around the state and can assist with local training. The BRC regional inspection offices supported the training and assisted the primary trainers with the afternoon exercises. All trainers used the same instructional information and agenda. Overall, 23 BRC employees assisted with the 8 training sessions.
- **Administrative staff burden should be shared.** The administrative task was divided into intake and output. The Registrar managed the registration, developed the list, processed the financial transactions and purchased supplies. The Training and Quality Assurance (TQA) administrative assistant in the BRC prepared and mailed the continuing education information, certificates and letters to those who completed the course. Both the Registrar and the TQA manager responded to email and phone calls about the training.
- **Triage and instructions are needed for non-removable contamination.** The focus of this training was to demonstrate the use of RRVC and MRC members to identify and remove external contamination. We know that it may be possible for some persons affected to have internal contamination, and instructions on what should be done in identifying internal contamination have not been developed.
- **Transfer of funding to local MRC units is difficult in some cases.** In early discussions with the state MRC coordinator and other volunteer organizations, it was indicated that we would need to support volunteers in their effort to support our needs. One way was to support the local MRC in local arrangement logistics. Many of the MRCs are in local county health departments and have no method to transfer and spend the funds

exclusively on this project. For some MRCs located in planning centers or medical associations, funds were able to be transferred.

NEW YORK CITY

- **Effective integration at a local level and continual communication with volunteers are needed to support emergency response and preparedness.** The New York City program developed quarterly electronic newsletters, which were sent to the Volunteer Corps of Radiation Professionals, including volunteer names, contact information and training opportunities.

NORTH CAROLINA

- **Opportunities exist to exercise activation** of TOREV for upcoming Nuclear Power Plant drills
- **Radiation volunteer use can be expanded to other duties.** TOREV may have more capabilities than just population monitoring (sample courier, sample control)
- **Broad support is needed from multiple agencies for success.**
- **The program also needs administrative support, web support and public outreach for sustainability.**

OHIO

- **Advise state programs to work with local agencies** in the development of volunteer programs, in particular with regard to local support, coordination, and the development of CRCs. Give consideration to instrumentation guidelines and the development of caches or the ability to share equipment between neighboring regions or states.
- **Credentialing of volunteers is critical.** Law enforcement or other local authorities may not allow volunteers to enter areas that are otherwise being evacuated.
- **Provide a resource listing for states**, including the CDC models, to aid program staff and help ensure consistency of program.
-

OREGON

- **Developing interest in the radiation volunteer corps program was the core initiative for the Working Group.** The solution was to utilize well-established state training websites, provided by federal partners, to promote the preliminary radiological training, which strengthened interest in the volunteer registry program.

- **Developing agency buy-in from local and state emergency response services can be a challenge.** The solution in Oregon was to present the volunteer program to the response community on an individual basis to show specifically how the volunteers would integrate into the system, how the volunteers would not be hindering emergency services, and to answer any agency specific questions immediately.

SUGGESTED BEST PRACTICES

During the review of the sub-contracting agencies' reports, the CRCPD Committee for Radiation Volunteer Development identified several practices that could be used nationally and by other state and local radiation control programs to enhance radiation response volunteer programs. These included:

- 1) **Enhancement of the interest and desire to volunteer among radiation professionals by providing a pathway for registration and training.** Since the Medical Reserve Corps and Citizen Corps have established databases for volunteers and systems in place for training registration, the pathway of joining forces with these groups at a local level has been proven to be a valuable asset in local emergency response and could also be useful in a national radiological emergency. In some areas where MRCs do not exist or there is difficulty in registering radiation professionals, chapters of radiation professional organizations (e.g., the Health Physics Society) have been used to establish and maintain a list of qualified and trained volunteers.
- 2) **Provision of outreach to radiation professionals through national and chapter meetings.** Utilize well-established annual organizational meetings and local chapter meetings to promote the volunteer radiological training and expand the registry.
- 3) **Allowing flexibility to achieve the same outcome based on current state/local organizational structures.** The project allowed flexibility in methodology for carrying out the development of a radiation response registry and implementing the volunteer program. Although each of the state and local sub-contracting agencies used a slightly different approach, each of them has been able to achieve some level of recruitment, training and integration of the volunteers into their emergency response plans.
- 4) **Development of a system diagram** to demonstrate linkage between agencies and volunteers, information flow, and oversight functions and integration into a state/local radiological emergency response plan.
- 5) **Integration of radiation, medical, and epidemiological response.** The Ohio program integrated radiation response volunteers into its Incident Command Structure. The development of the deployment plan took into consideration existing relationships between state and local entities, flow of information, and group responsibilities. Radiation specialists were incorporated in the structure in the Radiation Survey Branch, the Medical Branch (for radiological support), and the Epidemiology Branch for monitoring and registration.

- 6) **Development of minimum qualifications for volunteers.** A very important aspect of the volunteers is to assure that they have the minimum qualification to respond to radiation incidents. States have developed various methodologies. In Florida, the MRC registry was expanded to capture volunteers who are licensed radiation professionals (physicians, medical physicists, radiation therapists, nuclear medicine technologists, and radiologic technologists) as minimum qualifications. The Florida Bureau of Radiation Control also reviews academic and work experience to determine individuals who possess the skills and abilities to respond. The radiation control program staff members have worked with the SERVFL registry system to add fields to capture the MRC members who completed the RRVC training.
- 7) **Use of well-established state training websites to promote the preliminary radiological training.** This practice attracted a larger audience and strengthened interest in volunteer registry program. In Florida, the following link to training is provided: http://www.myfloridaeh.com/radiation/RRVC_Course_Reg.htm
- 8) **Incorporation of radiation response volunteer activities in existing emergency response drills.** The use of volunteers in emergency response exercises (nuclear power plant, Transportation Security Administration, state and national radiological sponsored activities) enhances the interest and capabilities of volunteers. It also provides the emergency planners the opportunity to test plans for incorporation of radiation response volunteers into their state and local response structure.
- 9) **Provision of continuing education credits for the training.** By taking the steps necessary to obtain continuing education credits for the population monitoring training through the various radiation professional credentialing boards, the agencies have attracted a greater number of volunteers and participants in the training courses.
- 10) **Provision of a token of appreciation for volunteers.** Volunteer buttons and patches, and certificates were used as part of several of the projects. These tokens promoted spirit of volunteerism and cohesion of the volunteers.
- 11) **Developing and providing information and resources to each participant.** Flash drives containing additional and refresher material gave training participants access to all the materials and additional resources for training as needed. Electronic mail and dedicated web sites for maintaining connection and providing up-to-date information and technical resources has also proved useful in sustaining the volunteer programs.

PROJECT CHALLENGES/SOLUTIONS

The following is a list of challenges identified by the CRCPD's Committee for Volunteer Development and solutions or options for overcoming them.

1. Validation, support and outreach from Health and Human Services Office of Civilian Volunteers—Additional outreach is needed from the Office of Civilian Volunteers in

encouraging their state MRC coordinators to connect with the radiation control programs in the states. Likewise, radiation control programs should contact their state MRC coordinators in a collaborative effort to incorporate radiation professionals into MRC registries.

2. Sustainability—Radiation control programs have been and need to continue to be creative in finding long-term funding mechanisms to sustain the volunteer program and provide follow-up communication and training. An alternative option for sustainability long-term is to transfer of ownership of RRVCs to local MRCs, professional organizations, or local emergency management offices.
3. Drills and exercises are needed for validation of the concept. Although recruitment and training are excellent first steps, the addition of drills would confirm the capabilities of radiation professional volunteers.
4. Staffing needs for contract management and outreach—CRCPD used existing staff (including the Executive Director), to manage the sub-contracts and to provide outreach to other professional organizations. Each state and local agency that sub-contracted used existing staff to carry out the project, but included the recruitment and training of radiation response volunteers into their routine duties.
5. Reduction in the amount of time available for completion of the project—The project was originally planned for a span of two years, including time to develop and send requests for proposals, select and complete contracts with sub-contracting state and local radiation control programs, and for the programs to carry out their individual projects and report back for the final combined report. The final contract was shortened by six months, resulting in less lead time to get the contracts in place. In some cases, the contracting process with state and local government agencies was lengthy, giving less time for the agencies to carry out the radiation volunteer project. Although all of the sub-contracting agencies have been able to start their projects, CRCPD has responded to several requests for no-cost extensions to the contract to enable the agencies to complete their scope of work past the date of the final report. The accomplishments to date of all the agencies are reflected in this report.

The following is a list of challenges/solutions identified by State/Local Sub-Contractors.

- Needed alternate continuing communication for participating volunteers—solution: dedicated web sites, e-mail, electronic newsletters
- Credentialing of volunteers—A very important aspect of the volunteers is to assure that they have the minimum qualification to respond to radiation incidents. States have developed various methodologies. In Florida, for example, the MRC registry was expanded to capture volunteers who are licensed radiation professionals (physicians, medical physicists, radiation therapists, nuclear medicine technologists and radiologic technologists) as minimum qualification. The Florida Bureau of Radiation Control also reviews academic and work experience to determine other individuals who possess the skills and abilities to respond. Since the training, Florida has worked with the SERVFL system for additional fields to capture the MRC members who completed the RRVC training. On a national level, professional resource types need to be established with acceptable credentials for MRC registries.

- In Oregon, identifying specific personnel located in various venues around the state for addition to the List of Identified Volunteers proved harder to obtain than previously thought. Solution was to add a Medical Physicist with inside connections to key organizations to the Working Group.
- Extended lead time for contracts in state contracting system. Even though final progress report was due February 1, contracts were issued for one year to allow time to complete individual projects, and some extensions have been granted.
- Staff time needed to sustain the project (take into account routine staff duties, turnover, etc.)
- Planning for volunteer training. Some suggested solutions include turning logistics over to local MRC and providing incentives for training (pins, refreshments, continuing education credits, educational materials, etc.) Other solutions are adding a nominal registration fee to encourage attendance of those registered for training sessions.

MODEL VOLUNTEER UTILIZATION AND DEPLOYMENT PLAN

The following Model Plan for the effective utilization and deployment of volunteer radiation professionals has been developed. The Plan incorporates the best practices demonstrated by the state and local sub-contracting agencies in the project.

1. Identify target audience

The success of this program is in identifying a pool of qualified radiation professionals that can assist in monitoring the population for radioactive contamination and exposure.

2. Identify and gain support of partners for successful implementation

Potential partners include local Medical Reserve Corps units, professional organizations, such as local chapters of the Health Physics Society and the American Association of Physicists in Medicine, state and local health and emergency management departments, and commercial interests such as nuclear power plant emergency planners. The radiation control program should contact state and regional MRC coordinators, as well as other partners, to establish a mechanism for registry, recognition of credentials, and buy-in on the use of professional volunteers for specific identified tasks. Additional discussions with the partners and state agencies should include legal liability issues for actions taken by volunteers working with state agencies during emergencies.

3. Develop a methodology for recruitment, credentialing and training

Recruitment

- Notices to radiation professionals through professional society membership lists
- Outreach at professional society meetings

Credentialing

- Identify minimum qualifications

CDC has developed proposed minimum capabilities for Radiation Monitoring Teams, which could be used by Medical Reserve Corps Units and radiation control programs to establish a corps of radiation professionals for population monitoring and decontamination services. This proposed resource typing and qualifications are found in Appendix L.

- Validate qualifications
- Maintain a registry of individuals through existing registries or development of a registry

Training

- Identify prerequisites training to include ICS 100 and 300
- Determine length of training—recommend approximately 8 hours to include Radiation 101
- Develop course objectives
- Develop an agenda
- Develop course materials to include didactic and hands on
- Identify and secure equipment necessary to perform training
- Secure continuing education credits for attendees
- Develop a course evaluation tool
- Identify incentives for course participants (buttons, letters, certificates, flash drives with course content, reference material)
- Include the use of trained volunteer radiation professionals in drills and exercises

4. Develop and provide promotional material

- Brochures
- Flyers
- Dedicated web sites
- Frequently Asked Questions/Information Sheets
- Standardized PowerPoint presentation for outreach

5. Incorporate volunteer organizations into local and state emergency response plans

Use flow charts to show organization for communication and deployment of volunteers.

6. Develop a deployment plan

Prepare population monitoring and shelter support-related procedures consistent with existing state or local response plans. Establish a communication and notification plan for the volunteers as to logistics (location, instrumentation locations, etc.), chain of command, and other information needed by the volunteers and those that they would be working with in order to respond in an effective manner.

FUTURE RECOMMENDED ACTIVITIES

In order to make the radiation response volunteer program effective and sustainable for the future, CRCPD recommends the following activities in the areas of outreach, technical tools development, and operations.

OUTREACH

- 1) Outreach and training to national organizations and their committees on preparedness/response; recruitment of radiation volunteer, including updating of CRCPD Radiation Volunteers brochure:
 - Health Physics Society (HPS)
 - American Association of Physicists in Medicine (AAPM)
 - Society of Nuclear Medicine (SNM)
 - American Society for Radiology Oncology (ASTROpO)
 - American Society of Radiologic Technologists (ASRT)
 - National Registry of Radiation Protection Technologists (NRRPT)
- 2) Outreach on the capabilities of radiation volunteers to emergency response organizations:
 - National Emergency Management Association (NEMA)
 - International Association of Fire Chiefs
 - Volunteer and Combination Officers
 - Public health preparedness coordinators
 - National Radiological Emergency Preparedness (NREP)
 - Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP)
 - Red Cross
 - Regional governmental jurisdictions (e.g., councils of government, regional emergency planning groups)
 - Faith-based organizations
- 3) Encouragement of support of FEMA for this activity
- 4) Enhancement of support of Medical Reserve Corps national and state leadership
- 5) Continuation of visibility of the need for mobilization of radiation professionals to respond to a radiological incident

- 6) Continuation of funding for sustainability until integration of the Radiation Response Volunteer Corps into state and local emergency response plans and activities. The adoption of new initiatives generally takes 3-5 years to become established.

OPERATIONAL/TECHNICAL

- 1) Plan for internal contamination and persons with non-removable contamination
- 2) Web-based continued education with case studies that can be used to send to radiation volunteers
- 3) Support of exercises to include the use of the Radiation Response Volunteer Corps
- 4) Development of communication tools for volunteers concerning radiation exposure and contamination (suggested talking points)

APPENDIX A.

Volunteers Building Strong, Healthy, and Prepared Communities Region IV MRC Update March 2009

Radiation Professionals and the Medical Reserve Corps

In February, representatives from MRC, ESAR-VHP, the CDC, and a number of national associations representing radiation professionals met in Atlanta, GA to discuss volunteer involvement in radiation response. Many states are developing volunteer programs for radiation response. While it is the hope that the volunteers are never needed for this purpose, the key to developing community resiliency is to prepare for different types of disasters including those involving exposure to radiation. So in addition to radiation response programs (some of which involve Medical Reserve Corps units), many radiation professionals would like to be involved in ongoing emergency preparedness and response activities.

Who are Radiation Professionals?

The category of radiation professionals includes a wide variety of specialists who are trained to work safely with or around radioactive materials or radiation generating machines. Many of these individuals work with these materials in a healthcare or academic setting. These professionals include: health physicists, medical physicists, radiation protection technologists, nuclear medicine technologists, radiation oncologists, and industrial hygienists.

Why (and how) should MRC units reach out to Radiation Professionals?

As we all know, all disasters are local. Working with radiation professionals can give your Medical Reserve Corps unit access to additional expertise as well as building your ability to respond to all hazards locally. To find out more about radiation professionals, visit: <http://www.hps.org>.

Why would a radiation professional be interested in Medical Reserve Corps?

Like all of our MRC volunteers, radiation professionals are often very committed to serving their communities. Even if they do not use their specialized knowledge as part of their service to the Medical Reserve Corps, they want to help build the resilience of their communities through public health, preparedness and response activities. The Medical Reserve Corps gives them the opportunity to serve their local community, as well as the opportunity to learn new skills such as Incident Command and Psychological First Aid.

What is Radiation Response and how can Medical Reserve Corps get involved?

There are several scenarios in which radioactive materials could be dispersed that could cause contamination – nuclear weapons, “dirty bombs” and incidents at nuclear facilities. In any of these events, it might be necessary to determine if people are exposed to or contaminated with the materials. It might be necessary to treat injuries and decontaminate affected individuals. It would certainly be necessary to provide mental health support to the affected community. To learn more about Radiation Response, visit <http://www.bt.cdc.gov/radiation/publichealth.asp> or <http://www.remm.nlm.gov/index.html> . For general information on radiation, visit <http://www.radiationanswers.org/>. To learn more about the plans in your state, contact your state MRC Coordinator and/or the agency(ies) responsible for Radiation Protection in your state: <http://www.crcpd.org/Map/map.asp>.

APPENDIX B.

Evaluation Criteria for Sub-Contract Proposals

- Degree to which the general and specific goals for the project have been incorporated
- Use of the following questions to help assess quality of proposals:
 - Plan/Project Description
 - Is the plan adequate to carry out the proposed objectives?
 - How complete and comprehensive is the plan for the entire project period?
 - Does the plan incorporate partnerships with other organizations?
 - Does the applicant have prior experience with radiation professionals?
 - Does the applicant have prior experience with volunteer management systems or programs?
 - Methods and Activities
 - Are the proposed activities feasible?
 - To what extent will they accomplish the program goals?
 - To what extent do methods and activities utilize existing infrastructure?
 - Do the activities integrate partners?
 - Do the methods demonstrate a potential for program sustainability or continuation beyond the dates of initial funding?
 - Are recruitment strategies practical for radiation professionals?
 - Do the methods include state-wide implementation?
 - Organizational Profile and Staff
 - Do the staff members have appropriate experience?
 - Are the staff roles clearly defined?
 - Will the staff be sufficient to accomplish the program goals?
 - Does the existing infrastructure support training and project requirements?
 - Evaluation Plan/ Performance Measures
 - Does the proposal include an evaluation plan?
 - How complete and comprehensive is the evaluation plan?
 - Are performance measures quantifiable?
 - Are performance measures valid?
 - Does the plan include quantitative process and outcome measures?

- Timeline
 - Are the proposed timelines realistic?
 - Does projected completion of the proposal fall within the time requirements of the proposed Statement of Work?
- Budget Narrative
 - Does the budget narrative demonstrate an efficient use of funding to accomplish project objectives and goals?

APPENDIX C.

Request for Proposal Radiation Response Volunteer Corps Development

Summary

The Conference of Radiation Control (CRCPD) invites proposals from state radiation control programs to recruit, train and manage a cadre of volunteer radiation professionals and to promote a volunteer registry of those individuals for use in radiation emergencies within the states. The purposes of this project is to evaluate the feasibility of developing self-sustaining volunteer emergency response programs that will include radiation protection professionals for population monitoring and shelter needs, and to incorporate radiation volunteers into existing volunteer registries and programs. Funding assistance will be provided through the sub-contracts for state radiological response volunteer corps initiatives and may be used for infrastructure needs, outreach to and solicitation and credentialing of radiation professionals in the state, development of communication systems, and training of volunteers.

Funding/Awards

The total estimated funding available to CRCPD for this competitive opportunity is approximately \$250,000 over the project period. CRCPD anticipates the award of up to 10 sub-contracts for an average of \$25,000 each, depending on the availability of funds and the quality and number of proposals received.

Background

State and local agencies are responsible for public health and safety during radiological incidents. The National Response Framework has identified population monitoring, among other duties, as a local and state responsibility. In the event of a major radiological incident, state and local radiation control and emergency response program resources would be quickly overwhelmed by the large number of citizens needing evaluation for contamination.

One method of supplementing state and local resources is through use of local volunteer radiation professionals who could provide assistance at community reception centers, shelters for displaced populations, emergency operations centers, hospitals, and communications facilities. There are tens of thousands of radiation professionals living and working in nearly every community across the country who could volunteer to assist their local and state public health and emergency management authorities in the event of a large nuclear/radiological incident. The infrastructure for such a volunteer effort exists in the Medical Reserve Corps (MRC) which is a part of the Citizen Corps program. There are already 800 MRC units in operation with 180,000 trained volunteer members including active and retired physicians, nurses, and public health professionals among other types of volunteers (www.medicalreservecorps.gov). The MRC program has proven to be a valuable asset in local public health preparedness for pandemic

influenza and for assisting in operation of Points of Dispensing sites for the purpose of distributing Strategic National Stockpile assets.

There is a need to raise awareness of the benefits and necessity of using volunteer radiation professionals to assist state and local authorities with population monitoring activities during a radiological emergency. Most state radiation control programs and the radiation professionals with whom they interact are not aware that volunteer programs such as MRC exist and how that existing infrastructure can assist them in radiation emergency planning. Additionally, most public health planners are not aware that a large pool of radiation professionals willing to assist exists. Most MRC leaders are not aware of the role their units can play in helping communities respond in a radiation emergency.

A “Volunteer Radiation Professionals Roundtable” was held in February 2009 on the development of a radiological volunteer corps that could be activated by local authorities in the event of a large-scale radiological event. Participants in the Roundtable and the Radiation Studies Branch (RSB) at the Centers for Disease Control and Prevention (CDC) realized the gaps in awareness described above and supported the need for a project that would evaluate the feasibility and sustainability of recruiting, training and using radiation volunteers to enhance radiological preparedness capabilities. The project would assess the budgetary requirements, legal liabilities of local, state, and federal entities, and other technical and administrative considerations.

Currently, only a few states have initiated efforts to outreach to radiation professionals in their state and engage them in their existing volunteer emergency response programs with preliminary success. The next step is to implement such a program in several states in conjunction with the radiation control programs and the Medical Reserve Corps in those states. Outreach for a pool of volunteers would focus on radiation professionals who are trained in radiation safety practices and perform some of the same duties that would be necessary in the event of a catastrophic event.

Goals of the Program

The purpose of this project is to evaluate the feasibility of developing self-sustaining volunteer emergency response programs that will include radiation protection professionals.

Radiation professionals include health physicists, medical physicists, radiation protection technologists, nuclear medicine technologists, radiologic technologists, radiologists, radiation oncologists, radiation biologists, radiation safety officers, and others. With additional training, as appropriate, these radiation professionals can assist in population monitoring and support of shelter operations in the communities where they live. The intent of this project is to assess the feasibility of incorporating these radiation professionals into existing volunteer registries and programs (e.g., Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP), Medical Reserve Corps, state volunteer registries, etc.) rather than creating entirely new volunteer groups.

This project addresses use of volunteer radiation professionals specifically for purposes of population monitoring and shelter needs during radiological events to:

- Raise awareness of the benefits and necessity of using volunteer radiation professionals to assist state and local authorities with population monitoring activities during a radiological emergency.
- Expand existing volunteer recruitment activities to include volunteer radiation professionals for use in population monitoring activities and shelter needs during a radiological event.
- Develop or enhance collaborations among volunteer radiation professionals and existing health volunteer programs through planning, training and exercising.
- Develop a publishable plan for effective deployment and utilization of volunteer radiation professionals that will align with existing radiation response plan and/or volunteer management plans.
- Develop a sustainable action plan for continued and expanded use of the program.

Scope

In order to develop a process for recruiting, managing and training volunteer radiation professionals, promote a volunteer registry of radiation professionals, and evaluate the feasibility of developing self-sustaining volunteer emergency response programs that will include radiation protection professionals, the **Conference of Radiation Control Program Directors, Inc. (CRCPD) will sub-contract with up to 10 selected state radiation control programs.** Sub-contracts will be issued to each state program selected. **The contracts will be issued for a one-year term.**

The general scope of work and selection process is described below. The funding assistance provided through the sub-contracts for state radiological response volunteer corps initiatives may be used for infrastructure needs, outreach to and solicitation of radiation professionals in the state, development of communication systems, and provision of training. CRCPD also plans to provide outreach and collaboration with the Medical Reserve Corps on a national and state-by-state basis. CRCPD and CDC will provide training outlines that have been developed, helpful hints from states that have had experience with a radiation volunteer corps, and other information useful to this project.

State programs applying for a sub-contract are asked to provide plans for:

- ◆ Incorporating radiation professionals into existing volunteer registries and/or programs
- ◆ Orienting volunteer radiation professionals to the emergency response activities and requirements within existing volunteer response organizations. Example: Core Competencies outlined by the MRC at <http://www.medicalreservecorps.gov/TASeries/TrainingCoreCompetencies>
CRCPD will provide assistance in coordinating contacts between the state radiological response agencies and coordinators of existing volunteer response organizations.

- ◆ Providing training and/or exercising of volunteers on state emergency response plans and the radiation volunteer's role under that plan during a radiological emergency (e.g., population monitoring).
- ◆ Promoting a volunteer registry of radiation professionals within existing registries and/or programs through:
 - Establishment of relationships with regional, state, and/or local chapters of radiation professional organizations, such as the Health Physics Society (HPS), American Association of Physicists in Medicine (AAPM), Society of Nuclear Medicine (SNM), American Society for Radiology Oncology (ASTRO), American College of Radiology (ACR), National Registry of Radiation Protection Technologists (NRRPT), and the American Nuclear Society (ANS).
 - Outreach to radiation protection professionals in the state (e.g., health physicists, medical physicists, radiological protection technologists, and nuclear medicine technologists) by email distribution, mail distribution, newsletter announcements, and/or attending local professional meetings.

Proposal Format

Proposals for sub-contracts under this project should follow the outline below. Criteria for completeness and selection are shown in italics under each section heading. **The proposal must not exceed 10 pages in length.**

a) Plan/Project Description

Plan should:

- *Be adequate to carry out the proposed objective*
- *Be complete and comprehensive for entire project period*
- *Incorporate partnerships with other organizations*

Other selection criteria:

Applicant's prior experience with radiation professionals and volunteer management systems or programs

b) Methods and Activities

Selection criteria:

- *Feasibility of activities*
- *Extent of planned goal accomplishment*
- *Extent to which methods and activities utilize existing infrastructure*
- *Integration of partners*
- *Potential for program sustainability or continuation beyond the dates of funding*
- *Practical recruitment strategies for radiation professionals*
- *Methods include statewide implementation*

c) Organizational Profile and Staff

- Time commitment
- Staff experience

Selection criteria:

- Sufficient staff and appropriate experience of staff to accomplish program goals
- Clearly defined staff roles
- Degree that existing infrastructure supports training and project requirements

d) Evaluation Plan for Project

Selection criteria:

- Inclusion and completeness of evaluation plan
- Quantifiable performance measures
- Validity of performance measures
- Inclusion of quantitative process and outcome measures

e) Timeline

Selection criteria:

- Realistic timeline
- Completion falls within the Statement of Work

f) Budget narrative

Selection criteria:

- Demonstration of an efficient use of funding to accomplish project objectives

g) Proposed budget

Reporting Requirements

The selected states will also be required to:

- ◆ Submit written progress reports on a quarterly basis to CRCPD's Office of the Executive Director and to the Chair of the Task Force for Volunteer Development, including work performed and costs incurred.
- ◆ Submit a written report describing their approach, accomplishments, and impediments by February 1, 2011.
- ◆ Provide input to the task force, based on the experience and lessons learned from the project, on a plan for effective deployment and utilization of volunteer radiation professions and methods for developing self-sustaining activities to ensure that the volunteer radiation professionals remain engaged.

Inquiries and Deadline for Proposals

Questions concerning proposals may be addressed to Ruth McBurney at rmcburney@crcpd.org. Frequently asked questions and responses concerning the RFP will be posted on the CRCPD web site. All proposals must be received by the CRCPD Office of the Executive Director, 1030 Burlington Lane, Suite 4B, Frankfort, KY 40601, by 6:00 pm Eastern Standard Time on **Friday, December 18, 2009**. Proposals may be sent through mail or delivery service to the address

above or may be transmitted electronically by e-mail attachment to Ruth McBurney, CRCPD Executive Director, at rmburney@crepd.org.

APPENDIX D.

Why do we need to have Radiation Training?

- ☢ The United States has extensive borders and coastlines.
- ☢ The United States has 45 major metropolitan areas.
- ☢ The United States has 1000 international, domestic and private airports and water ports.
- ☢ The United States is a popular destination for international travel.
- ☢ The United States is home to many large, public, special events and 104 nuclear power plants.
- ☢ All of the above could be targeted by the many groups and individuals who wish to harm the United States.

**Be Prepared,
Be Trained, &
Be Ready to Respond**
by
**Being a Member of the
Florida Medical Reserve
Corps Network**



**For more information
visit our web site
www.myfloridaeh.com/radiation
or
www.servfi.com**



Florida's Radiation Response Volunteer Corps



Volunteers are needed to support a coordinated Radiation Control team responding to a significant radiation emergency



MRC/RRVC members make an impact by assisting 1st responders with population monitoring and providing medical, administrative, logistical, and communication support during a radiation related emergency.



Looking for a Few Good Men and Women:

Who are experienced with radiation survey and decontamination procedures.

Who are knowledgeable and experienced in reducing citizens concern about health risk from radiation exposure.

Who are members of the Florida Medical Reserve Corps (MRC) Network.

Who are able to collect and know the value of epidemiological information.

Who have experience in dealing with the psychological impact such an event may have on citizens.

Who can communicate directly with the Bureau's Operations Officer through established communication channels.

“I WANT TO HELP”



“It’s as easy as 1, 2, 3”

1. Register today at www.servfi.com
2. Attend upcoming Radiation Response Volunteer Corps training
3. Become a part of the team by supporting local MRC activities



APPENDIX E.

Frequently Asked Questions

Medical Reserve Corp
Radiation Response Volunteer Corp
June 2, 2008

Why do we need a Radiation Response Volunteer Corp?

As part of the National Response Plan, population monitoring will be a required activity in the event of a large scale radiological event. Florida recognizes the gap in our radiological response plan, and developed this methodology to fulfill the gap. Florida is the first state to develop any plan for rapid population monitoring. The Center for Disease Control has validated that this is an option to meeting the needs of population monitoring. If successful, this may be the model for other states to use to mobilize a specialized group of responders.

Department of Homeland Security has indicated that there is a REAL threat that radioactive materials will be used in a terrorist activity. If this were to happen in Florida, we want to be ready to respond in the same efficient manner that we respond to hurricanes and forest fires.

What is the Radiation Response Volunteer Corp?

The Radiation Response Volunteer Corp (RRVC) is a specialty group within the Medical Reserve Corp that can be called upon to assist in population monitoring in the event of a radiological incident.

Who are members of the RRVC?

Members in this section of the MRC are licensed medical physicists, nuclear medicine technologists and radiation therapy technologists; certified health physicists and national registry of radiation protection technologists and individuals with documented years of experience in radiation response.

Why was the MRC chosen for this group?

The existing framework of the MRC is ideal for integrating this sub specialty. There are many common characteristics between the medical community and the radiation response volunteer group. Both groups are trained in working with the public in substandard conditions, they are both oriented to patient care. The radiation response corp in their current duties are knowledgeable and comfortable around radiation and contamination. They will be able to identify, segregate and assist on an individual basis those citizens that might be contaminated. They use radiation detection equipment frequently in their normal duties. It is expected that many individuals will need reassurance that they are

not contaminated. If they are, we need trained individuals to assist with the correct course of action and reassurance that the citizens are decontaminated before leaving the center. Epidemiological data will be collected so that we can locate where they have been and follow-up for a future period of time. MRC individuals may be asked to assist in this process.

Will the RRVC be supervised?

Yes, the Bureau of Radiation Control (BRC) will be available to provide guidance to the members of the corp. Depending of the situation, this may be supervision within the population monitoring facility or reach back. Each member will be instructed to contact the BRC Communication Officer for additional direct communication capabilities.

Will the RRVC be first responders?

No, there will be no warning prior to a radiological event, if so; we could evacuate all the individuals within the impacted area. We anticipate that after the event there will be a determination that this is a radiological event and begin mobilizing resources. It is the critical period after identification and before the mobilization of federal resources that we plan to use the RRVC corp. Our expectation would be that population monitoring centers would be identified and staffed 12 hours after the event. There are few isolated cases where mass monitoring has occurred; most notable is the Gionna Brazil incident 20 years ago where over 100,000 individuals were monitored. Monitoring in this remote area took several weeks.

Will the MRC be required to purchase equipment?

No, the Bureau of Radiation Control (BRC) has strategically placed the needed equipment throughout the state and have an inventory where more state equipment can be provided near the event. The BRC has ordered additional equipment to support this effort.

How will this work?

In the event of a radiation accident, the incident commander or advisors would notify ESF8 through the tracker/constellation system the need to establish a population monitoring center. Another notification will go to the surrounding areas to assist with populating the center with RRVC from your area. We will not make this request in the impacted area. This is an effort to support and relocate to an area outside but near the impacted area.

Will I be exposed to radiation at the reception center?

Care will be given that no unnecessary exposure to members of the MRC at population monitoring. One of the best ways to do this is to allow those skilled in contamination control to assist. They know how to set up decontamination stations, bag and tag

radioactive material and how to reduce the spread of radioactive material. It is to your advantage to have these individuals on your team. They are the experts in the field.

Why did the MRC coordinators get invited?

It is important that you are aware of the skills and abilities these individuals will bring to the MRC. Not only are they there to help with population monitoring they can also provide local contacts for additional training and exercises.

This training is an opportunity for you and the RRVC to integrate. Florida is the first to develop such corp and we are looking to you to help us chart this new territory. Your experiences can help us better identify methods to meet these needs.

Who will pay?

The BRC received a grant from CDC to support this effort. If you complete the registration form, the BRC can prepay your registration fee. We need the form by June 13, 2008. If you live outside of Orlando, we can cover your mileage and one night's hotel accommodation. You will need to make your hotel reservations by June 13 and submit the authorization form provided to you. Staff will be on hand to help you with reimbursement and you will receive the travel reimbursement within 30 days of submitting your receipt.

APPENDIX F.

Kansas Fact Sheet

Kansas Radiation Control Program Radiation Response Volunteer Corps (RRVC)



The Kansas Radiation Control Program is developing a registry for radiation professionals who would be willing to receive training and be included on a list of volunteers willing to perform population monitoring during incidents involving radiation. The registry is called the Radiation Response Volunteer Corps (RRVC). Volunteers would have the opportunity to receive training, participate in drills and serve as a resource in the event of a radiological incident.

Radiological Incidents

A nuclear/radiological incident may result from a deliberate act, an accident, or general mismanagement, and may center around different materials or industrial practices, including

- Commercial nuclear facilities
- Federal nuclear weapons facilities
- Radioactive material sources, industrial uses, or technologically enhanced, naturally occurring radioactive material
- Transportation incidents involving nuclear/radioactive material
- Domestic nuclear weapons accidents
- Foreign incidents involving nuclear or radioactive materials
- Terrorism involving facilities or nuclear/radiological materials, including use of RDDs or INDs (Source- Nuc/Rad Annex, NRF)

Population Monitoring

Population monitoring is a process that begins soon after a radiation incident is reported and continues until all potentially affected people have been monitored and evaluated for

- Needed medical treatment
- The presence of radioactive contamination on the body or clothing
- The intake of radioactive materials into the body
- The removal of external or internal contamination (decontamination)
- The radiation dose received and the resulting health risk from the exposure
- Long-term health effects (Source- CDC website)

Resource Needs

- Local and State radiological responders would be quickly overwhelmed by large numbers of citizens needing evaluation for contamination
- Thousands of radiation professionals in Kansas in every community throughout the state could volunteer to be trained to assist local and state authorities in the event of a large radiological incident (Source-CRCPD)

Learn More

- To learn more about the Radiation Response Volunteer Corps (RRVC) development, visit the website at <http://www.kdheks.gov/radiation/index.html>. Or contact the RRVC team at rrvc@kdheks.gov or 785-296-1560.

Team of Radiological Emergency Volunteers **TOREV**

Notification and Deployment

The Radiation Protection Section will notify members of deployment via e-mail or phone. Upon receipt of a deployment notification, TOREV members will provide an estimated time of arrival to a designated assembly location. Upon arrival, members will register with the incident commander and be instructed about their roles in the Incident Command System. The incident commander will be notified of any demobilization.

To join TOREV

go to www.nchps.org.
Complete the application.

To learn more about the Medical Reserve Corp, go to: www.medicalreservecorps.org.

N.C. Radiation Protection Section
1645 Mail Service Center
Raleigh, N.C. 27699-1645
Tel: 919-571-4141
Fax: 919-571-4148

Questions

For more information, contact:
Dawn Burke, N.C. Radiation
Protection Section,
at (704) 813-7071 or
dawn.burke@ncdemr.gov;
Roger Sit at (919) 962-5711 or
rsit@unc.edu; or
Gerry Wicks at (919) 515-4601 or
wicks@ncsu.edu.

Partners

- N.C. Radiation Protection Section
 - N.C. Health Physics Society
 - Capital Regional Advisory Council
 - Medical Reserve Corp (CapRAC MRC)
 - State Medical Assistance Team (SMAT)
- A key component of the CapRAC.

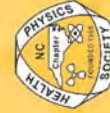
Member Requirements

New members are required to submit an application form and documentation signed by their supervisor stating the employee is volunteering to be a member of TOREV. Also, new members must sign a release form prior to participating in TOREV activities. Training is also required for all new TOREV members.

Member Training

Initial training, provided by the state Radiation Protection Section, includes classroom and hands-on instruction in emergency response operations and procedures as well as procedures for personnel monitoring, radiological monitoring equipment use and sample collection. In addition, new members are required to receive training on the Incident Command System.

Partners In Preparedness



450 copies of this public document were printed at a cost of \$173.62 or 39¢ per copy. 8/2010

What is TOREV?

The Team of Radiological Emergency Volunteers, or TOREV, is a statewide volunteer organization sponsored by the N.C. Health Physics Society in partnership with the N.C. Radiation Protection Section in the N.C. Division of Environmental Health and Capital Regional Advisory Council Medical Reserve Corp unit.

This organization would act as a part of a nationwide organization of radiation safety professionals. TOREV members would support North Carolina's resources as needed in case of a radiological emergency. Such an emergency or incident could be one with significant impact, such as a nuclear plant event or radiological dispersal device.

As an active TOREV volunteer, what would I do?

TOREV members participate in an annual regional radiological drill. Members enhance North Carolina's readiness through sharing of their knowledge and expertise in radiological situations. Key activities for a TOREV member consist of:

- Using a survey meter to check for radiation levels;
- Surveying individuals to check for contamination;
- Conducting routine monitoring using gamma spectroscopy and liquid scintillation;
- Participating in logistical planning and processing.

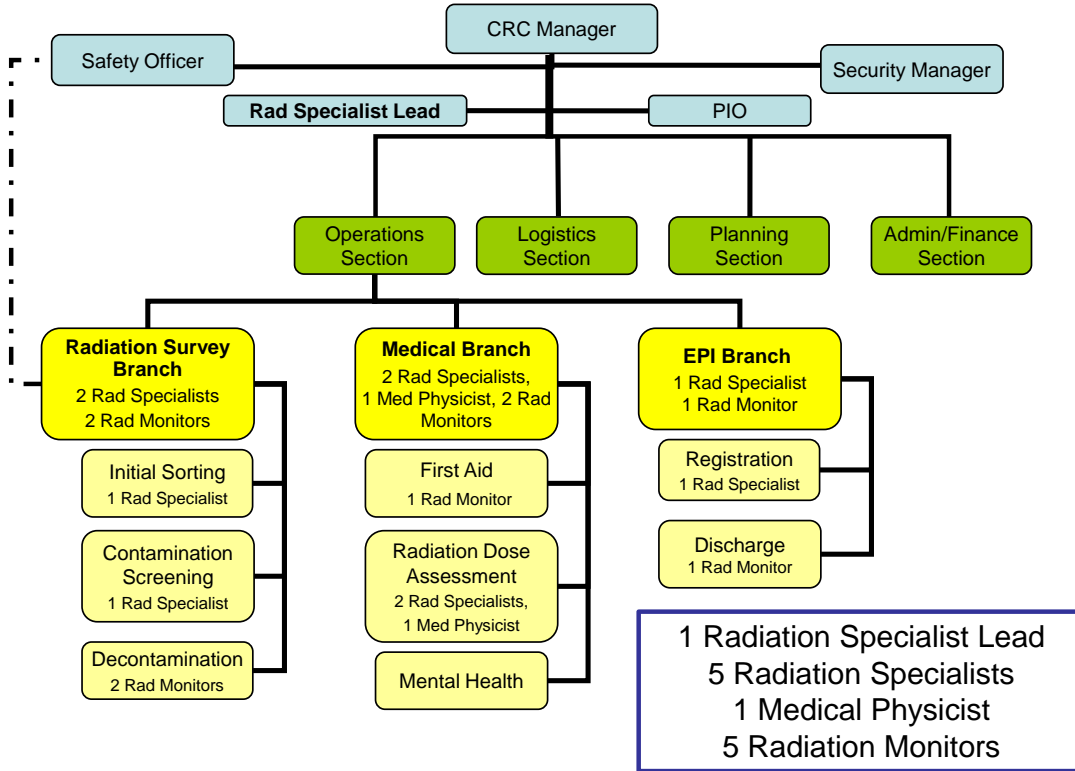
What's in it for me as a member of the TOREV team?

Training opportunities will be available throughout the year to enable members to participate in a radiological exercise, and members will be asked to participate in a nuclear power plant exercise. Becoming a TOREV member also presents a great networking opportunity as the TOREV team consists of partnering agencies that are essential to building a true network of emergency personnel.



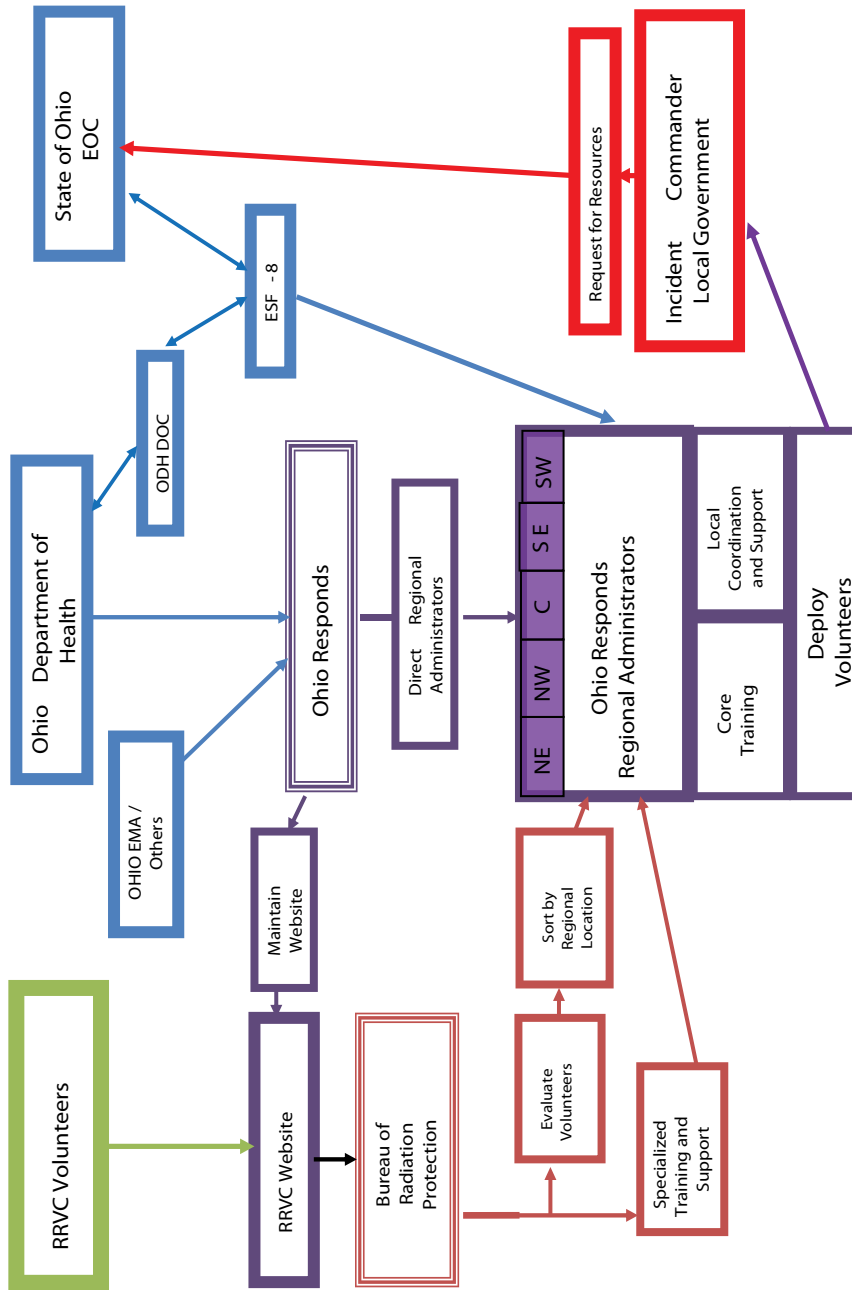
APPENDIX H.

ODH CRC ICS – HP Positions Rev 1



APPENDIX I.

Ohio Incident Command Structure Flow Chart



APPENDIX J.

CRCPD HS/ER-10 Exhibit Poster

The Radiation Response Volunteer Corps is part of a coordinated response team joined with local MRC units responding to a significant radiation emergency...Is your state **READY to RESPOND?**



CRCPD HS/ER-10
Task Force for Volunteer Development



www.medicalreservecorps.gov

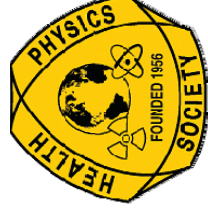
2010 CRCPD
Grant
Recipients
for
The
Development
of a
Radiation
Response
Volunteer
Corps
FL,KS,OH,OR,
NC,NY,

Be Ready to Respond...

In the event of a radiation emergency that impacts a large population, we face serious challenges in meeting the radiological health needs of every affected community...Radiation Professionals can make a difference...Contact your local MRC

SNM
Advancing Molecular Imaging and Therapy

www.medicalreservecorps.gov

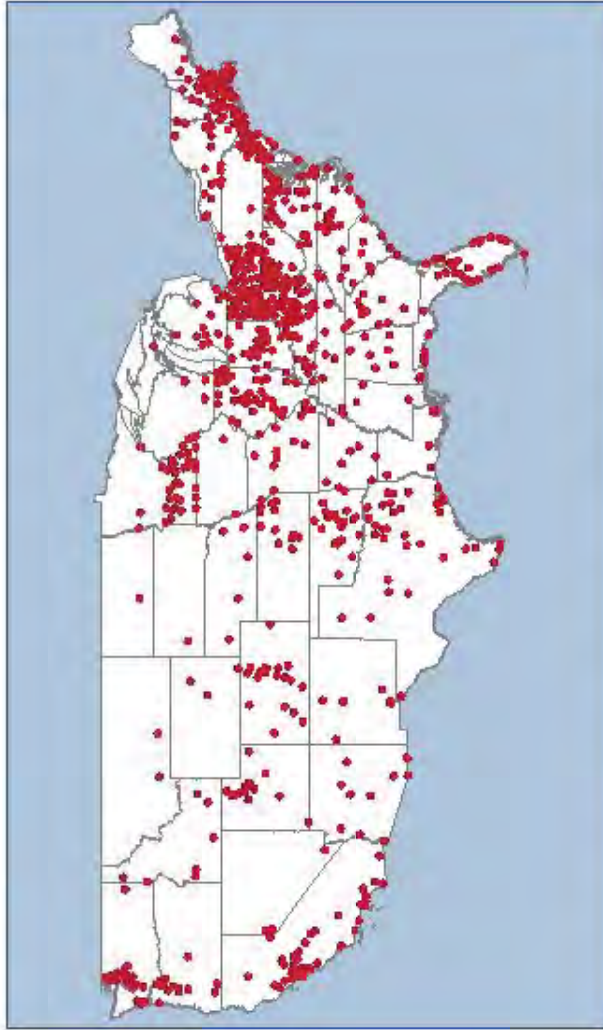


How Radiation Volunteers Help...

- Join and train with their local MRC units
- Monitoring environment and workplace
- Monitoring people
- Supporting operations at:
 - Hospitals
 - Public and special needs shelters
 - Emergency operations centers
 - Community reception centers
 - Etc.
- Communications/Calm Public Fears




Medical Reserve Corps Units

Alaska	Hawaii	Puerto Rico / Virgin Islands	Guam	Federated States of Micronesia	America Samoa	Northern Mariana Islands	Palau	Marshall Islands
								

Total MRC Units: 832

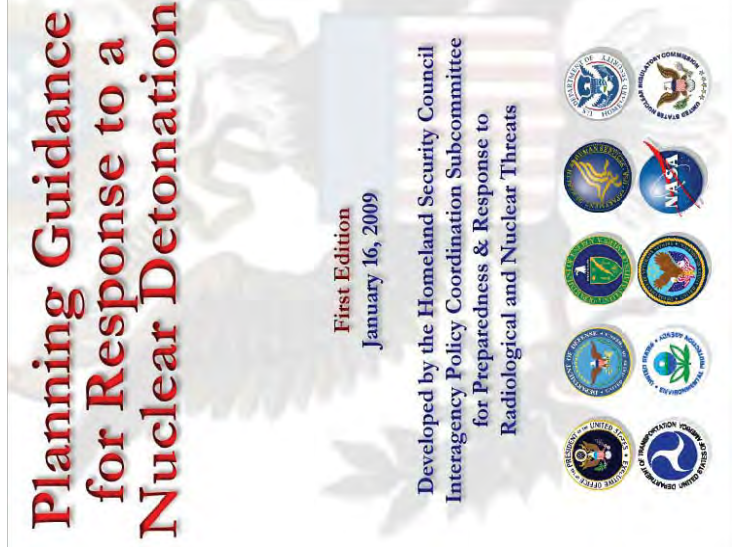


The Medical Reserve Corps is a component
of Citizen Corps and the USA Freedom Corps.



“Planners should identify radiation protection professionals in their community and encourage them to volunteer and register in any one of the Citizen Corps or similar programs in their community.”

Chapter 5



CRCPD HS/ER-10 Brochure

Why do we need to have Radiological Response Training?

- ☢ The United States has extensive borders and coastlines.
- ☢ The United States has 45 major metropolitan areas.
- ☢ The United States has 1000 international, domestic and private airports and water ports.
- ☢ The United States is a popular destination for international travel.
- ☢ The United States is home to many large, public, special events and 104 nuclear power plants.
- ☢ All of the above could be targeted by the many groups and individuals who wish to harm the United States.

“Planners should identify radiation protection professionals in their community and encourage them to volunteer and register in any one of the Citizen Corps or similar programs in their community.”
Chapter 5



**Be Prepared,
Be Trained, &
Be Ready to Respond**



www.crcpd.org
or
medicalreservecorps.gov

Volunteers are needed to support a coordinated Radiation Control team responding to a significant radiation emergency



Radiation Volunteers make an impact by assisting the State and local 1st responders with population monitoring and providing medical, administrative, and logistical, and communication support during a radiation related emergency...



Looking for a Few Good Men and Women:

Who are experienced with radiation survey and decontamination procedures and can assist in population monitoring.

Who are knowledgeable and experienced in reducing citizens concern about health risk from radiation exposure.

Who are willing to join their local Medical Reserve Corps (MRC) Network.

Who are able to collect and know the value of epidemiological information.

Who have experience in dealing with the psychological impact such an event may have on citizens.

“I WANT TO HELP”



“It’s as easy as 1, 2, 3”

- 1. Join** your local MRC
- 2. Attend** specialized Radiation Response Volunteer Corps training
- 3. Become** a part of the team by supporting local MRC activities



medicalreservecorps.gov

APPENDIX K.

EXAMPLES OF TOOLS AND PRODUCTS CREATED BY SUB-CONTRACTING AGENCIES

List of Tools and Products that Follow

Florida

Articles and Publications

Websites of Interest

Brochure

Advanced Population Monitoring Course

Template for Gathering Information

Photo Story

Kansas

Training Syllabus

Feedback Form

New York City

Symposia Flyer

Second Flyer

Ohio

Brochure

Oregon

Recruitment Brochure

Volunteer Recognition Patch

Articles and Publications

(The resources below were provided to attendees on a flash drive.)

- [Acronyms Radiation07](#)
- [Health Physics considerations in Medical Radiation Emergencies](#)
Ken Miller and Mike Erdman
Penn State Hershey Medical Center
- [Population Monitoring in radiation emergencies: A guide for state and local public health planners](#)
Centers for Disease Control August 2007
- [Psychological effects of radiation accidents](#)
Steven M. Becker, Dept. of Environmental Health Sciences, University of Alabama-Birmingham School of Public Health
- [RDD Handbook](#)
Conference of Radiation Control Program Directors, Inc.
- [Medical response to a radiation exposed patient](#)
- [Facts about Neupogen](#)
Centers for Disease Control and Prevention
- [Facts about Prussian Blue](#)
Centers for Disease Control and Prevention
- [Emergency Communication and Information Issues in Terrorist Events Involving Radioactive Materials](#)
Steven M. Becker, Dept. of Environmental Health Sciences, University of Alabama-Birmingham School of Public Health
- [Exercise Maritime Response](#)
Kramer, Gary H.; Johnson, Sonia; Hauck, Barry; Capello, Kevin; Quayle, Debora
Health Physics:Volume 92(5) Supplement 2May 2007pp S112-S122
- [Expanding Role in Preparedness and Response for a State Radiation Control Program](#)
Passetti, William A; Williamson, John A.
Health Physics:Volume 93(2) Supplement 2August 2007pp S139-S143
- [Radiological Incidents and the Florida Physician](#)
John J. Lanza, MD, PhD, MPH
Journal of the Florida Medical Association, August 2007

WEBSITES OF INTEREST

<http://www.bt.cdc.gov/radiation/>

<http://www.bt.cdc.gov/radiation/healtheffects.asp>

<http://www.bt.cdc.gov/radiation/publichealth.asp>

<http://www.bt.cdc.gov/radiation/masscasualties/publichealthplanning.asp>

<http://www.bt.cdc.gov/radiation/screeningvideos/index.asp>

Why do we need to have Radiation Training?

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Be Prepared,
Be Trained, &
Be Ready to Respond
by
Being a Member of the
Florida Medical Reserve Corps
Network



Volunteers are needed to support a coordinated Radiation Control team responding to a significant radiation emergency.

For more information visit our web site

www.myfloridaeh.com/radiation

or

www.servfl.com



Florida's Radiation Response Volunteer Corps



Upcoming RRVc Training
 Course Details/Registration Information
www.MyFloridaEH.com/radiation

UPDATED DATES AND

LOCATIONS (REVISED 9/15/10)

OCTOBER 2	MIAMI
OCTOBER 16	WINTER PARK
OCTOBER 30	PENSACOLA
NOVEMBER 20	DADE CITY
DECEMBER 4	NAPLES
DECEMBER 11	FT. PIERCE
JANUARY 8, 2011	PALM BEACH OR BROWARD COUNTY

There is NO registration fee.



MRC/RRVC members make an impact by assisting 1st responders with population monitoring and providing medical, administrative, logistical, and communication support during a radiation related emergency.



Looking for a Few Good Men and Women:

Who are experienced with radiation survey and decontamination procedures.

Who are knowledgeable and experienced in reducing citizens concern about health risk from radiation exposure.

Who are members of the Florida Medical Reserve Corps (MRC) Network.

Who are able to collect and know the value of epidemiological information.

Who have experience in dealing with the psychological impact such an event may have on citizens.

Who can communicate directly with the Bureau's Operations Officer through established communication channels.

“I WANT TO HELP”




“it's as easy as 1, 2, 3”

- 1. Register today at www.servfi.com**
- 2. Attend upcoming Radiation Response Volunteer Corps training**
- 3. Become a part of the team by supporting local MRC activities**



**ADVANCED
RADIOLOGICAL
RESPONSE
FOR MEDICAL RESERVE
CORPS**

TRAINING OFFICERS
DEBBIE GILLEY - HECTOR TABARES - DAVID PIESKI



Bureau of Radiation Control

1

The State of Florida Emergency
Management Annex for an All-Hazards
Radiological Emergency



Annex E to the State Comprehensive Emergency
Management Plan

2

Chapter 15, Annex E

**Each county is responsible for
assuring that county
emergency personnel receive
adequate training annually.**

3

MRC

**An organization of
volunteers who have been
pre-screened & trained to
assist local health agencies
in times of need.**

4

Morning

Radiological Fundamentals
Instrumentation
WMD/RDD

Incident Command Structure
County Response Overview
Population Monitoring & Decon

5

Overview

Afternoon

- Indoor Proficiency Stations
- Outdoor drills
- Review & Adjourn

6

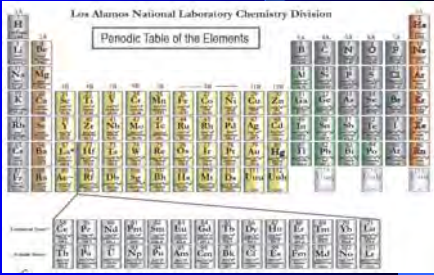
RADIATION FUNDAMENTALS ATOMIC AND NUCLEAR STRUCTURE



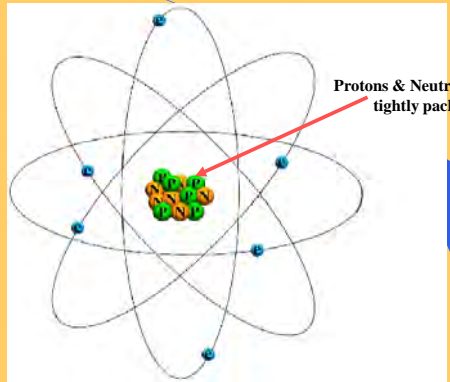
7

Atoms

- Atoms make up the elements.
 - Elements make up all matter
- Two parts
 - Nucleus
 - Electrons



8



9

Relevant Atomic Structure

Isotopes – atoms of an element with **differing** #'s of neutrons

Example

C-9 C-10 C-11 C-12 C-13 C-14 C-15
C-16 are all “isotopes” of carbon and all exist on Earth !

10

Radiation Fundamentals (Cont.)

What Is Radiation?

Energy in the form of subatomic particles **or** electromagnetic waves emitted from the nucleus of an **UNSTABLE** atom in an effort to reach **STABILITY**.

THIS ENERGY IS CALLED RADIATION

11

Radiation Fundamentals (Cont.)

Types of Radiation

- 1) Naturally occurring
- 2) Man-made.

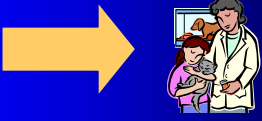
12

Naturally Occurring Radiation

Three Components

- Cosmic Rays
- Terrestrial Radiation - Naturally Occurring Radioactive Material (NORM)
- Internally deposited radionuclides

Uptake of NORM by plants/animals /water



13

Man-made Radiation

- Nuclear medicine - diagnostic & therapeutic
- Nuclear power
- Consumer products
- Industrial processes

14

Ionizing Radiation


Two Types

- 1) Particulate
- 2) Electromagnetic (wave)

15


Ionizing Radiation (cont.)

Particulate



Alpha α

Beta β

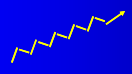


Neutron

16

Ionizing Radiation (cont.)

Electromagnetic




Gamma γ
or X-ray

17

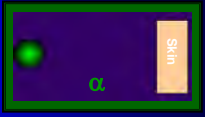
Alpha Particle

• Internal hazard only, harmful when *inside* body



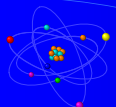
Former Russian spy Litvinenko fell ill on November 1 & died on November 23, 2006 after Po-210 poisoning

- Has large mass, can't penetrate skin
- Very short travel distance
- Shielded by paper




18

Radiation Fundamentals (Cont.)



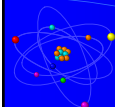
Beta Particle

- Internal and external hazard
- Can penetrate into skin but not to deep organs
- Short travel distance ~ 10 ft in air
- Shielded by ¼ " plastic or thin metal



19

Radiation Fundamentals (Cont.)

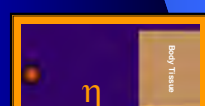


Neutrons

- Energetic and destructive to cells
- Rarely occurs from natural radioactive materials
- Can travel long distances
- Shielded with hydrogenous materials (water, poly, etc.)

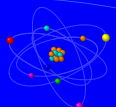
10 Inches of Plastic 1 foot of Concrete 3 feet of Dirt 3 feet of Water

- Neutrons needed for chain reaction in reactors and nuclear bombs



20


Radiation Fundamentals (Cont.)



Gamma and/or X-Rays

- The **biggest** concern for public safety
- Both are penetrating radiation and travel long distances
- Can penetrate walls and entire body giving deep dose to organs
- Shielded by dense materials

1 ft Soil 6 " Concrete 3 " Steel 1 " Lead



21

Radiation Measurement

Since Radiation is ENERGY, appropriate units will reflect that :

Heat: calories, BTU's
Electricity: Kilowatt-hour
Explosives: TNT equivalent

22

Radiation Fundamentals (Cont.)

Radiation Measurement

Terminology - Units

Roentgen = Rad = Rem

Describes amount of energy absorbed per material weight

23

Typical Doses

Source	DOSE
Chest or Dental X-ray	10 mrem
Coal Burning Power Plant	0.2 mrem / yr
Nuclear Power Plant	0.1 mrem / yr
Coast to coast Airplane roundtrip	5 mrem / trip
Smoking	3 mrem / pack

24

Effects of ACUTE Dose

Dose (Rads*)	Effects
25-50	First sign of physical effects (drop in white blood cell count) (NO detectable outward symptoms)
100	Threshold for vomiting, diarrhea, fatigue, fever (within a few hours of exposure)
320 - 360	~ 50% die within 60 days (with minimal supportive care)
480 - 540	~50 % die within 60 days (with supportive medical care)
1,000	~ 100% die within 30 days
BODY PART 200	Threshold for erythema (skin reddening) Ulceration (at higher doses)


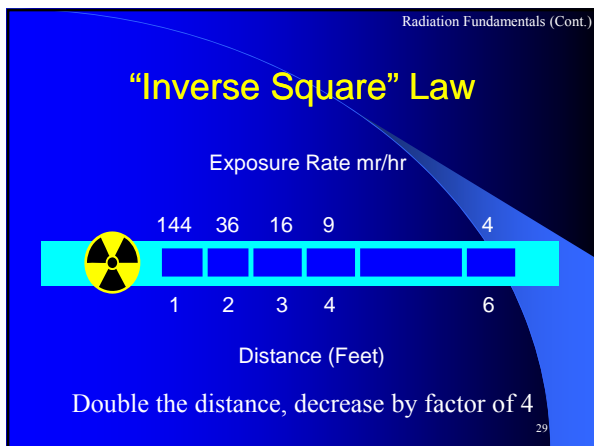
- ### Some Limits
- **2 mR/hr** Dose rate to public / Federal
 - 500 mR Emergency responder limit - State BRC
 - 5 R/hr Turn back value / State/BRC
 - **5 R/yr** Occupational /Federal/ State
 - 10 R Property / Federal (No detectable biological effect)
 - **25 R** Life saving / Federal (slight decrease in white blood count)
 - >25R Volunteers only / Federal
- Ref- 10CFR PART 20, EPA 400, 64E-5 FAC // FL-SOP

Acute Exposure and Fatal Cancer Risk

Dose (mrem)	Percent
1,000	0.08
5,000	0.4
10,000	0.8
25,000	2.0
50,000	4.0

Example: Rate of fatal cancer from all causes: ~ 20 %
Get 25 R dose, your risk is at 22 %

Controlling Exposure (ALARA) ??

Radiation Fundamentals (Cont.)

Contamination ??

- Contamination is radioactive material in an undesirable location.

Radiation is a type of energy;
Contamination is material

31



BUREAU OF RADIATION CONTROL

Radiological Survey Instruments
and Dosimetry Devices

33

Radiological Surveys

- Two main categories
- Those that measure radiation exposure
- Those that measure contamination
- **Some survey instruments are designed to do both**

Radiation Exposure Survey Instruments

- Typically read in milliroentgen/hour (mR/hr) or roentgen/hour (R/hr)







- Before using any meter
What is the FIRST STEP ?

37

Canberra UltraRadic


- Personal radiation exposure monitor
- Measures dose and dose rate
- Uses 4 AAA batteries/150 hrs
- 4 alarm settings
- “b” flashing
10 hours left

38

Canberra UltraRadic

Reset dose to zero
Audio on
Stay time function




39

Canberra UltraRadic

Alerts and Alarms

Dose Rate **Alert** set @ 2 mR/hr
Dose Rate **Alarm** set @ 100 mR/hr


Dose **Alert** set @ 100 mR
Dose **Alarm** set @ 500 mR



40

Application of Radiation Exposure Survey Instruments


- Source location / establishing boundaries
- Assessing package integrity



41



Contamination Survey Instruments

- Typically read in counts per minute (CPM)
- Typically use a pancake probe



42

The Ludlum meter

MODEL 2401-P Pocket Meter

Range: 0 -50 KCPM
0 -15mR/hr

Detects:
Alpha/Beta/Gamma


MULTIPLIERS: X1, X10, X100

9-volt battery /250 hrs operation

43

Application of Contamination Survey Instruments

- Locating contamination on personnel and equipment
- Determining the boundaries and magnitude of a contaminated area
- Determining the effectiveness of decontamination



44

Establish area "Background"


Contamination BACKGROUND

Normally between 50-100 CPM

45

Procedure for Contamination Survey

- Hold probe 1/2 inch from surface
- Move probe slowly, 1-2 inches per second
- Pause if count rate increases



46

When is something "contaminated" ?



Meter reads over 2X background

EPA 400-R-92-001 47

Model AM-801 Portable Portal Monitor

Manufactured by William B. Johnson & Associates, Inc.
West Virginia

48



Unit basic description

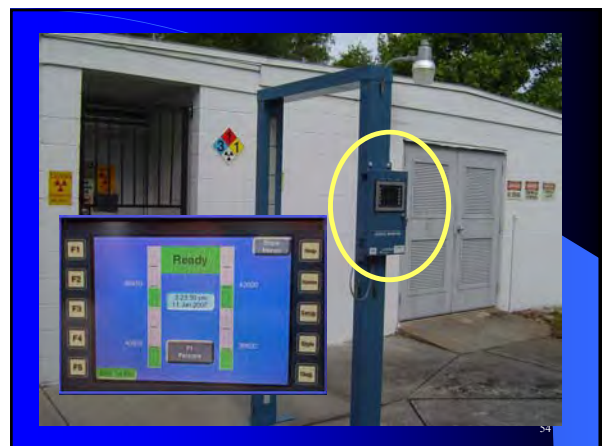
- Screen for gamma/beta radiation
- Weather resistant
- Assembly w/o tools
- 83 lbs. Carrying case: 128 lbs.
- Inside Dimensions (3' W x 7' H)

OPERATING MODES

- Walk thru
- Timed count
- ~~Vehicle Drive Thru~~ (kit)

Operating Spec's

- Audio (digitally recorded verbal commands)
- Power (120 VAC or 9 "D" cell batteries)
- Temperature Range (-4° thru 140° F)
- Display (VGA Touch Sensitive Screen)
- Operator Input (Screen)



Dosimeters

- Self reading dosimeter (SRD):
 - Measures accumulated dose
 - Hold to light, look through eyepiece to read
 - Check frequently while in area



Dosimeters

- Electronic dosimeter:
 - Measures accumulated dose
 - Utilizes digital readout
 - Many options available
 - Audible response - chirp rate varies with radiation dose rate



Dosimeters

- Electronic Personal Dosimeter: (EPDs)
 - Measures accumulated dose
 - Highly accurate dose
 - No user changeable settings
 - EPD software



Thermo MK2
Thermo Electron Corporation

- **Slow** response as a dose rate meter.

57

Personal Dosimeter

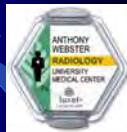
Specifications:	
Detects: Gamma-Beta X-rays	
Dose Range :	0.1 mrem to 1600 rem
Units :	mrem to rem auto-ranging
Dose Alarms :	100 mR and 500mR HP10 1000 mR HP07
Battery :	1AA 1.5VAlkaline/3.6VLithi 30 weeks/10 months
*Will also measure dose rate up to 400 R/hr	



58

Dosimetry Devices

- Thermoluminescent dosimeter (TLD):
 - Measures accumulated dose
 - Does **not** provide on-the-spot indication of dose
 - Specialized equipment required to “read” TLD



59



QUESTIONS ?

60



Radiation Dispersal Device (RDD) Two Types

1. Localized Sources
2. Coupled with Explosives (Dirty Bomb)

62

Is a Dirty Bomb a nuclear weapon?

NO !!

- Nuclear weapons need weapon grade material
- There is **no** nuclear/fission chain reaction
- Dirty bombs use nuclear waste or sources

63

Another Possible Target: Nuclear Facilities

Nuclear Facilities in the U.S.

- There are 103 operating nuclear power reactors at 65 sites across the United States.
- Total power production is about 20 % of consumption

64

Main Threats to Nuclear Plants

- Airliners hitting containment
- Cutting off electrical power to plant
- Armed assault

65

Comparative Size of Targets

WTC
208' wide
1,353' tall

Containment Building
130' wide
160' tall

Pentagon
1,489' wide (921' per side)
71' tall





67

EPRI, the Electric Power Research Institute, has concluded that commercial airliner impact does NOT pose a threat to nuclear power plants

68

Trying to cut off electrical power to plant?


Nuclear plants have, by license, large diesel generators to supply power in the event of losing offsite power. These generators have enough fuel to run for weeks *if needed*.

69

Armed assault of plant?

- Post 9/11 security has been increased tenfold.
- Most plants maintain commando and SWAT type training for their security personnel.



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71

Who has Nuclear Weapons ?

Russia	US	Pakistan
Israel	N. Korea	China
U.K.	France	9. India

** Iran has refused to halt Uranium enrichment program despite UN sanctions

72

Energy Distribution

Low altitude detonation, moderate sized weapon

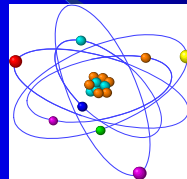
- 50% as blast
- 35% as thermal radiation
- 15% as nuclear radiation; (5% - initial & 10 % residual)

Shock wave & heat account for 85 % of energy released

Source:<http://www.fas.org/nuke/intro/nuke/effects.htm>

73

RADIOLOGICAL EVENT FEDERAL AND STATE COMMAND STRUCTURE



74

Federal Command Structure

- Follows the Incident Command and National Incident Management System
- DHS (DOE) or FBI will be lead **federal investigative** agencies initially if incident is of national significance

75

State Command Structure

Follows the Incident Command and National Incident Management System

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County Structure

- **Florida County Commissioners Responsible for Citizen Safety** – delegated through County Emergency Operations Center .

77


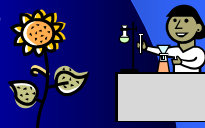
Florida DOH Responsibilities



- **Florida Statute 404 designates DOH as the state agency to administer a statewide radiation protection program**




78

BRC Responsibilities

- Provide radiation expertise 
- Collect and analyze samples 

79

BRC Responsibilities

- Take radiation measurements 
- Furnish dosimetry/KI to emergency workers in the radiation area 
- Keep emergency worker dose records 
- Determine doses to the public
- Provide documentation for measurements.

80

BRC Responsibilities, Cont'd

- Determine needs for mutual aid and federal assistance with regard to radiation monitoring.



For any Radiation event, BRC has representatives at SEOC and County EOCs, as needed.

81

Early Phase Issues

- Options: Evacuate or Shelter in Place - 1 REM projected dose (plume & ground) is the trigger
- BRC **advises** what to do – County **decides**

82

PAGs for the Early Phase of a Nuclear Incident

Protective Action	Projected dose	Comments
Evacuating or sheltering	1-5 rem	Protective action: normally initiated at 1 rem
Administration of iodine stable (KI)	25 rem	Requires approval of State medical officials

83

Each Specialty has some special considerations....

- County Emergency Management
- Law Enforcement
- Fire and Hazmat
- Hospitals/EMS
- County Health Department

84

Special Considerations: Emergency Management

- Provide resources to the Incident Commander
- Coordinate execution of mutual aid agreements
- Establish Joint Information Center

- Establish Rumor Control Hotline
- Establish Unified Command for Multiple Counties

85

Special Considerations: Law Enforcement

- Provide security and traffic control
- Assist with evacuation notification
- Assist with evidence protection and criminal investigation

86

Special Considerations: Fire and Hazmat

- Control fire at the scene
- Assess safety of unexploded devices

- Assist with evacuation notification
- Establish decontamination points

87

Special Considerations: EMS

Assess and triage casualties at the scene

Stabilize and transport casualties to hospitals

88

Special Considerations: Hospitals

- Establish casualty collection point
- Receive and treat casualties
- Establish decontamination at/near casualty collection point

89

Special Considerations: Hospitals

- Entire State Will See “Worried Well”
- Request perimeter security from Law Enforcement
- In coordination with American Red Cross, establish family reunification and worried well/behavioral health assessment
- Contact REAC/TS for radiological casualty treatment advice at 865-576-1005.

90

General County Responsibilities

- Open and staff Reception Centers -- where citizens can get assistance or have radiation levels monitored
- Location for federal assistance if requested

91

Special Considerations: County Health Departments

- Staff County EOC ESF-8 and assist with identification and deployment of health and medical resources (like the MRC !!)
- Release public health information in conjunction with the Joint Information Center
- Lists/maps of farms, dairies, water supplies, slaughter houses, groves, etc.

92

Special Considerations: County Health Departments

- Mental health and crisis counseling
- Victim ID/mortuary services
- Assist with PAG implementation
- Ensure cont'd tools, clothing, etc. that can't be decont'd are bagged, tagged, and stored

93

Population Monitoring: County Health Department

- Create & track a public exposure registry complete with names, addresses, location and times in the exposure area – **in coordination** with the BRC, CDC, DOE, DHS, DHHS, NRC, DOD and others
- Will be a long-term issue for CHDs (~20 yrs)

94

Recovery Phase: Months to Years

- Feds: DOE transfers lead to EPA
- Economic & social factors will be taken into account when keeping radiation levels low.
- All stakeholders will participate in deciding actual recovery Protective Action Recommendations.

95

Preparedness Phase

- Set locations and procedures for :
Casualty Collection Points and Reception Centers
- Establish location for federal assistance facility per FRMAC requirements
- Drill

96

Questions

?

97

Population Monitoring In Radiation Emergencies

98

Population Monitoring

Process begins soon after a radiation incident is reported and continues until all potentially affected people have been monitored and evaluated for:

- Medical treatment
- Contamination with RAM
- Decontamination
- Dose assessment and health risks.
- Long term health effects

99

Population Monitoring

SCOPE includes two assumptions:

- Incident does not involve chemical and/or biological agents
- The local response infrastructure is relatively intact

100

Population Monitoring

Guiding Principles:

- First priority is to save lives: **TREAT INJURIES FIRST, Contamination ≠ IDLH**
- Initial activities should focus on preventing acute exposure
- Scalability and flexibility are critical

101

Population Monitoring – Initial Hours . . .

People who self-evacuate by any means of transport

People who stay on the scene to be monitored and/or treated

102

Self Evacuees

- **Self Decontamination Instructions (TV, Radio)**
(Exposure risk communicated by location, proximity, plume projections, etc.)
- **Location of monitoring stations/reception centers**

103

People on scene

#'s of people and available resources will determine response

- Directed home for self-decontamination with instructions to return for monitoring
- Directed to monitoring stations/reception centers

104

Reception Centers

Assessment for:

- Exposure
- Contamination
- Decon
- Medical follow-up

105


Reception Centers

- Size
- Location
- Restroom & shower facilities
- Accommodations for disabilities
- Cooling/heating
- Sports arenas – Gymnasiums - Hotels

106

Staffing

- Intake
- Radiation surveyors (portal monitors &/or hand held)
- Decon assistance
- Clinicians



I WANT YOU

107

TRIAGE

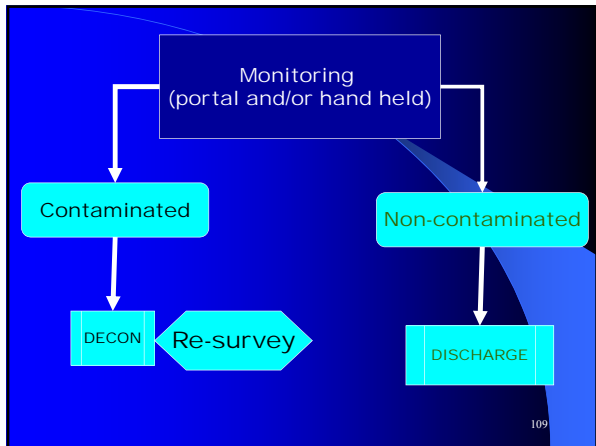
Life
Threatening
Injuries

External
Contamination
Suspected

Internal
Contamination
Suspected

Dose projections, times, locations, symptoms

108



Portal Monitors



Goiania, Brazil Cs-137 exposure >100,000 requested monitoring, 237 found contaminated

Tokyo, Japan-Sarin Gas attack in subway >5500 reported to hospitals, ~1000 mild injury, 37 severe and 17 critical.

Screening using Hand Held Equipment

Your Equipment

- Survey meter
- Survey Data Sheet
- PPE
 - Gloves
 - Booties
 - Optional face masks (N-95 or similar)

Whole Body Survey?

NO!

Head & shoulders

Screening Survey

Face

Hands

QUICKIN EASY!

Suggested Action Levels (very fluid !)

< 1,000 cpm ? home & shower

< 10,000 cpm ? home & shower
(Large event ??)

> 10,000 cpm ? decon area

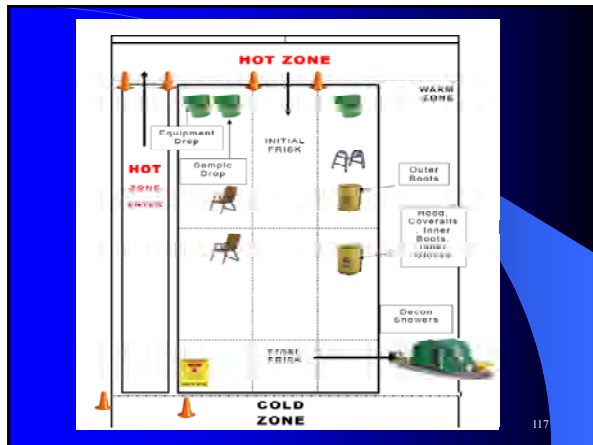
> 100,000 cpm ? priority for internal decon !

115

Typical Rad Decon Procedure

- ❑ Remove clothing (or cut off)
(80-90 % contaminants should be now removed)
- ❑ Bag (or double bag) clothing with contact information
- ❑ Don new clothing provided
- ❑ **Re-Survey**
- ❑ If contamination remains → "spot" wet wash
- ❑ Don new clothing provided
- ❑ **Re-Survey**
- ❑ If necessary, repeat shower ("spot" or full body) & **re-Survey**
- ❑ Direct to medical facility for internal contamination if prior steps ineffective

116



REGISTRY of potential contaminated/irradiated victims

All first responders, public health workers, & hospital staff

- Collection of contact, health, and exposure info into database
(name, address, tel. #, dob, sex, etc.)
(location/time of individual re incident)

118

QUESTIONS ?

119

End of Advanced Class Review

Let's do some hands-on !!

120



FLORIDA DEPARTMENT OF HEALTH COMMUNITY RECEPTION CENTER (CRC) TEMPLATE

Date <input style="width:100%; height:20px;" type="text"/> / <input style="width:20px; height:20px;" type="text"/> / <input style="width:20px; height:20px;" type="text"/> Military Time _____ HRS	Name (Last, First, MI) <input style="width:100%; height:30px;" type="text"/> ID: _____	Laboratory Information: High Priority? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, write "PRIORITY" on sample containers LAB TRACKING CODE: CRC01- <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
--	--	--

NOTE: REFER TO BIOASSAY CRITERIA GUIDANCE TO DETERMINE IF URINE SAMPLE SHOULD BE COLLECTED. IF URINE SAMPLE IS COLLECTED, ENSURE THAT LAB PRIORITIZATION INFORMATION IS INCLUDED IN LABORATORY INFORMATION SECTION (UPPER RIGHT OF THIS PAGE). REFER TO LAB PRIORITIZATION GUIDANCE FOR CRITERIA TO ASSIST IN IDENTIFYING HIGH PRIORITY SAMPLES.

**Part A:
RADIATION
CONTAMINATION
SURVEY**

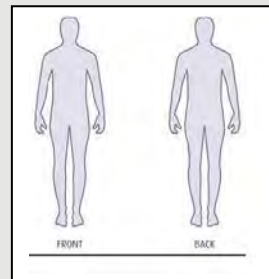
INSTRUCTIONS: PART A SHOULD BE COMPLETED BY CRC RADIATION STAFF. SECTION A SHOULD ONLY BE COMPLETED FOR HIGHLY CONTAMINATED INDIVIDUALS OR THOSE WHO SET OFF THE PORTAL MONITOR. FOR INDIVIDUALS WHO DO NOT SET OFF THE PORTAL MONITOR, SKIP TO SECTION B

A1. Potential Routes of Contamination
 Has the individual showered or changed clothes since the event? Yes No Unknown
 Has the individual eaten or drank since the event? Yes No Unknown

Describe (Include Date/Time): _____
 Has the individual voided urine or stool since the event? Yes No Unknown

A2. Pre-Decontamination Measurements Type of Detector: _____ Detector Serial #: _____
 Units CPS CPM BQ CI
 Using lines below, record measured levels of contamination for specified body areas, specify on the diagram and, where levels are recorded if levels refers to LEFT or RIGHT, FRONT or BACK:

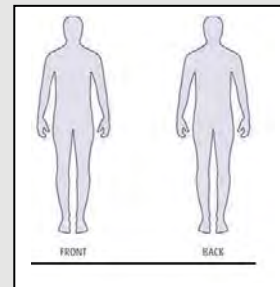
Face/Neck _____
 Trunk _____
 Upper Extremity _____
 Lower Extremity _____



Type: Alpha Beta Gamma
 Record levels measured at the HEAD/NECK area:
 Units: CPS CPM BQ CI

A3. Post-Decontamination Measurements Type of Detector: _____ Detector Serial #: _____
 Units: CPS CPM BQ CI
 Using lines below, record measured levels of contamination for specified body areas, specify on the diagram and, where levels are recorded if levels refers to LEFT or RIGHT, FRONT or BACK:

Face/Neck _____
 Trunk _____
 Upper Extremity _____
 Lower Extremity _____



Type: Alpha Beta Gamma

A4. Does individual have any potentially contaminated open wounds or retain a radioactive foreign body? Yes No

INSTRUCTIONS: IF URINE SAMPLE IS COLLECTED, ENSURE THAT THE LAB PRIORITIZATION INFORMATION IS INCLUDED IN LABORATORY INFORMATION SECTION (UPPER RIGHT OF FRONT PAGE) BEFORE THE INDIVIDUAL IS MOVED TO THE REGISTRY ENROLLMENT AREA. REFER TO LAB PRIORITIZATION GUIDANCE FOR CRITERIA TO ASSIST IN IDENTIFYING HIGH PRIORITY SAMPLES.



FLORIDA DEPARTMENT OF HEALTH COMMUNITY RECEPTION CENTER (CRC) TEMPLATE

INSTRUCTIONS: SECTIONS B, C AND D SHOULD BE COMPLETED BY ALL INDIVIDUALS WHO ARE ASSESSED IN THE COMMUNITY RECEPTION CENTER.

Section B: REGISTRY CONTACT INFORMATION		B1. Name (Last, First, MI) <input type="text"/>	B2. Date of Birth <input type="text"/> / <input type="text"/> / <input type="text"/>	B3. Social Security Number <input type="text"/>
B4. Ethnicity <input type="checkbox"/> Hispanic <input type="checkbox"/> Non-Hispanic <input type="checkbox"/> Unknown	B5. Race (all that apply) <input type="checkbox"/> White <input type="checkbox"/> Black <input type="checkbox"/> Asian/Pacific Islander <input type="checkbox"/> Native American <input type="checkbox"/> Unknown	B6. Gender <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Unknown	B7. Pregnant If yes, due date <input type="checkbox"/> Yes <input type="text"/> / <input type="text"/> / <input type="text"/> <input type="checkbox"/> No/NA <input type="checkbox"/> Unknown	B8. Phone Number <input type="text"/> - <input type="text"/> - <input type="text"/> B9. Alternative Phone Number <input type="text"/> - <input type="text"/> - <input type="text"/>
B10. Street Address <input type="text"/>	B11. City <input type="text"/>	B12. State <input type="text"/>	B13. Zip <input type="text"/>	B14. Email Address <input type="text"/>

Section C: EXPOSURE INFORMATION

C1. Please indicate which BEST describes the capacity in which you may have been exposed:
 First Responder (e.g. Fire, Law Enforcement, EMS) Wore PPE Did not wear PPE
 Other on-scene responder: Local State Federal Other (specify: _____)
 General Public
 Other (specify: _____)

C2. Did you see or hear an explosion? Yes No

C3. Were you indoors or outdoors at the time of release? Indoors Outdoors

C4. Location/Address where you were when the event occurred?
 LOCATION _____
 STREET _____
 CITY _____ STATE _____ ZIP _____

C5. Following the event, how long were you at the LOCATION or ADDRESS listed above? _____ MINS/HRS (circle one)

FOR STAFF USE ONLY
PROVIDE AN ESTIMATE OF THE DISTANCE BETWEEN LOCATION OR ADDRESS AND INCIDENT SITE

≤ 1 Mile
 1-5 Miles
 5-10 Miles
 ≥ 10 Miles

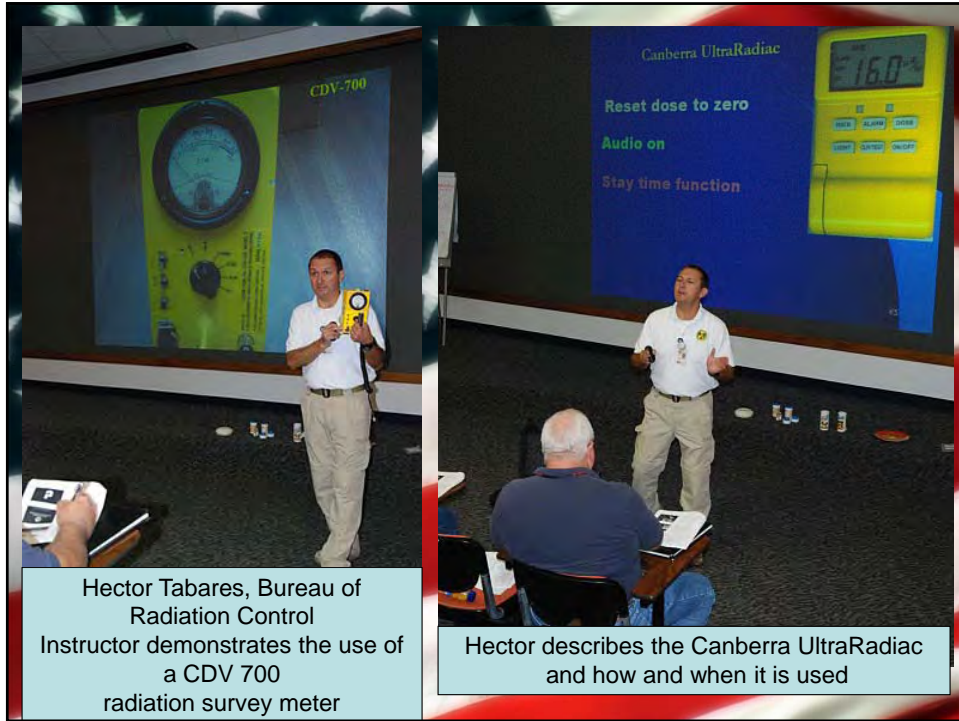
Section D: CLINICAL INFORMATION

D1. Since the incident, have you had or do you currently have **any** of the following symptoms::

Symptom	Time of Onset (since exposure)
<input type="checkbox"/> Repeated vomiting	<input type="checkbox"/> <10 MIN <input type="checkbox"/> <1 HR <input type="checkbox"/> 1-2 HRS <input type="checkbox"/> >2 HRS <input type="checkbox"/> NONE
<input type="checkbox"/> Diarrhea	<input type="checkbox"/> <1 HR <input type="checkbox"/> 1-3 HRS <input type="checkbox"/> 3-8 HRS <input type="checkbox"/> >8 HRS <input type="checkbox"/> NONE
<input type="checkbox"/> Severe headache	<input type="checkbox"/> 1-2 HR <input type="checkbox"/> 3-4 HRS <input type="checkbox"/> 4-24 HRS <input type="checkbox"/> NONE
<input type="checkbox"/> Fever	<input type="checkbox"/> <1 HR <input type="checkbox"/> 1-2 HRS <input type="checkbox"/> 2-3 HRS <input type="checkbox"/> NONE
<input type="checkbox"/> Confusion	<input type="checkbox"/> YES, AT ANY TIME <input type="checkbox"/> NONE
<input type="checkbox"/> Loss of consciousness	<input type="checkbox"/> YES, AT ANY TIME <input type="checkbox"/> NONE
<input type="checkbox"/> Additional symptoms and onset:	List Here: <input type="text"/>

<p>D2. Past Medical History</p> <p>Have you recently received diagnostic studies involving nuclear medicine (e.g. stress test, thyroid exam etc) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If yes, when: _____</p> <p>Have you recently received cancer treatment (e.g. radiation therapy brachytherapy for prostate or thyroid cancer)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If yes, when: _____</p>	<p>D3. Pre-Existing Conditions (check all that apply)</p> <p><input type="checkbox"/> Hypertension <input type="checkbox"/> Congestive Heart Failure <input type="checkbox"/> Stroke <input type="checkbox"/> Seizure <input type="checkbox"/> Diabetes <input type="checkbox"/> Immunocompromised <input type="checkbox"/> Chronic Obstructive Pulmonary Disease (COPD) <input type="checkbox"/> Other, specify: _____ <input type="checkbox"/> Other, specify: _____</p>
--	--





Hector Tabares, Bureau of Radiation Control Instructor demonstrates the use of a CDV 700 radiation survey meter

Hector describes the Canberra UltraRadic and how and when it is used



Participant practice with Canberra UltraRadic survey meter proficiency



Taking background readings in the classroom



Duval County Fire and Rescue Participants



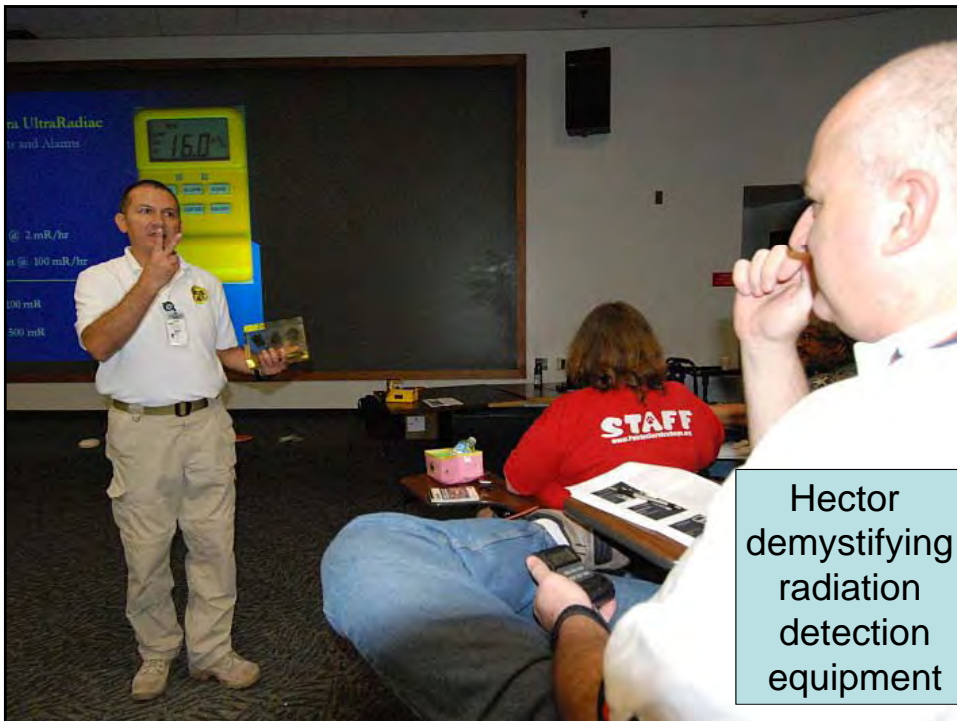
Detecting Radiation!



Wow this is fun!



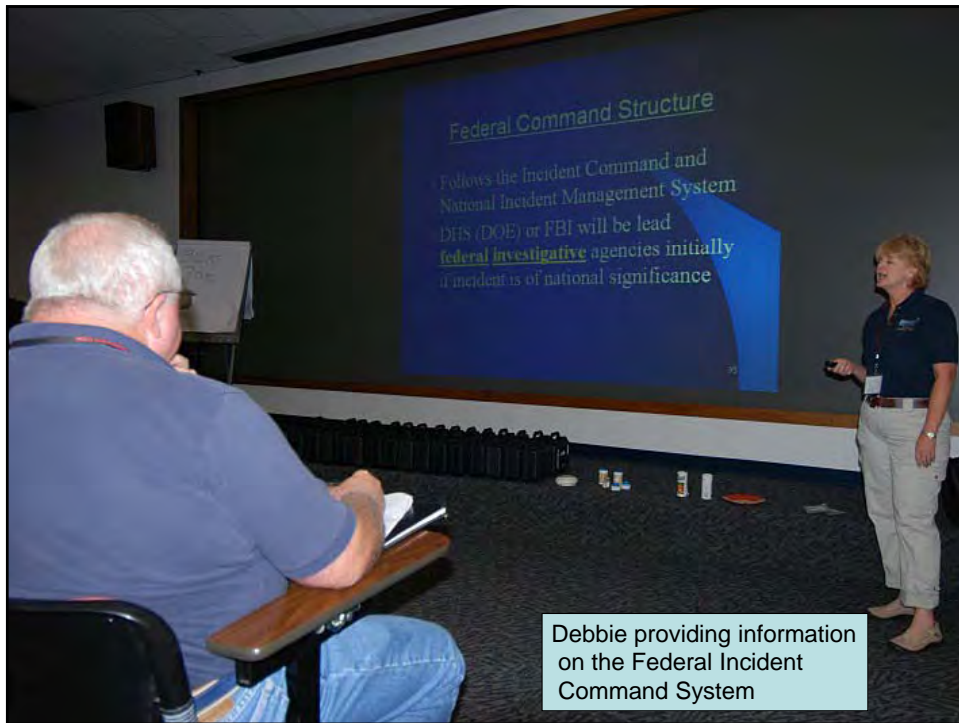
Participants enjoying the “hands on” section of the class



Hector demystifying radiation detection equipment



Hector makes this so easy



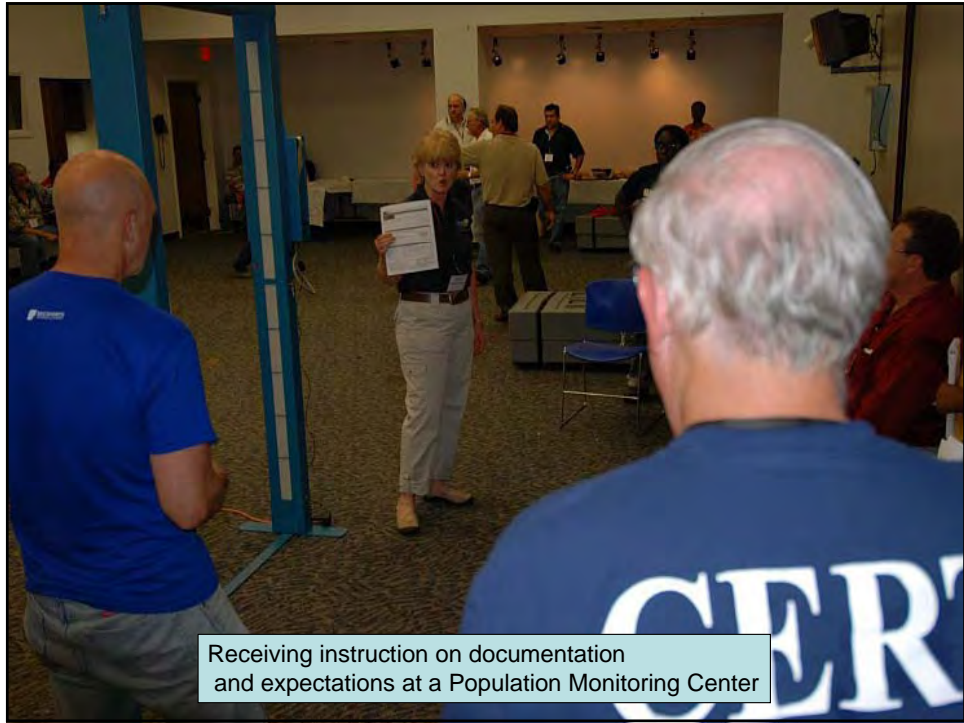
Debbie providing information on the Federal Incident Command System



Assembling the Johnson Portal Monitor for a Population Monitoring Center



Assembling the Johnson Portal Monitor to detect radiation



Receiving instruction on documentation and expectations at a Population Monitoring Center

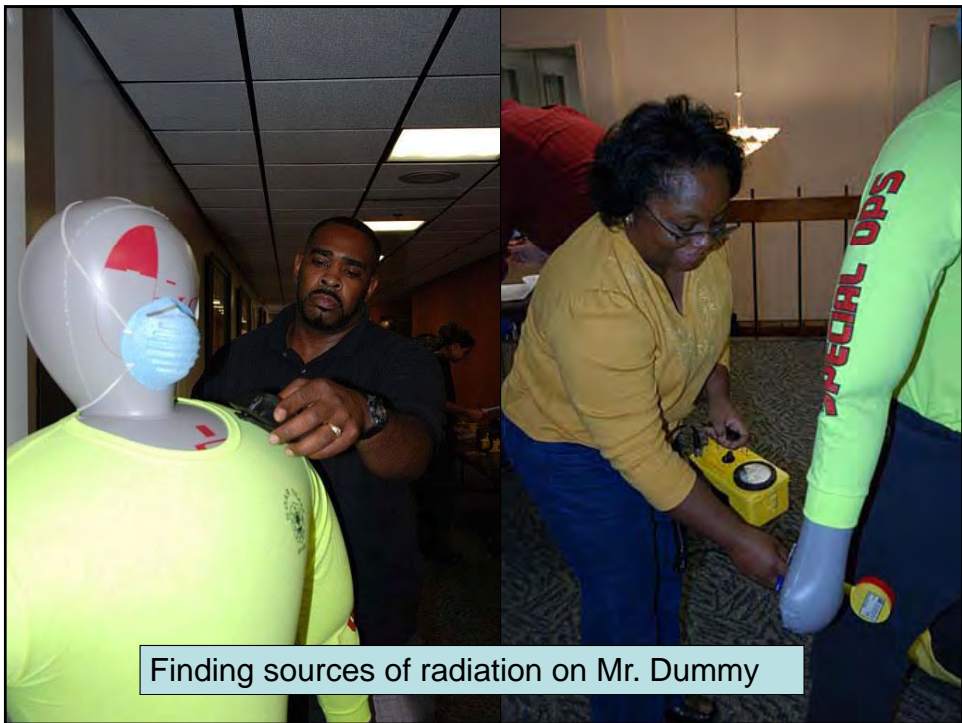


Radiation detected using a Johnson Portal Monitor

Confirmatory survey and decontamination using a Ludlum 2401-P



David assisting participants with detecting radiation and contamination



Finding sources of radiation on Mr. Dummy





BRC Instructor Hector Tabares explains the outdoor drill



Adult "Hide and Seek"
(Looking for sources of radiation)





**Kansas Radiation Control Program
Radiation Response Volunteer Corps (RRVC)
Syllabus
*January 20, 2011
Kansas City, KS***

9:00 – 9:10 a.m.	Introductions	Isabelle Busenitz
9:10 - 1000 a.m.	Population Monitoring	Isabelle Busenitz
10:00 – 11:00 a.m.	Radiation Fundamentals	David Lawrenz
11:00 – 11:15 a.m.	Break	
11:15 – 12:30 p.m.	Meter Operations Tom	Conley
12:30 – 1:30 p.m.	Working Lunch (Amber Waves 2012)	Isabelle Busenitz
1:30 – 2:00 p.m.	Risk Communication	Isabelle Busenitz
2:00 – 3:00 p.m.	Survey and Decontamination	David Lawrenz
3:00 – 3:15 p.m.	Closing discussion	David Lawrenz

Kansas Radiation Control Program
Radiation Response Volunteer Corps (RRVC)



Date: _____

Location: _____

Please choose the answer to indicate which statement best matches your opinion.

1. The content of the training was what was expected.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

2. The sessions were interesting and informative.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

3. The sessions were clear and concise.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

4. The sessions were well organized and managed.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

5. The presenters were effective in conveying concepts.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

6. The training aids, visuals, and handouts were useful.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

7. I was encouraged to participate in discussion and contribute ideas.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

8. The skills I was expected to use and develop were clearly stated.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

9. The sessions were well paced.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

10. The session was located at a convenient location.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

11. The time the session was held was suitable.
 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

12. What were some things that you liked about this training?

13. What were some things you would like to see changed?

14. Do you have any other comments?

15. May we contact you if we have further questions regarding your comments? If so, please provide your name and how we may contact you.

Thank you for taking the time to help KDHE improve their emergency response training and for becoming involved with the Radiation Response Volunteer Corps. Your service is valued!



NEW YORK CITY DEPARTMENT of HEALTH and MENTAL HYGIENE

Symposium on Developing a Radiological Volunteer Capacity in New York City

PLACE:

BARUCH COLLEGE
VERTICAL CAMPUS
CONFERENCE CENTER,
ROOM 14-220, 11TH FLR

550 Lexington Ave.
New York, NY 10016
(Corner of 24th and Lexington Ave.)

DATE:

June 22, 2010

TIME:

8:30 am – 9:00 am
Breakfast and Registration

9:00 am – 4:00 pm
Symposium

**Lunch will be provided
No Fee for Attendance**

For more information call:

212-676-1516
or
212-676-1508

The NYC Department of Health and Mental Hygiene's (DOHMH) Bureau of Environmental Emergency Preparedness and Response (BEEPR) in cooperation with the Conference of Radiation Control Program Directors (CRCPD) invites you to attend a free, one day symposium.

Symposium Agenda

Time	Speaker	Presentation
8:30-9:00	Registration, coffee, Volunteer sign-up	
9:00 – 9:15	DOHMH	Welcome, introduction to symposium
9:15 – 10:15	Joyce Lipzstein, Ph.D.	The Goiania Incident – What happened, response efforts, lessons learned
10:15-10:45	Break	
10:45 – 11:30	Jill Lipoti, Ph.D.	Recent activities of the NCRP and other advisory agencies relating to RDD and IND attacks
11:30 – 12:15	Lunch and Volunteer sign-up	
12:15 – 1:00	Armin Ansari, Ph.D., CHP	Population monitoring, state and local responsibilities, and CDC training and planning tools
1:00 – 1:45	Adela Salame-Alfie, Ph.D.	New York State activities
1:45 – 2:00	DOHMH	New York City activities
2:00 – 2:30	Elaine Verneti, MD, MPH	Community Reception Center planning and operations
2:30 – 3:00	Betty Duggan	How the Medical Reserve Corps operates (including Q & A)
3:00 – 3:30	Andrew Karam, Ph.D., CHP	The role of radiological volunteers in a radiological emergency
3:30 – 4:00	Q&A and Summary, Volunteer sign-up	

Seating is limited, therefore all registrations must be received by June 4, 2010. Register early by clicking on [REGISTRATION](#)





Symposium on Developing a Radiological Volunteer Capacity in New York City

Joyce Lipsztein, Ph.D.
State University of
Rio de Janeiro

Joyce Lipsztein is a Brazilian Health Physicist who earned her PhD in Health Physics from the Institute of Environmental Medicine, New York University in 1981. She is the head of the Radioprotection Area of Study of the Graduate Program in Nuclear Biosciences at the State University of Rio de Janeiro, and she led the Department of Individual Monitoring of the Institute of Radioprotection and Dosimetry, National Atomic Energy Commission of Brazil, from 1981 until retiring in 2002. In that capacity, Dr. Lipsztein was responsible for the assessment of individual radiation doses in the Goiania Cs-137 radiological accident.

Dr. Lipsztein has also served as a member of Committee 2 of the International Commission on Radiological Protection (ICRP) since 1987, and has served as a member of the ICRP task group INDOS (Internal Dosimetry) since 1988. She was more recently a member of the committee that wrote both volumes of NCRP Report #161, Management of Persons Contaminated with Radionuclides. Dr. Lipsztein's international service also includes work on several IAEA consultant groups that touch on many aspects of environmental and industrial exposure to intakes of radioactivity as well as serving on the United Nations Science Committee on the Effects of Atomic Radiation (UNSCEAR) from 1995-2005 (she chaired UNSCEAR from 2001-2004).

Armin Ansari, Ph.D., CHP
Centers for Disease Control and
Prevention

Dr. Ansari is a health physicist at the Centers for Disease Control and Prevention serving as subject matter expert in CDC's radiation emergency preparedness and response activities. He has represented CDC on the federal Advisory Team for Environment, Food, and Health, and was the lead subject matter expert responsible for preparing the CDC guide for state and local public health planners on population monitoring. He serves on a Homeland Security Council interagency committee for preparedness and response to radiological and nuclear threats, and was a contributing author to the federal Planning Guidance for Response to a Nuclear Detonation. Dr. Ansari received both his BS and PhD degrees in radiation biophysics from the University of Kansas. He is a Certified Health Physicist and an adjunct associate professor of nuclear and radiological engineering at Georgia Institute of Technology, and recently authored the textbook "Radiation Threats and Your Safety: A Guide to Preparation and Response for Professionals and Community."





Symposium on Developing a Radiological Volunteer Capacity in New York City

Betty Duggan
NYC DOHMH
Medical Reserve Corps

Betty Duggan is the manager of the New York City Medical Reserve Corps. Ms. Duggan has an extensive background in volunteer management. She managed a nursery school cooperative, was a casework manager with older adults at the Heights and Hill Community Council, and a caseworker for people with disabilities at Catholic Charities, Brooklyn. Prior to coming to the NYC Department of Health and Mental Hygiene, Ms Duggan was the Director of Volunteer and Community Programs at the Medicare Rights Center where she managed a consumer hotline, was the principal trainer and managed over 500 volunteers. As manager of the NYC Medical Reserve Corps, Ms. Duggan has the privilege of working with over 9,000 medical professionals who have agreed to respond in the event of a disaster or emergency in New York City.

Andrew Karam, Ph.D., CHP
NYC DOHMH
Radiological Emergency
Response Unit

Andrew Karam is the Director of Radiological Operations for the NYC DOHMH Bureau of Environmental Emergency Preparedness and Response. He has served on several committees of the Health Physics Society, two committees of the NCRP, the Depleted Uranium subcommittee of the National Academy of Sciences, and has participated in IAEA missions to South America, Europe, and Asia. Dr. Karam is the author of more than 100 scientific and technical papers, articles, and presentations, as well as writing numerous book chapters and editing a book for technical audiences. He has also authored 11 books and over 200 encyclopedia articles for the general public. Dr. Karam is a Certified Health Physicist and has a Ph.D. in Environmental Science from Ohio State University.

Jill Lipoti, Ph.D.
New Jersey Department of
Environmental Protection

Jill Lipoti is the Director of the Division of Environmental Safety and Health in the New Jersey Department of Environmental Protection and is the New Jersey representative to the Atlantic Interstate Low-level Radioactive Waste Management Compact. She has served on the National Council on Radiation Protection and Measurements since 2002, and she served as Chairperson for the Conference of Radiation Control Program Directors (CRCPD) in 1997-1998 and received the Parker award in 2000. Dr. Lipoti served as Chair of the Radiation Advisory Committee of the Environmental Protection Agency's Science Advisory Board (SAB) and served on the Executive Committee of the SAB. She has served on the Food and Drug Administration's Technical Electronic Product Radiation Safety Standards Committee.





Symposium on Developing a Radiological Volunteer Capacity in New York City

Adela Salame-Alfie, Ph.D.
New York State
Department of Health

Dr. Adela Salame-Alfie is the Assistant Director of the Division of Environmental Health Investigation in the New York State Department of Health (NYSDOH) and is the former Director of the Bureau of Environmental Radiation Protection at NYSDOH. Dr. Salame-Alfie is the past Chair of the Conference of Radiation Control Program Directors (CRCPD) and she Chaired the committee responsible for the preparation of the “Handbook for Responding to a Radiological Dispersal Device –The First 12 Hours”. She has also served on committees of the NCRP and ASTM that drafted reports and recommendations related to radiological emergency response to terrorist attacks. Dr. Salame-Alfie received her Master’s and Ph.D. in Nuclear Engineering from Rensselaer Polytechnic Institute in Troy, NY.

Elaine Vernetti, MD, MPH
NYC DOHMH
Radiological Emergency
Response Unit

Dr. Elaine Vernetti is a City Medical Specialist with the NYC Department of Health and Mental Hygiene. She earned her MD at the University of Oregon, which was followed by an internship and residency in surgery at Duke University Medical Center and by a subsequent residency in anesthesiology at the Long Island Jewish-Schneider’s Medical Center in 1993 (at which time she also earned her board certification in anesthesiology). Dr. Vernetti has worked with the NYC DOHMH since 2004, where she is currently involved in radiological and nuclear emergency preparedness in the Bureau of Environmental Emergency Preparedness and Response.





Save the Date!

Operating a Community Reception Center: A Workshop for the NYC Radiological Reserve Corps

PLACE:
**Columbia University
Medical College
Russ Berrie Medical Science Pavilion, 1150 St
Nicholas Ave 10032
(at corner of 168th St.)
NY, NY**

DATE: March 25, 2011

TIME:
8:30 am — 9:00 am
Registration

9:00 am — 4:00 pm
Workshop

No Fee for Attendance

Contact:
Elaine Vernetti, MD at:
evernett@health.nyc.gov
or call: 212.676.1509

The NYC Department of Health and Mental Hygiene's (DOHMH) Bureau of Environmental Emergency Preparedness and Response (BEEPR), in close cooperation with the Conference of Radiation Control Program Directors (CRCPD), invites you to attend a free, one day workshop.

The NYC DOHMH Bureau of Environmental Emergency Preparedness and Response (BEEPR) is involved in the preparedness and response efforts for radiological and nuclear emergencies. In an effort to better prepare New York City's response, DOHMH is working to develop and train a volunteer corps of radiation professionals to assist in the response efforts following a radiological emergency in New York City. This workshop will consist of an overview of how a CRC should be set up and operated followed by a workshop in which participants will walk through setting up and running a mock Community Reception Center.

- ◆ The morning session will consist of informative PowerPoint presentations regarding radiological and nuclear emergencies, the response effort for each and the role and responsibilities of DOHMH.
- ◆ Following lunch we will practice setting up and operating a mock CRC in response to a simulated emergency—this exercise will familiarize volunteers with the actions that might be required of them following a radiological incident.

Day at a Glance:

- ◆ How NYC will respond to radiological emergencies
- ◆ How a Community Reception Center will operate (and your role in helping to run a CRC)
- ◆ A hands-on exercise setting up and running a mock CRC

Seating is limited, therefore all registrations must be received by March 11, 2011, in order to be guaranteed a seat. [Click here for additional information and to register.](#)



RRVC and Population Monitoring

The RRVC is a subset of the Medical Reserve Corps, bringing together volunteer health physicists, radiation-related medical professionals, and others familiar with radiation protection to perform population monitoring at a Community Reception Center in the event of a large-scale radiological event.

The nature, location, and bounds of such events are unknown. However, should the need arise, our families and friends will require the support of knowledgeable volunteer radiation professionals.

Please consider supporting this effort to prepare for public support in the event of an unimaginable disaster.

You can help make a difference.



RRVC - an MRC Partner Program

www.ohioresponds.gov



Program Support Provided by CRCPD



Ohio Emergency Management Agency



Ohio Department of Health
Bureau of Radiation Protection



**Ohio
Radiation Response
Volunteer Corps
RRVC**

**Population
Monitoring**



Ohio Medical Reserve Corps
Partner Program

Radiation Response Volunteer Corps (RRVC)

The Radiation Response Volunteer Corps (RRVC) is a cadre of radiation volunteers focused on supporting population monitoring in the event of a large-scale radiological event.



Organizationally, the RRVC is a sub-group of the Medical Reserve Corps (MRC). Support for organization and training is provided through the Ohio Department of Health (ODH). Experience with non-radiological disasters has demonstrated that well intentioned, but unaffiliated volunteers often go unassigned despite an obvious need. RRVC volunteers will be qualified, credited individuals with a specific range of job assignments in the event that they are needed.

In the post 9/11 world, Radiological Dispersal Devices (RDDs), Radiation Exposure Devices (REDs), and Improvised Nuclear Devices (INDs) are recognized as real threats to our safety and society. Despite this awareness, we must be better prepared for such an event.

You can help make a difference.

Community Reception Centers

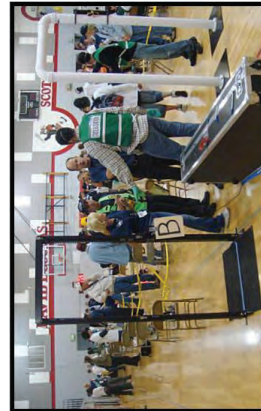
Community Reception Centers (CRC) are locations established by public health and emergency management for the initial screening and care of members of the public affected by a radiological event. The CRC Manager will work with government and volunteer groups to staff and operate the CRC. The CRC needs medical, maintenance, security, communications, and financial staffing, but RRVC volunteers have specific roles in the CRC operation.

Population Monitoring

RRVC Volunteers will provide Population Monitoring in support of a Community Reception Center.

Population Monitoring functions include:

- Screening members of the public for radioactive contamination
- Monitoring people for acute health effects from radiation exposure
- Coordinating medical services for internally contaminated or highly exposed individuals
- Establishing a registry to track long-term health effects



Who Should Volunteer?

Health Physicists, HP Techs, radiation-related medical professionals, and others familiar with radiation protection activities. Individuals with significant experience but not currently working in the field are welcomed. Each volunteer's skills and abilities will be evaluated on an individual basis.

How do I Volunteer?

Go to the Ohio Responds website at :

www.ohioresponds.gov

Follow the RRVC pathway, completing the on-line application. You will later be contacted by an MRC coordinator about core training. Once training is completed, your registration as a volunteer will be final.

Liability Protection

Ohio Revised Code 121.404 provides liability protection to registered MRC/RRVC volunteers during local, state, or federally declared emergencies, drills, and training. The statute also exempts the personal information of registered volunteers from public disclosure.

www.ohioresponds.gov



Bureau of Radiation Protection

Place Stamp Here

Sudhir Oberoi, Health Physicist
Radiation Protection Services
800 N.E. Oregon Street, Suite 640
Portland, Oregon 97232

Radiation Protection Services needs you

☞ *Radiation Protection Services licensed health care volunteers are prepared to monitor the population in any radiological emergency within the state of Oregon. They are an outstanding example of true American volunteerism.*

Through the work and service provided by our volunteers in towns, cities, and counties across the state of Oregon, Radiation Protection Services (RPS) volunteers are making an immediate and lasting effect on the health and safety of their neighbors and their communities throughout the state.

Join Us! Make a difference!

Become an RPS volunteer

- Promote radiation protection and exposure prevention
- Improve radiation health literacy
- Enhance public health preparedness

Radiation Protection Services
800 N.E. Oregon Street, Suite 640
Portland, Oregon 97232

For more information

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Visit: www.oregon.gov/DHS/ph/rps/

The Public Health Radiation Response Volunteer Corps is sponsored by a grant from the Conference of Radiation Control Directors Program, Inc.



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DHS 9375 (Rev. 7/01/2010)

DHS: PUBLIC HEALTH DIVISION
RADIATION PROTECTION SERVICES

State Emergency Registry of Volunteer Radiation Professionals

Public Health Radiation Response Volunteer Corps



Register now!

As a volunteer radiation professional, you can help protect the health and safety of Oregonians during a disaster.

Strengthening the Public Health Infrastructure and Improving Emergency Preparedness



Independent. Healthy. Safe.

About the Public Health Radiation Response Volunteer Corps

Oregon is a Nuclear Regulatory Commission Agreement State responsible for public health and safety through regulating the use of radioactive materials. While the National Response Framework has identified population monitoring as a local and state responsibility, our funding sources are limited and must be dedicated to the inspection and licensing of radiation facilities to protect public safety.

In the event of a major radiological incident, RPS and other local radiation response resources would be quickly overwhelmed by the large number of citizens needing evaluation for contamination.



Funds from a grant by the Conference of Radiation Control Program Directors, Inc., are now being directed to supplement our resources through the use of local volunteer radiation professionals and Oregon AmeriCorps VISTA/Medical Reserve Corps who could provide assistance at community reception centers, shelters for displaced populations, emergency operations centers, hospitals and communication facilities.

What can RPS volunteers do?

Support local public health initiatives, while advancing the priorities of Oregon's Radiation Protection Services:

- Promote radiation safety
- Improve population monitoring
- Enhance the quality of life of all Oregonians
- Maintain a high level of responsiveness to the health and safety of all Oregonians in an emergency

Assist local hospitals and health departments with surge personnel needs.

Participate in community preparedness activities, such as exercises for radiation monitoring, shelters, mass prophylaxis, vaccination clinics, and other emergency scenarios.

Train with local emergency response partners.

With your help, we can make Oregon's disaster response program work!

Who should register?

Radiation professionals who wish to volunteer in the event of a large-scale health care emergency or mass casualty event.



Become an RPS volunteer!

To learn more about Oregon's Radiation Protection Services, visit www.oregon.gov/DHS/ph/rps/

Put your skills to use. Register and train to take part in Oregon's disaster response program.

How do I register*?

To register, please provide the following:

Name _____

Phone number _____

Address _____

E-mail _____

Occupation _____

Availability _____

Please tear off your completed registration form and mail it to the address on the reverse side of the form.

* Registering does NOT obligate you to respond during any given emergency.

Tear Here



DHS
Oregon Department
of Human Services

Oregon



APPENDIX L.

Proposed Radiation Monitoring Resource Typing and Qualifications

PROPOSED – RADIATION MONITORING TEAM

Public Health and Medical: Radiation Monitoring Team			
Resource:	Health and Medical		
Category:	Kind:	Team: This team conducts population monitoring in response to a radiation emergency	
Minimum Capabilities	Type I	Type II	Type III
Component	Metric		
Team Type	Capability	Team that can perform the following activities under the Authority Having Jurisdiction: -monitor arrivals for external contamination -assist with decontamination services -assess exposure -assess internal contamination	Team that can perform the following activities under the Authority Having Jurisdiction: -monitor arrivals for external contamination -assist with decontamination services
Personnel	Team Composition per 12-hour Coverage	- 1 Radiation Monitoring Team Leader - 3 Radiation Protection Specialists - At least 8 Radiation Monitoring Staff - 1 Radiation Health Specialist	- 1 Radiation Monitoring Team Leader - 2 Radiation Protection Specialists - At least 6 Radiation Monitoring Staff
Equipment/Supplies	Will Vary by Team Type	- Radiation monitoring equipment to survey for external contamination - Personal Protective Equipment (PPE) as appropriate - Necessary forms and handouts - Radiation monitoring equipment to screen for internal contamination - Communication tools to communicate in secured and unsecured environments - Relevant software, hardware, and other interoperable capabilities (laptop computers, printers, etc.)	- Radiation monitoring equipment to survey for external contamination - Personal Protective Equipment (PPE) as appropriate - Necessary forms and handouts - Communication tools to communicate in secured and unsecured environments - Relevant software, hardware, and other interoperable capabilities (laptop computers, printers, etc.)
Comments:			

PROPOSED – RADIATION MONITORING TEAM

Radiation Monitoring Team Leader	
Description	The primary purpose of the Radiation Monitoring Team Leader is to provide expert guidance on conducting population monitoring, including, but not limited to: radiation safety, contamination monitoring, decontamination, dose reconstruction, and radiation medical countermeasures. The Radiation Monitoring Team Leader oversees and assists Radiation Health Specialists and Radiation Protection Specialists operating in a community reception center (CRC). The Radiation Monitoring Team Leader interfaces with reception center managers, safety officers, clinical staff, public information officers, epidemiology team leader, medical team leader, and laboratory personnel as appropriate.

Table 45-1: Required Criteria

Education	Education in a specialized area relevant to radiation protection such as radiation safety, health physics, nuclear engineering, or other natural or physical sciences, plus one of the following: <ol style="list-style-type: none"> 1. Master's degree with at least 2 years experience 2. Bachelor's degree with at least 5 years experience
Training	Completion of the following courses/curricula: <ol style="list-style-type: none"> 1. ICS-300: Intermediate ICS 2. ICS-400: Advanced ICS 3. FEMA IS-700: NIMS, an Introduction 4. FEMA IS-701: NIMS Multiagency Coordination Systems 5. Community Reception Center (CRC) training. 6. OSHA 1910.120 HazMat Awareness Training or military equivalent basic instruction on responding and operating in a CBRNE Mass Casualty Incident
Experience	<ol style="list-style-type: none"> 1. Ongoing, active participation with an established emergency response organization or an affiliated volunteer response organization (e.g. Medical Reserve Corps) 2. Participation as a Radiation Protection Team Leader in an incident response, exercise, or training.
Certification	Certified Health Physicist (CHP), National Registry of Radiation Protection Technologists (NRRPT), or similar as relevant to education requirements specified above.
Licensing	
Comments	

Table 45-2: Recommended Criteria

Certification	
Training	1. Basic Health Risk Communication
Other	

PROPOSED – RADIATION MONITORING TEAM

Radiation Health Specialist	
Description	The primary purpose of a Radiation Health Specialist is to provide expert guidance to clinicians regarding internal contamination, decorporation therapy, and dose reconstruction.

Table 46-1: Required Criteria

Education	Education in a specialized area relevant to radiation health such as medical physics, nuclear medicine, radiation biology, health physics, medical toxicology, medicine, or other natural or physical sciences, plus one of the following: 1. Doctorate with at least 1 year of post-graduate training 2. Master's degree with at least 2 years experience
Training	Completion of the following courses/curricula: 1. ICS-100: Introduction to ICS 2. ICS-200: Basic ICS 3. FEMA IS-700: NIMS, an Introduction 4. Community Reception Center (CRC) training. 5. OSHA 1910.120 HazMat Awareness Training or military equivalent basic instruction on responding and operating in a CBRNE Mass Casualty Incident
Experience	1. Ongoing, active participation with an established emergency response organization or an affiliated volunteer response organization (e.g. Medical Reserve Corps) 2. Participation as a Radiation Health Specialist in an incident response, exercise, or training.
Certification	American Board of Radiology (ABR), American Board of Medical Physics (ABMP), American College of Medicinal Physics (ACMP), American Board of Health Physics (ABHP), or similar as relevant to education requirements specified above.
Licensing	Active status of legal authority to practice in any of the above stated capacities without restrictions granted by a state, commonwealth, the District of Columbia, or U.S. Territory.
Comments	

Table 46-2: Recommended Criteria

Certification	
Training	1. ICS-300: Intermediate ICS 2. ICS-400: Advanced ICS 3. Basic Health Risk Communication 4. Radiation Emergency Medicine, Health Physics in Radiation Emergencies, and/or Advanced Radiation Medicine training courses from the Radiation Emergency Assistance Center/Training Site (REAC/TS)
Other	

PROPOSED – RADIATION MONITORING TEAM

Radiation Protection Specialist	
Description	The primary purpose of a Radiation Protection Specialist is to provide expert guidance regarding radiation safety, personal dosimetry, radiation monitoring, contamination control, and decontamination. Radiation Protection Specialists oversee Radiation Monitoring Staff in the community reception center (CRC).

Table 47-1: Required Criteria

Education	Education in a specialized area relevant to radiation protection such as radiation safety, health physics, nuclear engineering, or other natural or physical sciences, plus one of the following: 1. Master's degree with at least 2 years experience 2. Bachelor's degree with at least 5 years experience
Training	Completion of the following courses/curricula: 1. ICS-100: Introduction to ICS 2. ICS-200: Basic ICS 3. FEMA IS-700: NIMS, an Introduction 4. Community Reception Center (CRC) training. 5. OSHA 1910.120 HazMat Awareness Training or military equivalent basic instruction on responding and operating in a CBRNE Mass Casualty Incident
Experience	1. Ongoing, active participation with an established emergency response organization or an affiliated volunteer response organization (e.g. Medical Reserve Corps) 2. Participation as a Radiation Protection Specialist in an incident response, exercise, or training.
Certification	
Licensing	
Comments	

Table 47-2: Recommended Criteria

Certification	National Registry of Radiation Protection Technologists (NRRPT), Radiation Safety Officer (RSO), or similar as relevant to education requirements specified above.
Training	1. ICS-300: Intermediate ICS 2. ICS-400: Advanced ICS 3. Basic Health Risk Communication 4. Radiation Emergency Medicine, Health Physics in Radiation Emergencies, and/or Advanced Radiation Medicine training courses from the Radiation Emergency Assistance Center/Training Site (REAC/TS)
Other	

PROPOSED – RADIATION MONITORING TEAM

Radiation Monitoring Staff	
Description	The primary purpose of the Radiation Monitoring Staff is to assess individuals reporting to the community reception center (CRC) for external contamination and conduct decontamination as appropriate. Radiation Monitoring Staff work under the supervision of Radiation Protection Specialists.

Table 48-1: Required Criteria

Education	High school diploma or equivalent.
Training	<ol style="list-style-type: none"> 1. ICS-100: Introduction to ICS 2. ICS-200: Basic ICS 3. FEMA IS-700: NIMS, an Introduction 4. Community Reception Center (CRC) training. 5. OSHA 1910.120 HazMat Awareness Training or military equivalent basic instruction on responding and operating in a CBRNE Mass Casualty Incident 6. Just-in-time refresher training at the beginning of the operational period.
Experience	<ol style="list-style-type: none"> 1. Ongoing, active participation with an established emergency response organization or an affiliated volunteer response organization (e.g. Medical Reserve Corps) 2. Participation as a Radiation Monitoring Staff member in an incident response, exercise, or training.
Certification	None Required
Licensing	None Required
Comments	

Table 48-2: Recommended Criteria

Certification	
Training	<ol style="list-style-type: none"> 1. ICS-300: Intermediate ICS 2. ICS-400: Advanced ICS
Other	