Roundtable on Population Monitoring Following a Nuclear/Radiological Incident

A Roundtable Discussion Group Summary Report Prepared For:

Centers for Disease Control and Prevention
National Center for Environmental Health
Division of Environmental Hazards and Health Effects
Radiation Studies Branch

Disclaimer:

The views and opinions expressed in this document are solely those of the participants in the *Roundtable on Population Monitoring following a Nuclear/Radiological Incident*. Although the views and opinions expressed in this Summary Report will be used to help the Centers for Disease Control and Prevention (CDC) develop guidelines for responding in such a situation, responses expressed in this report do not constitute endorsement by the CDC or agreement by CDC with these opinions. The following report was compiled by a contracting agency under Contract Number 200-1999-00061 0012.

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INTRODUCTION

On January 11-12, 2005 in Atlanta, Georgia, the Centers for Disease Control and Prevention (CDC) hosted the *Roundtable on Population Monitoring Following a Radiological/Nuclear Incident*. The goal of this roundtable was to develop population monitoring guidance based on discussions by participants from a variety of backgrounds. Leading experts in health physics, epidemiology, health communications, psychology, radiological dosimetry, social work, and contingency planning from around the country participated in the meeting, including representatives of Federal agencies, state and local health departments, academia, and professional organizations. Over the course of two days, the group explored such questions as:

- *What are key approaches to population monitoring following a radiological incident?*
- *What are state and local public health agencies' capabilities in this area?*
- *What guidance do state and local public health agencies need to carry out effective population monitoring programs?*

The Roundtable, which resulted in a wide range of discussions, ideas, and recommendations, will serve as a basis for CDC's future activities, specifically guidelines for state and local agencies, surrounding this most critical issue.

PRESENTATIONS

Charles W. Miller, Ph.D., Chief of the Radiation Studies Branch, CDC, set the stage for the session by outlining the reality of the threats associated with radiological and nuclear materials. These threats include acts of terrorism, such as a targeted attack on a nuclear facility, but also include accidental releases of radiological materials at weapons laboratories and medical facilities. He said CDC recognizes that many local jurisdictions are not prepared to deal with radiological incidents or implement a monitoring program, and that CDC has a role to play in developing guidance in this area. He said the Federal government has successfully used forums like this to assess the level of preparedness in the field and the need for new initiatives or support.

Mr. Craig Conklin, U.S. Department of Homeland Security (DHS), outlined the need for population monitoring and decontamination procedures guidance in the context of the National Response Plan (NRP), the nation's plan for responding to major events, defined as "incidents of national significance." The NRP includes a "Nuclear / Radiological Incident Annex," which applies to the full range of possible radiological incidents, including terrorism and nuclear power plant accidents. Under the plan, the Department of Health and Human Services is responsible for coordinating victim monitoring and decontamination. This includes establishing a registry of potentially exposed individuals, performing dose reconstruction, and conducting monitoring for long-term health impacts. He said that new procedures must be compliant with the National Incident Management System (NIMS), which provides the national standard for incident management.

Elena Buglova, Ph.D., International Atomic Energy Agency (IAEA), reviewed lessons learned from radiological incidents that were followed by population monitoring programs. Highlighted examples were the Goiânia and Chernobyl incidents. She said one of the major lessons from

these emergencies was that non-radiological consequences (e.g., economic, social, psychological) might have been worse than the direct radiological consequences. She added that lack of pre-established guidance for the public and government officials contributed to these non-radiological consequences. She emphasized the need to have criteria for protective actions in case of radiation emergency, agreed and established in advance.

Robert C. Whitcomb, Ph.D., Radiological Assessment Team Lead, Radiation Studies Branch, CDC, focused on the objective for this roundtable session:

> *To foster discussion and input from invited participants and subject matter experts that can provide practical strategies to public health officials in population monitoring activities following a nuclear/radiological incident.*

He said a specific goal of the session was to develop population monitoring guidance based on these discussions. Dr. Whitcomb also offered this working definition of population monitoring:

> ***Population monitoring*** *is a collective term referring to identifying, screening, measuring, and monitoring populations for exposure to or contamination from radioactive materials. Screening prioritizes the population using pre-defined action levels to decide between courses of action; measurement is the process of obtaining numeric values for the purpose of dose assessment; and monitoring includes recording health-related information on the population for an extended period of time (many years and may include subsequent generations) post event.*

METHODOLOGY

Participants divided into breakout groups. Four concurrent breakouts groups were held during each of four sessions for a total of 16 breakouts. Participants were asked to select breakouts most appropriate to their respective areas of interest and expertise.

A series of questions was prepared in advance and the discussions were facilitated, though in some cases participants added questions to the discussion. Each session ran about an hour and was followed by report outs to the group at-large. John S. Parker, M.D., facilitated the plenary sessions. CDC staff members served as observes of the roundtable and were available to answer questions and provide additional expertise, only. The observers did not participate in the discussion sessions and the views expressed in these sessions are solely those of the invited participants.

MAJOR THEMES

While much of the roundtable discussion was highly technical in nature – population monitoring is, after all, a highly complex subject – a few overarching themes did emerge over the course of the two days.

Best practices for guiding program development – While participants often spoke of the need for “criteria” and “standardization,” they noted that public health agencies need to be

flexible in adapting the existing body of knowledge to the circumstances at hand. They saw standardization not so much as a solution, but as a direction to move toward. Participants saw guidelines based on best practices (on the full range of radiological issues) as the most necessary element. Such guidelines can be used to guide public health agencies in the planning process. Additionally, the idea of a "play book" or radiological response plan was commonly suggested.

CDC's leadership role – Certainly, the public health community looks to CDC to provide leadership on this critical issue. Although CDC is not seen as being able to solve all the problems, the agency is encouraged to be proactive in a visible way in such areas as: defining the issues; serving as an information resource; serving as a catalyst for identifying and sharing resources; building a national inventory of local resources; building national partnerships; educating public health agencies; and putting its respected name behind acceptable approaches to population monitoring issues.

Integrating radiological preparedness into an all-hazards approach – Participants expressed a general feeling that "the other hazards" (e.g., biological) get more attention, more resources, and more planning dollars. Participants recognized that communities do not have the resources or desire to focus on any given threat; that they need to develop an all-hazards approach to preparedness. Similarly, they encouraged CDC to integrate its radiological programs with other threat-based programs at the national level. CDC's radiological initiatives should be integrated in existing programs related to incident management, hospital training, national exercises, public health education, and so on.

Public health and medical community education – Participants emphasized the need to educate all audiences about radiation issues – "demystifying radiation" – but especially the public health, medical, and first responder communities. It was suggested that a community's ability to respond to a radiological incident would depend largely on how well these audiences understood the basics of radiation.

AGENDA

Centers for Disease Control and Prevention (CDC)
Roundtable on Population Monitoring
Following a Nuclear/Radiological Incident

Tuesday, January 11, 2005

8:30 a.m. - 8:45 a.m.	**Welcome** *Henry Falk, MD, MPH* *Director, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry, CDC*
8:45 a.m. - 9:15 a.m.	**Opening Remarks** *Michael A. McGeehin, PhD, MSPH* *Director, Division of Environmental Hazards and Health Effects National Center for Environmental Health, CDC*
9:15 a.m. - 10:00 a.m.	**Keynote Address - "Preparing for the Unthinkable"** *Charles W. Miller, PhD* *Chief, Radiation Studies Branch* *Division of Environmental Hazards and Health Effects* *National Center for Environmental Health, CDC*
10:00 a.m. - 10:15 a.m.	**BREAK**
10:15 a.m. - 10:45 a.m.	**Presentation: Overview of the Federal Plans** *W. Craig Conklin, Chief* *Nuclear and Chemical Hazards Branch* *Preparedness Division* *Federal Emergency Management Agency* *Department of Homeland Security*
10:45 a.m. - 11:30 a.m.	**Presentation: Population Monitoring Programs after Radiation Emergencies: Lessons to be Learned** *Elena E. Buglova, MD* *Radiation Protection Specialist (Medical)* *Emergency Preparedness and Response Section* *Department of Nuclear Safety and Security* *International Atomic Energy Agency*
11:30 a.m. - 12:00 p.m.	**Meeting Purpose/Logistics** *Robert C. Whitcomb, Jr., PhD* *Radiation Studies Branch* *Division of Environmental Hazards and Health Effects* *National Center for Environmental Health, CDC*
12:00 p.m. - 1:00 p.m.	**LUNCH (on your own)**
1:00 p.m. - 2:00 p.m.	**Meeting Structure** *John S. Parker, M.D., Facilitator*
2:00 p.m. - 3:00 p.m.	**Breakout Session I: Planning/Preparedness** Table A Planning/logistics Table B Communications Table C Equipment Table D Training
3:00 p.m. - 3: 15 p.m.	**BREAK**
3:15 p.m. - 4:15 p.m.	*Breakout Session I Report Out*
4:15 p.m. - 4:45 p.m.	**Day 1 Summary**

	Wednesday, January 12, 2005	
8:00 a.m. - 9:00 a.m.	**Breakout Session II: Assessment**	
	Table A	Population identification
	Table B	External/internal contamination
	Table C	Laboratory needs (inc. bioassay)
	Table D	Dose reconstruction
9:00 a.m. - 10:00 a.m.	*Breakout Session II Report Out*	
10:00 a.m. - 10:15 a.m.	**BREAK**	
10:15 a.m. - 11:15 a.m.	**Breakout Session III: Mitigation**	
	Table A	External decontamination strategies
	Table B	Internal decontamination strategies
	Table C	Radiation control/containment
	Table D	Worker Protection
11:15 a.m. - 12:15 p.m.	*Breakout Session III Report Out*	
12:15 p.m. - 1:15 p.m.	**LUNCH (on your own)**	
1:15 p.m. - 2:15 p.m.	**Breakout Session IV: Registries/Resources**	
	Table A	Registries
	Table B	Discharge and follow-up
	Table C	Mental health care
	Table D	Special population considerations
2:15 p.m. - 3:15 p.m.	*Breakout Session IV Report Out*	
3:15 p.m. - 3:30 p.m.	**BREAK**	
3:30 p.m. - 4:30 p.m.	*Meeting Summary*	
4:30 p.m. - 5:00 p.m.	**Closing Remarks** *Charles W. Miller, PhD* *Chief, Radiation Studies Branch* *Division of Environmental Hazards and Health Effects* *National Center for Environmental Health, CDC*	

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PLANNING/LOGISTICS

In the "**planning/logistics**" breakout session participants were asked to explore approaches for integrating a population monitoring program into a community's public health emergency response plan. The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What are key steps associated with developing a public health community response to a radiological incident? What key agreements must be developed in this coordinated response?

- Communities need to develop a uniform plan and system for managing the incident response, and work to ensure that all parties agree on the approach – public health personnel need to participate in the community's overall emergency response planning

- One participant strongly encouraged CDC to develop guidelines on use of geospatial data as a means for tracking populations and identifying contamination zones more efficiently

- CDC should assume leadership in helping public health agencies plan – develop consistent operational best practices based on the experiences of many agencies, include information on available resources, opportunities for sharing resources, and approaches for conducting surveys and needs assessments
  - Guidance must be scalable
  - Training should be based on this guidance
  - "Practice, practice, practice" should be stressed
  - State and local agencies need to perform surveys or assessments

- CDC should facilitate interstate and international agreements on sharing information, knowledge, and laboratory resources
  - Local and state public health personnel need to be aware of available resources
  - List of local experts on radiological issues
  - Establish a centralized meta lab database to facilitate projects focused on analyzing large numbers of radio nuclides at once – this would take pressure off the states
  - Reconcile the missions (specifically related to radiological issues) of CDC and Health Resources and Services Administration (HRSA) – this would make medical facility agreements more possible

- Develop a case study of an incident management team in action—describe how it managed such issues as shelter in place, evacuation and quarantine

What can public health agencies do to reduce duplicative efforts among organizations? How should public health agencies coordinate with other organizations or medical facilities?

- Communications and networking with other agencies and organizations throughout the planning process is essential – agencies need to develop cross-agency plans, you can't plan effectively in a vacuum

- Agencies need to reach out for expertise, e.g., involve Federal and state experts in "weapons of mass destruction" in the planning process

- Establish agreements between CDC, REAC/TS, and AFRRI, and then communicate these agreements to state and local public health agencies – the more these national organizations are in sync, the more effective state and local planning will be

What roles should volunteer organizations or individuals play?

- Determine whether existing civil defense/emergency management models can be applied to management of radiological issues

- CDC should develop guideline for utilizing volunteers and provide models on how different types of groups and organizations can be helpful in planning and response
  - Tailor models to the nature and expertise of core service groups
  - Develop guidelines on what retired medical staff can do
  - Provide guidance based on lessons learned in communities where long-term monitoring has been conducted
  - Need plans for recruiting and allocating volunteers for the planning stage and for an immediate response

Any other key advice or guidelines not already mentioned.

- CDC should help agencies plan for the recovery phase, there is a need for long-term thinking, don't just focus on planning

- CDC needs to be more proactive in reaching out to the states long before a possible radiological incident to address the existing resource shortfall

- Develop an early-response playbook for first responders to refer to during the first critical hours – this is based on the assumption that CDC and other personnel trained in radiological response will not be immediately available

COMMUNICATIONS

Participants in the **"communications"** breakout session were asked to develop guidance on public health communications in a mass casualty radiation incident. Participants said that state and local public health communicators, and even physicians, have minimal knowledge about radiation and radiological response, and are not prepared to communicate effectively with the public about these issues. They said that messages and information for carrying out effective public health communications in a radiation incident are not in place at the state and local levels.

Participants noted, however, that some states are more prepared than others, and that some regions (where nuclear power plants are located) are more knowledgeable than others, and that it would be helpful to conduct a survey to determine each state's level of preparedness.

Participants encouraged CDC to take a leadership role by providing crisis and risk communications guidance and materials to state agencies and public health partners, which could be called upon to train spokespersons and stakeholders at the local level. In developing any new initiatives, they said that CDC should specify its role, whether it be a public education initiative or guidance to the medical community.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The group offered the following recommendations:

What types of materials should be prepared prior to an incident?

- Provide public health communicators with Vince Covello's research on the most common media questions (77 questions) following a large-scale event [Covello, V.T. *Keeping Your Head in a Crisis: Responding to Communication Challenges Posed by Bio-terrorism and Emerging Infectious Diseases.* Association of State and Territorial Health Officers (ASTHO), 2002, in press].

- A guidebook for use in educating tribal governments

- A video on population monitoring to show to people waiting in line (e.g., secondary care facility line) during an event

- Video and print materials in a variety of languages for distribution at monitoring stations

- Ready-to-go web site materials that can be tailored to the incident

- Press release templates, fact sheets, question/answer sheets, talking points and radiation graphics

What approaches should be pursued for educating the public?

- Work with the media to disseminate information about protective actions, symptoms, and health effects. Provide media briefings to educate reporters
- Community channels – TV/Radio
- CDC should link communications and messages with that of other organizations, e.g., poison control hotlines, American Red Cross, 911 – in an emergency, people want information fast and they're more likely to use the phone than the web
- Public health agencies need to have an expert in radiological issues who is capable of conveying information to stakeholders
- Integrate radiological planning and response information with chemical and biological information—physicians want material on all three

List external stakeholders with whom a public health agency should communicate during a radiological incident including a prioritized list of key stakeholders in order of critical priority.

- Media
- General public through the clergy, media, primary care, schools, hospitals
- Primary care providers
- City workers
- Local law enforcement / first responders
- Incident command center
- Schools
- Special populations/minorities
- Tribal organizations
- Politicians
- Hospitals
- Professional organizations

What are key messages for public education?

- Monitoring procedures
- What, how, and where about assistance centers, secondary care facilities
- Where to get information
- How do I protect myself?
- How do I protect my family?
- How much radiation is dangerous?
- Who's in charge?
- How to conduct decontamination
- Who needs decontamination?
- What to expect when being monitored
- Privacy – people may believe that they are being used as guinea pigs

Any other key advice or guidelines not already mentioned

- Native American communities are not involved in the state planning process, they make their own rules and are not held to state government rules
- National public health associations cite CDC scripts for communicating early in an incident and find the CDC web site useful
- CDC: make sure the web site can handle more than one million hits per hour because the public will turn to CDC's web site during a radiological event
- CDC should consider redundant systems for posting web site information

TRAINING

CDC recognizes that training will be essential to building a population monitoring workforce in any public health emergency response plan. The participants in the "**training**" breakout session were asked to offer guidance regarding the education and training of public health personnel.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What are training topics/subjects for preparing public health agency staff for monitoring the population in a radiological crisis? What prioritized subjects must a public health agency have to adequately prepare staff?

- Focus training on these key areas:
  - Roles and responsibilities (*What is my job and how do I do it?)*
  - Resource identification (*Who do I call? Where do I get assistance?)*
  - Proper use of equipment and laboratory procedures and methods

- One goal is to build understanding of radiation and its effects on humans, animals, and the environment in order to "de-mystify" the issue and reduce anxiety

- Make drills and "hands on" exercises an essential part of training

- Suggested training topics/subjects include:
  - Emergency response management
  - Identification/handling of special populations
  - Equipment and laboratory procedures/methods training
  - Diagnosis (i.e., *Is it significant exposure?)*
  - Contamination control
  - Managing "worried well"
  - Understanding resources and how to access them
  - Dose reconstruction

How should this training be delivered? What is the frequency of training for each of the topics/subject matters?

- Make exercises and drills a primary training vehicle:
  - Training often stops at the emergency room door—all hospital staff needs to be trained
  - Integrate with TOPOFF 3

- Coordinate emergency response plans and exercises with first responders, i.e., EMTs and hospitals

- Make training as interactive as possible through satellite broadcasts, web casts, videos, CD-ROMs and first person accounts of people who "have been there"

- Foster partnerships with associations and academia to leverage training resources

- Create checklists

- Make training a continuum
  - Offer “refresher” courses
  - Update materials regularly as a way of keeping training fresh and interesting

How can technology be used to train public health and medical staff?

- Identify body of experts, knowledge and resources and create a database that is easy to access

Who can the public health agency partner with to reduce the cost of training?

- Joint Commission on Accreditation of Hospitals
- American Medical Association
- American Hospital Association
- American Society of Radiologic Technologists
- American Association of Physicists in Medicine
- A+IA
- Society of Nuclear Medicine
- Medical schools and health physicists societies

Any other key advice or guidelines not already mentioned.

- Encourage radiation training for the following:
  - Elected officials
  - Public information officers (as a means to educate the public)
  - First responders, especially EMS/EMTs
  - Hospitals, all personnel
  - Health care clinicians
  - Key community stakeholders such as teachers
  - Personnel at mass care facilities, i.e., American Red Cross workers and volunteers
  - Mental health practitioners

- Ensure that EMS personnel are trained in radiation response – while first responders are typically the best trained, gaps exist in radiation training for EMS, from diagnosis to use of special equipment

- Develop ready-to-use materials for guiding emergency and public health agencies in a radiological disaster

- Work with Joint Commission on Accreditation of Hospitals to encourage private hospitals to develop and/or update emergency response plans for radiation and population monitoring

- Develop a national radiation response plan

- Expand/establish accreditation and certification programs for radiation emergency response and population monitoring—an alternative suggestion was to place more emphasis on CME credit and license renewal not certification

- Add radiological guidelines to physician's certification exams—CDC needs to take the lead in working with certifying boards

EQUIPMENT

The participants in the "**equipment**" breakout session were asked to identify equipment needs for carrying out effective population monitoring activities. Many of the recommendations and observations focused on a need for standardized systems and networks.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What is the best selection of equipment to use in a radiological incident?

- Whole body counters
- Equipment for bioassay and dosimetry
- Credit card chromatographic dosimeters (issued to all emergency responders)
- Walk through portal monitors allow everyone to be monitored and would be faster than handheld monitors for large groups
- Hand-held spectrometers
- Nose swabs to assess internal contamination
- Playbooks or laminated cards for responders to educate them and arm them at the scene of the incident – these cards should include an easy to read and understand table for the isotopes and when (at what level) they pose risks, information about how to use the equipment

Any other key advice or guidelines not already mentioned?

- Establish a quality system that standardizes equipment--from first responders all the way to long-term equipment needs
- Develop guidelines on what constitutes acceptable samples (this needs to be done immediately)
- Establish a national inventory of resources (such as equipment and laboratory supplies) – needed to fill the large gap in resources immediately following an event
- Create a protocol for rapid testing that every local responder can use – include how to collect, label, and package the sample
- Provide recommendations on the specific types of instruments to use

In addition to the presented recommendations, the group discussed and voiced concerns regarding laboratories during their internal conversation:

- Laboratories will not be onsite – FEMA assumes samples will be sent to local laboratories
- There is a need for consistency – personnel in the labs need training and expertise
- The laboratories need to know what is expected of them
- Perhaps regional agreements need to be set up for laboratory work
- There is a need to address issues of contamination control
- There is a need to validate rapid testing for laboratories
- Must set standards and start a conversation with all laboratories that might be involved
- Must consider laboratories with inadequate capacity
- There is a need for written laboratory protocols to be in place
- Must take care to not build up local laboratories to do things they will never need to do
- Create a Lab Response Network – similar to what is already established for chemical and biological networks – that established a working relationship between all labs in the nation and outlines a protocol

POPULATION IDENTIFICATION

The participants in the "**population identification**" breakout session were asked to identify the point at which a person affected by a radiological incident should be entered into a long-term monitoring program. The group was asked to consider such factors as projected or measured levels of contamination, dose rate, dose, and risk.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What should the prioritization scheme be? High, moderate, and low priority monitoring?

- Participants agreed that prioritization in identifying populations to monitor must be based on different groups' risks of exposure. Risk must drive the population identification process. Key indicators of risk are:
  - Dose projection
  - Range/location/proximity to the event
  - Clear acute symptoms (nausea, vomiting, etc.)
  - Evidence of external contamination
  - Lymphocyte counts – deployable blood counters can be used to gather this data

- As a general rule, high priority populations would include:
  - Individuals with high dose rates/levels of external contamination
  - Individuals at the site of the accident and those in close range
  - Individuals exhibiting acute symptoms
  - Individuals with unusual or suspicious lymphocyte counts

- Moderate Priority Populations would include:
  - Individuals with moderate dose rates/levels of external contamination
  - Individuals outside of a critical geographic perimeter and those downwind from event
  - Individuals exhibiting less severe symptoms

- Low Priority populations:
  - Individuals with low (or no measurable) dose rates/levels of external contamination
  - Individuals distant, and downwind, from the event
  - Individuals with no noticeable symptoms

- While it was agreed that these priority groups should be given triage and attention and then monitored, the participants also felt it important to record and track the non-contaminated, i.e., those who do not set off measurement equipment – important information can be collected from these individuals who may have claims of illness later (this is a tough task, but important)

- In order to determine key thresholds that will help to dictate various levels of priority, dose criteria/levels need to be agreed upon in advance. Similarly, guidance needs to be provided as to how to set up geographic perimeters that will be used to determine likelihood of exposure.

- Provide guidance on ways to handle different categories of individuals presenting to centers (i.e. those presenting late with symptoms, children, fetuses, handicapped, etc.)

Should these levels be on a sliding scale based on the magnitude of the event (Radiological Dispersal Device [RDD] vs. Nuclear detonation)?

- Yes. A sliding scale will need to be used based on the size of the event – RDD is much different than a nuclear detonation and size of the event will affect the numbers of individuals that may need to be monitored

- Sliding scale also needed because even an RDD event changes over time. It's a dynamic process and a scale may need to be adjusted based on where you are in the course of the event (e.g., early in the event, mid event, etc.)

What forecasting tools utilized during the emergency phase of the incident provide the best means to geographically select the population to monitor?

- Information about what exposure levels were the norm for individuals in a range of places (those on-site at the accident as well as those in neighboring and distant communities)

- Geospatial mapping data that can predict how far and how quickly radiological materials may have traveled (These systems are in place and need to become part of the process – technology can be very predictive)

- Weather conditions and patterns that can also help to determine how far radiological materials may have spread

What identifying information can one collect from an individual? Are there human subjects concerns? Are there consent forms that need to be considered, especially concerning children?

- Survey census can be conducted to collect information from people not presenting to a decontamination center

- Those presenting to decontamination centers should provide unique identifier information such as name, address, social security number, etc.

- If possible, those presenting to decontamination centers should also be given a form that can be worn like a tag and follow them through the center as they are assessed. The tag should include temporal information (how long were they inside/ outside/close to the event), spatial information (where they were relative to the location of the event and what kinds of shielding was in place), as well as weather conditions at the time that might affect spread of radiological materials

- Consent forms will need to be developed for children/minors

- Resources and politics will play a role in what can actually be done

INTERNAL/EXTERNAL CONTAMINATION

The participants in the "**internal/external contamination**" breakout session were asked to explore issues associated with internal and external contamination following a radiological incident.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What key challenges do public health agencies face in assessing external contamination?

- For some local health agencies external monitoring is a new role

- Timing issues
  - Getting "exposed" population over time
  - Need a "quick time" screening protocol
  - Rapid, but not necessarily sensitive screen
  - Mass casualty screening needed
    - Yes/No test

- Logistics and communication

How can public health agency staff determine that person has been externally contaminated? What equipment can a public health agency use to test for external contamination? What equipment is recommended for a public health agency with a limited budget?

- Hand held survey instrument
  - RAD triage model needs to be developed

- Face-Hands-Feet monitoring/screening procedures
  - Use Radiological Emergency Preparedness (REP) program models that already exist in 35 states

How can public health agency staff determine that person has been internally contaminated?
What equipment can a public health agency use to test for internal contamination? What equipment is recommended for a public health agency with a limited budget?

- External positives will play a determining role

- Based on isotope, need to develop scalable criteria messages

- Need an epidemiological history

- Need follow-up testing

Other key advice or guidelines not already mentioned.

- Pre-event
  - Plans need to be developed to deal with various size/scale radiation events that require monitoring
  - Communication materials need to be developed in advance

- Need a plan for bringing back contaminated persons

- Need a facility for storing contaminated samples

LABORATORY NEEDS

It's anticipated that a number of laboratory tests will be necessary to determine the extent of radioactive contamination on or in a person, and that additional tests will be needed to assess a person's psychological status. Participants in the "**laboratory needs**" breakout session were asked to explore the possibilities for laboratory testing based on existing resources. The group emphasized the need for standardized protocols and processes.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What types of laboratory tests may be required to assess contamination, estimate individual dose, and determine course of monitoring and/or treatment?

- Whole body counters
- Nasal samples -- protocols are old and need updated
- Complete Blood Count (CBC)
- Chromosome analysis – drastically reduced
- Urine
- Feces testing
- [Testing for the presence of] Uranium-plutonium
- Thyroid scan – no protocol for an accident
- Gamma/alpha scan – no standards
- Handheld spectrometers
- Thermoluminescent dosimeter (TLD) analysis – CDC assistance needed in specific areas
- Clothing – need to work with population to get access to replacement clothing
- Air samples
  - On scene analyzed and in lab
  - Beta analysis of air samples
- Reach-back* – can transmit spectrum so someone in lab can analyze

* Reach-back is a process that employs assets to identify and retrieve resources that are not available at the site.

What are the most vital laboratory tests that must be conducted? For each vital test, rate the current capacity of public health laboratories in general for conducting the test.

- The participants graded these tests as "adequate capacity/need additional capacity"
  - CBC
  - Gamma/Alpha scan

- The participants graded these tests as "need additional capacity"
  - Nasal samples
  - Urine
  - TLD analysis

- The participants graded these test as "need additional capacity/lacking any real capacity"
  - Whole body counters
  - Reach-back

- The participants did not grade any test as "lacking any real capacity"

What should public health agencies/laboratories do in reference to the vital steps that capacity is "lacking any real capacity"?

- The participants did not grade any test as "lacking any real capacity"

What processes/procedures should a public health agency have in place to prepare laboratories for receiving and processing large numbers of laboratory samples?

- Create a Lab Response Network – similar to what has already been established in the chemical and biological communities – that establishes a working relationship between all labs in the country and that sets forth: standardized protocols, delineation of responsibilities, contracts for addressing specific needs, and guidelines for sampling

- Establish a system that standardizes equipment, from first responder equipment to long-term equipment needs

- Establish a national inventory of resources (equipment, laboratories, expertise)

- Need standards – need to start a conversation with all laboratories that might be involved

- Perhaps regional agreements need to be set up for laboratory work

- There is a need for consistency – lab personnel need training and expertise

Any other key advice or guidelines not already mentioned?

- Laboratories will not be onsite – FEMA assumes samples will be sent to local labs

- Laboratories need to know what is expected of them
- Need to address issues of contamination in laboratories
- Need to validate rapid testing for laboratories
- Need laboratory protocols in place for rapid testing that every local responder can use, e.g., how to collect, label, and package the sample
- Don’t try to create laboratory capabilities that will never be used

DOSE RECONSTRUCTION

Participants in the **"Dose reconstruction"** breakout session were asked to develop guidance on approaches to dose reconstruction for a large population following a nuclear or radiological incident. Participants reviewed what is commonly associated with dose reconstruction: amount of material released, how people came in contact with the material, medical treatment applied, and the amount of radiation absorbed by the body. One participant suggested that the key is to determine how much radiation people were exposed to after the acute phase of the incident. The group noted that dose reconstruction requires many years of work, as in the case of Hiroshima, and involves complex factors such as an individual's long-term health effects and changes in lifestyle. The group identified questions that they felt were more appropriate than those posed by CDC for addressing the issues surrounding dose reconstruction.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations of the group are as follows:

What are the biggest challenges in this area for state and local public health?

- Locating the population and establishing a reporting mechanism
- Keeping the population engaged and in contact with you
- Asking the right questions and gathering the right data, i.e., measurements
- Lack of standard models
- Lack of protocol for consistent bio-assay
- Keeping accurate records, maintaining accurate data
- Communicating scientific information to a public audience
- Determining responsibility for collecting input data and setting up the registry – first responders may be the first to collect data at the scene but they may not recognize its importance or why they're collecting it

What tools should be used?

- To answer this questions, need to address in advance precisely what data are needed and how data will be collected
- Need tools for both collecting demographic data and physical data
  - Paper? PDA? Questionnaires? Protocols? Models?
  - Where do you get models?
  - Is there scientific consensus around the models?

- If the models change, then the doses will change, e.g., Hiroshima and Nagasaki doses are changing
- Models are decided by committee

- Develop scientific consensus on the appropriate models to use – more than one model is possible

- Develop a reference manual for population modeling, e.g., standard breathing rates

- Establish the credibility of models, recognize that credibility may change as science advances

What is CDC's best guidance?

- Find the population
  - Establish registry early
  - Involve the stakeholders (e.g., population exposed) at the beginning so they buy into the process from the start
  - Have forms prepared in advance
  - Take the dose reconstruction process backwards in terms of data identification and collection – decide what is needed and then work backwards

- Gather accurate data
  - Provide information on how to set up questionnaire and registry
  - ATSDR will set up computer system to collate data
  - Establish protocols for data collections
    - Identify the type of data needed
    - Assess available data and determine relevance to dose reconstruction
    - Be sensitive to privacy issues while collecting data
  - Ask the right questions early -- during the acute phase of the incident
  - Population dose will help identify individuals that should be included in monitoring – both population and individual doses should be considered (legal issues, medical issues)

- Establish ongoing communications
  - Provide scripts for interviewers to establish trust early in the process
  - Explain why the information is important – if people feel they are part of a research study they will not want to participate or will not fully complete the form
  - Understand the sensitivity in communicating dose information to people
    - Face-to-face meetings are best
    - Carefully craft letters to individuals to explain dose
    - Be sensitive to people's concerns
    - Equip healthcare providers with information to communicate to patients
  - Reach out to mental health community for assistance with exposed and concerned populations
  - Include all populations – pay special attention to disadvantaged populations
  - Create one-page fact sheet explaining dose reconstruction to the general public
    - Be careful not to imply that the study is putting people at risk
    - Need to explain why you are collecting data from people

EXTERNAL DECONTAMINATION

The participants in the "**external decontamination**" breakout session were asked to consider what issues may arise regarding external decontamination following a radiological incident. Issues regarding special populations, children, and others requiring special handling were also considered.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What are the comprehensive steps to decontaminate a person?

- The approach to, and methods for, decontaminating individuals will vary depending on where they are and what resources they have access to. Different, but related, protocols and considerations were recommended based on whether an individual is at home, at a decontamination/monitoring center, or in the field (at the site of a radiological accident).

- At home
  - Keep hands off of face and out of eyes and mouth
  - Remove clothing
  - Put clothes in plastic and seal
  - Blow nose and clean out eyes and ears
  - Shower thoroughly – "best shower of life" principle
    - No hard scrubbing
    - Use tepid water, not scalding hot water
    - Soap will work
  - Sanitize shower itself and wash car if you drove home from area of exposure (last priority)

- At decontamination/monitoring centers
  - Process same as above – no need to wash vehicle
  - Will need pre-planning to locate and set up centers to allow for proper decontamination and protection (must have showers, containers for contaminated clothing, slippers, bags, wash cloths, etc.)
  - Conduct survey to determine who to dismiss who needs additional help
    - Collect basic information
    - CDC should suggest template for epidemiological information and history

- In the field (in close range of a radiological release, but not near a decontamination/monitoring center)
  - Resources are limited, so must keep things simple until individuals can get to a decontamination facility
  - Keep hands off of face and out of eyes and mouth
  - Remove Clothing
  - Wash face and hands
  - Hose down body, if possible

Other key advice or guidelines not already mentioned?

- Need to rely on CDC for guidance on how to survey/deal with individuals from beginning to end
  - What kinds of equipment do you use in challenging, as well as ideal, circumstances?
  - What do you do when an individual has washed three times, but is still showing signs of contamination?
  - How do you handle individuals who leave of their own accord without being decontaminated?
  - Need to have a plan in place that features alternative triage centers to help avoid overloading hospitals
  - Decontamination centers need to have a system for forward referral to hospitals

- Consider the special needs of rural areas
  - May lack resources and infrastructure that more urban areas have
  - May be difficult to communicate public health risks and decontamination procedures to individuals living in remote areas

- Radiation people and/or health physicists need to be present and available
  - If none available, network with other states to establish a database of physicians who can be contacted in emergencies
  - Designate “strike team” of physicians/health physicists that can be called in to quickly respond and assess/treat individuals

- Consider liability issues for the center
  - Key issues may impact staff, workers and physicians
    - Workers/Physicians may be exposed/contaminated themselves in certain instances (worker protection/safety considerations)
    - Workers may have limited expertise and physicians may not be licensed or have the authority to treat individuals in states other than their own.
      - It may be necessary to have job descriptions of various positions at the decontamination center to assign appropriate personnel to jobs.
      - Centers may need a mechanism to indemnify or give federal authority to out-of-state physicians

INTERNAL DECONTAMINATION

Participants in the "**internal decontamination**" breakout session were asked to explore issues associated with internal decontamination following a radiological incident. Special populations requiring special handling, such as children, were also considered.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What are public health agencies' primary challenges in decontaminating individuals?

- Identifying those who need treatment
- Lack of expertise at the local level
- Lack of subject matter expertise
- Lack of training in the local health department
- Establishing criteria for determining who will be treated (must be scalable for the number of victims) due to limited availability of decontaminating agents
- Will physicians feel comfortable administering decontamination agents? Will the ER be responsible for this?
- Administration gets down to individual basis such as patient's age
- Mobilization of material from the stockpile
- Determining who gets treated and who doesn't, and justifying these decisions to the public
- Need guidelines for long-term treatment
- Can pediatric victims take medication? The pills and doses are large and administered three times a day
- Dealing with the media
- Should city and county agencies divert funds for stockpiling decontamination drugs – CDC and REAC/TS should advice localities not to stockpile their own drugs

What are the comprehensive steps to decontaminate a person?

- Identify the isotope

- Identify therapies
  - Inpatient
    - IV administration may be difficult during a mass casualty event – staff not available to monitor this
    - DTPA [a chelating agent] requires physician to administer
    - Need to develop guidance for MDs on distributing medications to victims
  - Outpatient and self-administered
    - Prussian blue and cytokines are oral medications
    - People can self-decontaminate with aluminum/magnesium [binding agent for some radionuclides], Exlax® [for intestinal contaminants], and beer [as a diuretic to speed elimination of certain radionuclides in the urine]
    - Need to develop guidance on self-decontamination

- Need to inform MDs and ERs that these [internal contamination] treatments are still viable even if it is begun later

What equipment, test or assay can a public health agency use to confirm effectiveness of internal decontamination? What equipment is recommended for a public health agency budget?

- Need some form of bioassay to determine if treatment has been effective
  - Need laboratory capability to make determination
  - Protocols already exist, but need to establish guidance for using bioassay

- "Findings of efficacy" by FDA

Considering public health agencies' limited resources, is there any way people can decontaminate themselves?

- People can self-decontaminate with:
  - Aluminum/magnesium – can bind with some radionuclides and speed elimination
  - Beer – beer can be used as a diuretic in some instances
  - Exlax® – Exlax® is excellent for removing particulates from the digestive tract
  - Need to develop guidance on self-decontamination

- Local physicians need training on how to assess the population, how to advise people on taking medication

- Pharmacists and medical personnel need information
  - Recommend CDC develop fact sheets on self-treatment protocols
  - People want specific information from a credible source

- Develop partnerships with pharmacists and media to disseminate information on self-decontamination using over-the-counter medications

Other key advice or guidelines not already mentioned?

- Develop a system to forward deployment of drugs without losing federal “custody” of drugs – drugs can be in place within 12 hours, but additional time is needed to break them down and prepare for administration
- Develop material for physicians on the administration of drugs
- Develop guidelines on the selection process, i.e., who gets treated and who doesn’t
- Physicians need to be ready to explain why some people are not being treated – may need to communicate the selection process to the media
- Communities need to know how many people they can treat in an emergency – also need to know availability of drugs, e.g., doxycycline for treating anthrax
- Need guidance and protocols for physicians and public health agencies for following up with victims and for enhancing compliance with administration of medications and self-treatments throughout the course of an individual’s treatment

RADIATION CONTROL/CONTAINMENT

The participants in the "**radiation control/containment**" breakout session were asked to define approaches for controlling and containing radioactive materials once contaminated individuals had arrived at a population monitoring center.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What are the key principles for radiation control and containment?

- Try not to mix clean with dirty
- Walk line [of waiting individuals] with meter pull out really dirty or medical needs cases
- Split routes and areas
- Define areas, set a perimeter
- Have booties, gloves and, if possible, face masks for workers
- Check instruments for cross contamination
- Synchronize agreements with local population monitoring centers
- Place plastic everywhere people walk
- Control access
- Security
- Have a loading dock
- Use FEMA/Nuclear Weapon Accident Response Procedures (NARP) guidelines for the centers
- Create guidelines for managing population monitoring centers—base guidelines on existing Federal guidelines (FEMA, NRC, NCRP, NARP)

Other key advice or guidelines not already mentioned?

- Tailor existing guidelines for state and local health officials
- Roll out a training program

- Get this message out: "Our goal is to protect the people first; the environment second"
- Develop guidance on recruiting, managing, and maintaining staffing volunteers for facilities
- Use existing security guidance as defined in local emergency response plans
- Base guidance on equipment use on existing guidance from local hospitals
- There is a need for coordination between DHS, HHS, and CDC across issues, e.g. DHS already has an established channel to first responders
- Need to consider security of personal effects
- Create standards for family units
  - Understand what is dangerous
  - What needs to be disposed of
  - Where the collection point is
- Prepare printed guidance for first responders and public health workers to have with them once an incident occurs—prepare information on establishing a Point of Distribution (POD)
- We need a Federal solution to legal issues associated with use of volunteers in an incident

WORKER PROTECTION

The participants in the "**worker protection**" breakout session were asked to consider the needs of public health agency staff who could be asked to assist in a crisis. What kind of guidance is needed to keep public health staff safe in a radiological incident?

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What staff will most likely come in contact with contaminated casualties or materials?

- First responders (EMS/EMT, fire fighters, in house staff) need training in radiation protection measures as part of the all-hazards approach – consolidate response protocols as much as possible so that there is one set of actions for all hazards
- Public health trainers and supervisors, laboratory and field teams, and volunteers all require radiation protection and safety training

What is the appropriate personal protection equipment for these staff?

- The following is recommended within the context of an all hazards emergency response: gloves, masks, shoe covers/booties, survey meters for laboratory staff

What should be the general guidelines or protocols for physically protecting public health agency staff?

- Follow existing FEMA and other federal guidelines
- Follow the all-hazards approach established by the individual states plans with generic guidelines from the CDC
- Follow protocols established by laboratories regarding acceptable limits for hot samples

How should first responders be prepared? What equipment is required for their protection?

- Workers need to be fully knowledgeable about radiation safety procedures
- Public health first responders need to understand how to coordinate with EMTs, fire fighters, medical personnel and others first on the scene – they also need to know the availability of equipment and other resources
- Workers need dosimeter training

How can public health deal with panicked family and friends?

- Workers need to be aware of the psychological issues at play in an emergency situation
- Need security in order to keep angry individuals away from workers at screening stations
- Provide ongoing radiation education
- Be sensitive to how worker protection is conducted

Other key advice or guidelines not already mentioned?

- Worker protection should be incorporated into all response plans
- States have to establish their own plans for worker protection, but the Federal government has a role in identifying and promoting best practices
- For emergency first responders, recognize the balance between duty to save lives and protective measures
- Utilize the guidance of other agencies, i.e., OSHA
- Include volunteers in worker protection and safety and equipment training
- Recognize that radiation causes considerable fear and anxiety among public health workers and factor this into planning and response procedures
- Include security considerations in plans for worker protection

REGISTRIES

Topics in the "**registries**" breakout session included data requirements for estimating doses, approaches for developing a casualty tracking system, and data collection methods that could be utilized by public health agencies.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What data can be collected during the assessment phase? What data are needed for monitoring?

- General information – name, address, phone number, date of birth
- Spatial issues
  - Where were you when the incident happened, inside or outside?
  - How close were you to the incident?
- Information regarding the worker involved with the individual
- Temporal issues – how long were you there?
- Dosimetry information if they have it
- Symptoms, if victim is showing any
- Weather at the time of the incident

What is the most important data that must be collected?

- Spatial issues
  - Where were you when the incident happened, inside or outside?
  - How close were you to the incident?
- Temporal issues – how long were you there?
- Dosimetry information if they have it
- Symptoms, if the victim showing any

How should this data be collected, evaluated, shared and tracked?

- Unique identifiers should be assigned to each person as they come through the decontamination area

- CDC is encouraged to develop a template of data required for registries specific to radiation – make sure state and local public health departments are aware of response tools provided by the Federal government

- Develop a pre-registry of first responders

- Pre-determine who will have access to the database in advance

What are the possible legal issues associated with collecting and using this data? How should public health agencies address these legal issues?

- Develop IRB language on confidentiality issues

- Need to inform the public that there is no guarantee of compensation simply by being included in the registry

- One way to prepare for liability issues down the road is to register and collect data on everyone who shows up, even if they were not affected by the incident – in past incidents, people have claimed to be present during the event and demanded compensation

- Make sure forms are easy to read and understand

Any other key advice or guidelines not already mentioned?

- There could be three sub-registries: immediate onsite, emergency room/hospital, and late presenters

- Issue: What happens when a registry is declared over? Will it be archived? What happens to the data? Accessing archived databases is difficult

DISCHARGE/FOLLOW UP

Recognizing that the public would likely request information pertaining to follow-up care while at a population monitoring/relocation center, participants in the "**discharge/follow-up**" session explored the issues associated with meeting this public need.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What follow-up medical care will individuals require upon discharge from a population monitoring/relocation center?

- Mental evaluations
- Physician follow-up
- Bioassay/blood count
- Highly depends on incident, dose, and isotope, and clinical signs of symptoms and residual contamination

What education or training will prepare people for future care? How should this education/training be conducted? What are the key messages of this education/training?

- Demystifying radiation is important in any educational material
- Include information on where to obtain more detailed information about the long-term health effects of exposure
- Describe the insurance implications of long-term care and follow-up
- Be up front about how costs will be covered – it may be implied that the government is going to cover the costs because it's the government telling the population to see doctors

PSYCHOSOCIAL

Assessing and responding to the public's psychosocial needs following a radiological incident would certainly be one of the public health community's most vexing challenges. Participants in the "**psychosocial**" breakout session were asked to explore means for assisting people who had experienced a radiological event. The group decided that 1) victims and their families and 2) public health workers need to be considered separately.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

What are the most likely psychosocial effects of radiation exposure?

- Concern for family
- Concerns about having sufficient personal protective equipment and medications
- Concerns about being adequately protected
- Fatigue: physical, emotional, cognitive
- Overexposure
  - Public health workers can treat only so many people at one time
  - Compassion fatigue – caring for people is emotionally draining
  - Child victims are particularly stressful on families and the healthcare community
- General adaptation syndrome – this is a condition where there is a baseline level of arousal, the body can only sustain a threat for so long before the body crashes, the individual then goes back to day-to-day work and is unable to function

What are the signs that public health agency staff may be experiencing these effects? When will they most likely occur?

- One sign to look out for is people trying to self-medicate (i.e., increased smoking and alcohol use)

What should the public health agency do to reduce psychosocial effects? What mental health support should the public health agency leadership provide?

- Distribute material on the effects and how to cope with them prior to an incident
- Create a case study of the impact of SARS on public health workers and use as an example for radiation

- Build a second and third team to manage overflow – workers cannot work 18-hour shifts, need to have a protocol in place to send people home

- Create a mechanism to reach families during the event

- Address credentialing issues up front – this was a lesson learned during 9/11, doctors were turned away [from hospitals in which they volunteered] because they did not have the right credentials

Any other key advice or guidelines not already mentioned?

- Expect post-traumatic stress syndrome in providers
  - Most people will have minimal symptoms immediately and then see them wear off
  - Most people will return to normal but a screening mechanism is needed so providers know when to make a referral

SPECIAL POPULATIONS

Special populations include pregnant women, immune compromised individuals, and disabled people who require use of wheelchairs or other assistance. Participants in the "**special populations**" breakout session were asked to suggest tools for use by local governments to assist these populations.

The questions posed here were designed to help outline the discussion – bulleted points reflect comments and opinions from the participants and do not constitute endorsement by the CDC.

The recommendations from this group are as follows:

Brainstorm a list of possible special populations requiring special care, which a public health agency may encounter in a radiological incident.

- Children
- Elderly
- Illegals
- Prisoners/fugitives/security risks
- Workers
- Homeless
- Potentially pregnant women
- Non-English speaking
- Persons with mental and physical impairments, i.e., blind, hard-of-hearing
- Animals

How should public health agencies assist these special populations?

- Many well-established national organizations are assisting special populations in myriad ways, the relationships and communications systems are already in place – the public health community should establish relationships with these organizations and ask for guidance
- Consider adoption of universal signage
- Use videos to visually communicate information – this reduces the need for translation
- Use pre-printed cards
- Identify in advance volunteers' special skills for helping special populations so that they can be called into action quickly in an emergency
- Identify groups with special needs in advance – such classifications will be specific to the particular region

Other key advice or guidelines not already mentioned.

- Need to prepare for the following:
  - People who want assistance but refuse screening
  - People who do not want to be identified (e.g., criminals, illegal aliens)
  - How to deal with contaminated pets or wild animals
  - How to link children with parents
  - How to equip shelters and waiting areas for special needs popualtions
  - Ethnic, cultural, and religious issues

- Where are the gaps?
  - There are some questions about authority of public health to deal with special populations
  - Need to address the long-term psychological aspects of monitoring on special populations
  - In addition to pets, dealing with farm animals and wild animals are hot areas
  - Address HIPPA (Health Insurance Portability and Accountability Act of 1996) issues
  - Consider a role for poison control centers – they represent a direct line to the public
  - Is there a way to use the internet for educating special populations about enrollment and discharge issues?
  - Examine the public health role in food and water management for special populations

ADDITIONAL RECOMMENDATIONS AND OBSERVATIONS

Dr. Kate Uraneck, New York City Department of Health

- Prepare discharge instructions in many languages, consider the needs of the illiterate, consider how to communicate to people when there is no translator available

- Internal Monitoring
  - It might be worth funding studies on baseline levels of key isotopes in the population
  - Workers at greatest risk for occupational exposure would have a baseline to work from

- Sheltering
  - What happens in a catastrophic event where hundreds of thousands of people are potentially contaminated (think tsunami with radiation)?
  - It will be impossible to screen and monitor them due to limited resources, infrastructure obstacles
  - How do you shelter large numbers of people who cannot return home but are potentially contaminated?
  - What will you need for these shelters that would be different from "clean shelters"? Who would staff them?
  - Suggest a working group potentially with FEMA on "Sheltering and the Radioactively Contaminated Individual in Catastrophic Conditions"

- Public communications: important to plan for what people will actually do rather than what we would like them to do – Redefining Public Awareness found that 60 percent of public would not follow government recommendations to shelter in place during an event

- Worker protection
  - First responders and recovery workers constitute a specific, identifiable population that should be monitored and screened more aggressively due to increased risk of exposure, contamination, and possible cumulative dose
  - Most guidance for workforce monitoring is for nuclear power plant workers – police and fire are having to create their own programs while relying on departments of health for guidance
  - It would be helpful to have some guidelines for workforce monitoring in the emergency worker population

- Planning and Logistics
  - There are not enough trained government experts
  - Need to have a national registry of certified health physicists, radiation safety officers, and functional Geiger-Mueller detectors
  - Need national experts willing to serve in an advisory capacity, perhaps retired persons
  - Reception centers
    - Need agreements with outlying areas near urban areas
    - Many locations will not be useable due to evacuations
    - Need criteria for sites

- When the numbers are overwhelming
  - If a responder recommends a “quick screen” (just face, hands, shoulders, and feet), others will want a reference or authority such as CDC or REAC/TS stating this is a valid option under the circumstances
    - Need to be able to access a CDC or REAC/TS “quick screen” protocol (that includes caveats, recommended meter settings, guidance on when to use this protocol)
    - Guidelines on how to do a “quick screen” should be understandable to non-radiation professionals
  - Occupational screening
    - First responders may need a different protocol and probably should be more familiar with traditional screening methods
    - Screening protocols for occupational workers should also be available

- Other concepts
  - Fund an independent media group or scientific journalism society to write a book, “Reporting on Radiation and Nuclear Incidents” (There is a useful and factual guide for journalists, “Reporting on Bioterrorism”)
  - Include personal safety information for reporters. Predominately they will be in safe zones and have little to low risk of exposure, but most reporters know very little about these issues – if they are misinformed, the public will be as well

Captain (Bruce) Kevin Molloy
Factors to consider for American Indians/Alaska Native Populations

- American Indian/Alaska Natives have a government-to-government relationship with the Federal government. They are not generally under the state or local governments and may not be included in their communication or response systems or jurisdictions. There may also be unique cultural issues.

- Many American Indian/Alaska Natives populations are in rural areas and may only have access to a health center providing ambulatory care. They may be a considerable distance from large medial centers.

- The rural aspect does not exclude these populations from events, natural or man-made.

- Casinos, proximity to international borders, and the unique status of tribes may make them targets or desirable areas where “terrorists” might stage their operations. For example, tribal police arrested two individuals on the top 20 “Most Wanted” list for terrorists on a southern U.S. Indian reservation. These were two separate incidents.

- Some American Indian/Alaska Natives health programs are managed and operated by the tribe, and some are managed and operated by the Federal government through the Indian Health Service.

- Please keep the Indian Health Service involved in these discussions.