CDC Tools for Radiological Preparedness & Response

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Community Assessment for Public Health Emergency Response (CASPER)
Agenda

- Welcome and Introductions
- Introduction to the Community Assessment for Public Health Emergency Response (CASPER)
- Community Reception Centers
- Questionnaire development discussion
- Wrap-up questions and evaluations
Disasters

A serious disruption of the functioning of society, causing widespread human, material or environmental losses, that exceeds the local capacity to respond, and calls for external assistance.
Public Health Impact of Disasters

- The United States is facing an increase in frequency and magnitude of disasters
- Many disasters are responsible for negative impacts
  - Increased morbidity and mortality
  - Environmental hazards
  - Displaced populations
  - Disruption of public health infrastructure
…many of the problems we have identified can be categorized as ‘information gaps’...Better information would have been an optimal weapon against Katrina. Information sent to the right people at the right place at the right time.”
Disaster Epidemiology

- Use of core public health capabilities to assist leaders and decision-makers by providing timely information to the right people
  - Tracking and surveillance
  - Assessments and investigations
  - Research

- Characterize short and long-term health consequences
Objectives of Disaster Epidemiology

- Provides situational awareness
- Identify risk factors
- Improve prevention and mitigation strategies for future disasters

Source: FEMA
CDC/HSB Disaster Epidemiology Tools

- **Surveillance**
  - National Poison Data System (NPDS)
  - Mortality Surveillance
  - Morbidity Surveillance

- **Rapid Needs Assessment**
  - Community Assessment for Public Health Emergency Response (CASPER)
CASPER Definition

- Epidemiologic technique designed to provide quickly and at low cost, *household-based* information about an affected community’s needs after a disaster in a simple format to decision-makers.
History of CASPER

- In 1970s, the WHO Expanded Programme on Immunization (EPI) survey technique for estimating vaccine coverage.
- In 1980s, U.S. Academy of Science’s identified the fastest technique for EPI.
- In 1990s, WHO published the protocol for best practice.
- In 1996, the modified cluster-sampling method for post-disaster rapid assessment of needs was published.
- In 2009, CDC Health Studies Branch published CASPER toolkit to assist personnel in conducting a CASPER.
What CASPER IS

- A quick, reliable, accurate technique which provides household based information about an affected communities needs

Goals of CASPER

- To rapidly obtain information about the needs of an affected community
- Produce population- based estimates for decision-makers
- To assess new or changing needs during the recovery period
What CASPER is NOT

- NOT intended to deliver food, medicine, medical services or other resources to the affected area
- NOT to provide direct services to residents such as cleanup or home repair
- NOT able to determine why people are not returning to the community, nor establish current population estimates
Advantages of CASPER

- Generalizable data (provides population estimates)
- Timely
- Relatively low cost
- Simple reporting format
- Flexible
CASPER Phases

- **Prepare for the CASPER**
  - Determine objectives
  - Determine assessment area
  - Develop forms and questionnaire
  - Select first stage sample (30 clusters)

- **Conduct the CASPER in the field**
  - Select second stage sample (7 households)
  - Organize and train assessment teams
  - Conduct household interviews

- **Analyze the data**
  - Determine sampling weight
  - Calculate weighted frequencies and percentages

- **Write the report and share results**
Determine Objectives

- What are the objectives of the CASPER
  - Disaster response: identify the needs of the affected community
  - Non-emergent setting

- Is CASPER the best tool, given the objectives?
  - HOUSEHOLD level information
  - Generalizable to the community at large
Developing the CASPER Questionnaire

- Determine the scope and nature of the key questions
  - Why ask the question?
  - What do you already know?
- Identify the critical information needed
  - Is the question necessary?
  - How will data be used?
  - Outline basic analysis (table shells)
- Discuss the benefit of short vs long questionnaire
- SMART objectives!
CASPER Methodology Overview

- **Two-stage probability sampling**
  - 30 clusters (census blocks)
    - Selected probability proportional to size (ensures that clusters with more housing units have a higher change of being selected)
    - 7 households in each cluster
- **Household-interview**
- **Data weighting to adjust for non-random sampling and obtain population estimates**
- **Report generated within two days of data collection**
- **Report shared with partners**
Sampling Method

- **Sampling Frame:** All households within the selected geographic area

- **Two stage probability sampling**
  - Stage 1: 30 clusters
  - Stage 2: 7 households

- **Data must be weighted to adjust for non-random sampling**
When to Conduct CASPER

- When population-representative information is needed
  - Determine if CASPERs 30x7 method is most appropriate
- CASPER results will be descriptive of the entire area
- Size and feasibility considerations
  - Minimum of 800 houses
  - Larger geographic areas = more time needed to interview
Define Geographic Area

- Identify the assessment area(s)
  - Sometimes more than one assessment area
  - Often determined by local official who requested CASPER
  - Define the assessment area (sampling frame)
    - County (or groups of counties)
    - City (or groups of cities) or Zip Code
    - Between key landmarks (highways or waterways as boundaries for the hardest hit areas, more vulnerable populations, etc.)
Texas – City

Source: Texas Department of State Health Services and the National Oceanic and Atmospheric Administration, National Hurricane Center, November 2008
Alabama – Key landmarks
Consideration for Radiation Emergencies

- Extreme caution radiation boundary 10 rem/hr
- High radiation boundary 100 rem/hr
- Medium radiation boundary 10 rem/hr
- Low radiation boundary <10 mRem/hr

- 1 rem/hr X 5 hr = 5 rem
  - "Inner zone"

- 0.1 rem/hr X 50 hr = 5 rem
  - "Intermediate zone"

- 0.01 rem/hr X 500 hr = 5 rem
  - "Outer zone"
Stage 1: Selecting Clusters

- What is a cluster?
  - Mutually exclusive
  - Known number of housing units

- Census blocks are ideal clusters

- Select with **probability proportional to size**
  - This ensures that clusters with more housing units have a higher chance of being selected
  - Corrected during data analyses by **weighting**
Stage 2: Selecting Housing Units

- Random selection difficult in disaster situation

- Systematic selection of households
  - Randomly choose starting point (e.g. intersection, center)
  - Select nearest house, then every $n$th house after
  - Choose $n$ based on size of cluster. The goal is to be sure houses are spread out across cluster
Systematic Selection of Houses

- Randomly select starting point
- Count every $n$th house
- Continue until 7 interviews are complete
Tracking form

- Used for tracking every house that is sampled
- Each cluster collected on separate tracking form
- Allows for calculation of response rates
Fill out a column for **EVERY house visited**, even those that were inaccessible, did not answer, or did not complete an interview.
Tracking Form

Community Assessment for Public Health Emergency Response
Tracking Notes Form

County: ___________________ Cluster # (i.e., 1-30): _______ Interviewer: ___________________ Date of Interview: _____ / _____ / _____

Instructions: Use this page to keep notes on which houses may need return visits.
Sampled Housing Unit:
1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 
13. 
14. 
15. 
16. 
17. 

Write information to identify houses to return to or any notes on the back
Conducting CASPER in the field

- **Just-in-time-training**
  - 3-6 hours one day in advance OR morning of the first day

- **Organization of field teams**
  - 10-15 interview teams (20-30 people)
  - Leadership team at headquarters

- **Safety briefing**

- **Supplies and materials**
Providing Public Health Information

After the Storm
Health risks and how you can prevent them.

Prevent Illnesses from FOOD

Food & Water: Do not eat or drink food or water that has been stored or served in containers that have been opened or leaking. Do not use items that have been frozen or rodent-infested. Do not eat food that has been stored in or on a surface that has been touched by a rodent. Do not use water that has been stored in or on a surface that has been touched by a rodent.

Prevent Illnesses from WATER

Water: Avoid using water that has been stored in or on a surface that has been touched by a rodent. Do not use water that has been stored in or on a surface that has been touched by a rodent.

Prevent Illnesses from CARBON MONOXIDE (CO)

CO is a colorless, odorless gas that can be toxic if inhaled. It can cause unconsciousness, confusion, and death if inhaled. Do not use gas appliances or generators in a confined space. Use carbon monoxide detectors in your home to help prevent CO poisoning.

Prevent Illnesses from MOSQUITOES

MOSQUITOES can spread diseases such as malaria and West Nile virus. To prevent illness, use insect repellent and avoid being outside during peak mosquito-biting times.

Mental Health Services
AltaPointe is providing crisis intervention counseling for South Mobile County residents affected by the Oil Spill Disaster.

When to Seek Help

If you are feeling overwhelmed
If you or your family are feeling too stressed
If you are having thoughts of hurting yourself
If you are using drugs or alcohol in order to cope
If you just need someone to talk to...

Community Counseling Center of South Mobile County
12791 Poulget Switch Road
Irvington, AL 36564
also located at the
Bayou La Batre Community Center
Visit us online at AltaPointe.org

There is no health without mental health
AltaPointe is offering a free, after-school behavioral support group for children from Kindergarten to 8th grade. Parents may attend optional adult group while their children are in camp.

Back-to-School Camp
For children and parents affected by the 2010 Oil Spill
AltaPointe is offering a free, after-school behavioral support group for children from Kindergarten to 8th grade. Parents may attend optional adult group while their children are in camp.

Be with your Friends!

Have Fun!

Sign-in begins at 3 p.m.
Groups are from 3:30 p.m. to 4:30 p.m.
Bayou La Batre Community Center
August 10 through September 30

Games

Awards

Questions? Call the AltaPointe Community Counseling Center of South Mobile County at 824-2310.
Analyzing Data Basics

- Data from questionnaires can be entered into EpiInfo

- Any statistical software package that allows you to weight data is acceptable (EpiInfo, SAS)
Analyzing Data: Sampling Weight

- Numerator will be the same for every housing unit (HU) within the assessment area.
- Denominator will differ (potentially) between clusters:
  - Ideally 210 (i.e. 7 [HUs] x 30 [clusters])
  - Obtain from tracking form

\[
\text{(Total number of housing units in sampling frame)} \div \frac{\text{(number of housing units interviewed within cluster)}}{\text{(number of clusters surveyed)}}
\]
In this example, there were 107,367 total housing units in the sampling frame (Kitsap County) and 30 clusters surveyed (see the equation for cell E2 at the top of the page). NOTE: the weight value for clusters 3 and 5 is the same because the same number of interviews was completed in both clusters.
Analyzing Data: Tracking form

- Data from tracking form can be entered into any spreadsheet (e.g., Microsoft Excel)

- Calculations of these response rates provides an indication of the representativeness of the sample to the population
Analyzing Data: Tracking form

- Calculation of these **response rates** provides an indication of the representativeness of the sample to the population

  - **Contact Rate** = percentage of households that complete a survey after contact is attempted

  - **Cooperation Rate** = percentage of households that complete a survey after contact has been made

  - **Completion Rate** = number of completed interviews compared to the ideal number of completed interviews
Sharing Results

- **Who is your audience?**
  - Emergency managers
  - Epidemiologists
  - Politicians
  - Media

- **Timing – when are your deadlines?**
  - Within 24 hours of completion of data collection for initial results
  - Start EARLY

- **Data presentation**
  - Simple
  - Easy-to-read format
  - Tables or graphically (pie charts, line graphs)

- **Link to original objectives**
Examples of CASPER Across Disaster Life Cycle

- Preparedness phase (beginning of “disaster season”)
  - Evacuation plans
  - Personal readiness plans
  - Communications

- Response phase

- Recovery phase
Little is known about how prepared households in Oakland County are for response to a natural, man-made, or radiological disaster.

**Objectives**
- Assess the level of household preparedness
- Determine most trusted and main sources of information for households during an emergency, including radiation incidents

**Results**
- During a radiation emergency, the local PH department would be the most trusted source of info and TV would be the main medium of info
- Over one-third of the households had a dependent outside of the home for whom they would have to provide help during an emergency
Examples of CASPER Across Disaster Life Cycle

- Preparedness phase

- Response phase (2-14 following disaster)
  - Needs change rapidly in first several days/weeks after disaster
  - Communications

- Recovery phase
Example: Kentucky Ice Storms

- **Background**
  - In January 2009, a massive ice storm hit KY causing 36 deaths and leaving 770,000 people without power across the state

- **Objective**
  - Determine health and safety related needs of residents living in Western KY severely impacted by storm

- **Results**
  - Many HHs did not seek shelter because they did not want to leave pets
  - Immediate need for supplementary oxygen
  - Majority used generator since the storm, many of which were using incorrectly and/or did not have a working CO detector
Uses of CASPER Across Disaster Life Cycle

- Preparedness phase
- Response phase
- Recovery phase (3 weeks – 1 year following disaster)
  - Assess long term or on-going needs
  - Evaluate response efforts or programs
Example: Deepwater Horizon Follow-up

- **Background**
  - April 20, 2010, Deepwater Horizon (DWH) exploded causing 11 deaths and 17 injuries and leading to the largest marine oil release in history

- **Objectives**
  - Determine the general and mental health needs of the community one year following the Deepwater Horizon oil spill
  - Provide information on the emergency preparedness of the community to aid health officials in preparedness planning

- **Results**
  - Reports of physical and mental health symptoms in 2011 CASPER were lower than in 2010 CASPER
  - In general, residents of coastal AL and MS would evacuate if public health authorities recommend evacuation
Non-Disaster Uses of CASPER

- **Non-emergent setting**
  - Determine current health status, assess public health perceptions, estimate needs of a community

- **Health Impact Assessments (HIA)**
  - Assess community awareness, opinions and concerns regarding the impact of a new project (e.g., new transportation route, new power plant) on health in the community

- **Community assessment for accreditation**
  - Public Health Accreditation Board (PHAB)
  - Project Public Health Ready certification
Example: Perceived Health Risks of Coal Gasification, Kentucky

- **Background**
  - Three coal gasification plants were planned in Green River District (GRD) area. CASPER Conducted as a component of a Health Impact Assessment.

- **Objective**
  - Assess GRD residents’ knowledge and beliefs related to coal gasification, environment and health, including perceived health risks.

- **Results**
  - Results used as portion of the broader Health Impact Assessment in the GRD.
  - Small percent of households were at least moderately aware of the projects.
  - Majority of households were without enough information or unsure about the plants being built.
Impact of Past CASPERs

- **Resources**
  - Allocate scarce resources
  - Data cited to support requests/needs
  - Respond to specific needs (e.g., oxygen-dependent individuals, medication)

- **Support**
  - Provide valid information to governors, news media, etc.
  - Support funding of projects
  - Confirm suspected need for services (e.g., mental health)

- **Messaging**
  - Target communication messages

- **Future planning**
  - Prompted modification of emergency management plans
  - Identify where education needed in the community
CASPER References

- CASPER toolkit

- Disaster Epidemiology and Response Team (DERT)
  - [http://www.cdc.gov/nceh/hsb/disaster/default.htm](http://www.cdc.gov/nceh/hsb/disaster/default.htm)

- Disaster Epidemiology Community of Practice (DECoP)
  - [http://partner.cdc.gov/DECoP](http://partner.cdc.gov/DECoP)
  - Contact Amy Schnall ([GHU5@cdc.gov](mailto:GHU5@cdc.gov)) for access
Thank You

Amy Helene Schnall

GHU5@cdc.gov

770.488.3422 (office)  404.543.8299 (blackberry)

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov  Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Objectives

- Describe the process flow in a CRC
- Describe CRC data collection based on disaster epidemiology principles
- Demonstrate new training and planning tools for CRC operations
Community Reception Centers

Local response strategy for conducting population monitoring

- Multi-agency effort
- Staffed by government officials and organized volunteers
- Opened 24-48 hours post event
- Located outside of hot zone
- Comparable to PODs, NEHCs
Community Reception Centers

- Services include:
  - Contamination screening
  - Decontamination
  - Limited medical care

- Main purpose is to prioritize people for further care
  - Ease burden on hospitals
  - Manage scarce medical resources
Community Reception Center Process Flow

7 Stations:
- Initial Sorting
- First Aid
- Contamination Screening
- Wash

Contamination Control Zone

Clean Zone
- Registration
- Radiation Dose Assessment
- Discharge
Initial Sorting

Community Reception Center Flow Diagram

Contamination Control Zone
Clean Zone

RADIATION/TOXIC ASSESSMENT

REGISTRATION

DISCHARGE
Initial Sorting

Staff identify people who have:

- Urgent medical needs
- High levels of contamination
- Special needs
- Decontaminated before coming to the CRC
First Aid

Community Reception Center Flow Diagram

Contamination Control Zone
Clean Zone

Radiation Zone Assessment
Registration

Disinfect
First Aid

- Medical staff care for and/or transport patients with urgent medical needs
- **Life saving care takes priority!**
  - Do not delay transport for decontamination!
Contamination Screening

- Staff screen people for external contamination
- Radiation detection equipment
  - Consult your state or local radiation control authority for assistance
Wash

Community Reception Center Flow Diagram

Contamination Control Zone
Clean Zone

Registration

Discharge
Wash

- Staff monitor and facilitate showering
- People wash themselves
  - People with special needs may require additional assistance
Registration
Staff collect information for registry and long-term follow-up:

- Patient name
- Contact information
- Destination
- Proximity to event
- Time in affected area
Radiation Dose Assessment
Clinical and health physics staff:

- Screen for internal contamination
- Assess radiation exposure
- Assess need for bioassay
- Assess need for treatment
- Prioritize for short-term follow-up
Discharge
Staff provide information for people discharged:

- Assess need for counseling
- Discharge to home or shelter
- Provide referral for further care
Community Reception Center
Process Flow

- Process can be adjusted to meet capabilities
  - Instrumentation
  - Personnel

- Additional processes can be added as needed or as possible
  - Pets
  - Relocation services
Disaster Epidemiology

- Assesses the short- and long-term adverse health effects of disasters and to predict consequences of future disasters
- Includes acute and communicable disease, environmental health, occupational health, chronic disease, injury, mental health, and behavioral health epidemiology
- Provides situational awareness
  - Information to describe immediate needs, plan the response, and gather the appropriate resources
Importance of Epidemiologic Data Collection

- **Surveillance**
  - Ongoing to detect covert incident
  - Post-incident to track population health impact
    - Count numbers of exposed, contaminated, injured, dead, etc
    - At-risk populations (young, pregnant)

- **Standardized data collection to**
  - Inform immediate interventions to protect health
  - Prioritize limited resources (e.g. urine radiobioassay)

- **Long-term health effects studies**
## CRC Standardized Data Collection

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Reason for Collecting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact information</td>
<td>Enable short and long-term follow-up</td>
</tr>
<tr>
<td>Demographics</td>
<td>Describe affected populations, including vulnerable populations</td>
</tr>
<tr>
<td>Radiation contamination in face or chest area</td>
<td>Identify those at increased risk of internal contamination</td>
</tr>
<tr>
<td>Open wounds</td>
<td></td>
</tr>
<tr>
<td>Location at time of and following incident</td>
<td>Assess time, distance, and shielding factors</td>
</tr>
<tr>
<td>Inside building at time of and following incident</td>
<td></td>
</tr>
<tr>
<td>Time spent at or near incident site following incident</td>
<td></td>
</tr>
<tr>
<td>Signs and symptoms of acute radiation syndrome (ARS)</td>
<td>Identify those who may need immediate medical care</td>
</tr>
<tr>
<td>Height and weight</td>
<td>Improve dose estimation associated with bioassay result</td>
</tr>
</tbody>
</table>
## Florida CRC Exercise

### STATION 1: INITIAL SORTING

**Instructions:** Attach ID band barcode label here OR enter ID Number.

<table>
<thead>
<tr>
<th></th>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>A4. What is your preferred spoken language?</th>
<th>English</th>
<th>Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

### STATION 2: RADIATION CONTAMINATION SCREENING

<table>
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<tr>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B4. Initial screening results:</th>
<th>Negative for contamination</th>
<th>Positive for contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Instructions:** If “negative for contamination”, send individual to Station 5: Registration using Express Lane. If “positive for contamination”, officials conducting radiation contamination screening should complete the table below and escort individual to Station 3: Wash.

<table>
<thead>
<tr>
<th>Body Area</th>
<th>Contaminated?</th>
<th>If contaminated, measurement?</th>
<th>If contaminated, area of body?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head/Neck</td>
<td>B5. Yes/No</td>
<td>B5a.</td>
<td>B5b.</td>
</tr>
<tr>
<td>Trunk</td>
<td>B6. Yes/No</td>
<td>B6a.</td>
<td>B6b. Left/Right front/back</td>
</tr>
<tr>
<td>Upper Extremity</td>
<td>B7. Yes/No</td>
<td>B7a.</td>
<td>B7b. Left/Right front/back</td>
</tr>
<tr>
<td>Lower Extremity</td>
<td>B8. Yes/No</td>
<td>B8a.</td>
<td>B8b. Left/Right front/back</td>
</tr>
</tbody>
</table>

### STATION 3: WASH

<table>
<thead>
<tr>
<th>B9. Is the individual still contaminated after first decontamination has been completed?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instructions:</strong> If yes, complete a second decontamination. If no, send individual to Station 6: Radiation Dose Assessment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B10. Is the individual still contaminated after 2 decontamination attempts?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instructions:</strong> If yes or no, send individual to Station 6: Radiation Dose Assessment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Florida CRC Exercise

#### STATION 4: FIRST AID

Instructions: If individual was referred directly to First Aid without going through Station 2, complete section B above.

<table>
<thead>
<tr>
<th>C1. The individual was referred to the first aid station for:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Wound: Site(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C1a. If referred for open wound(s), did the individual have radiation contamination detected in open wound(s)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C1b. If yes, was wound decontamination performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

#### STATION 5: REGISTRATION

**CONTACT INFORMATION**

Instructions: Section D should be completed by the individual. Adults should complete the form for accompanying minors.

<table>
<thead>
<tr>
<th>D1. Name (Last, First, Middle Initial):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>D2. Date of birth (MM/DD/YYYY):</th>
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<tbody>
<tr>
<td>/ /</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>D3. Age:</th>
<th>Years or Months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D4. Ethnicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
</tr>
<tr>
<td>Non-Hispanic</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
<tr>
<td>Refused</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D5. Race (check all that apply):</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
</tr>
<tr>
<td>Native American</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
<tr>
<td>Refused</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D6. Gender:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
<tr>
<td>Refused</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D7. If female, pregnant?:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D8. Best way to contact you within the next 30 days:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
</tr>
<tr>
<td>Other:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D9. Primary Phone Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>_________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D10. Alternative Phone Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>_______________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D11. Mailing Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D12. City:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D15. Email Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
Florida CRC Exercise

**FLORIDA DEPARTMENT OF HEALTH**
**COMMUNITY RECEPTION CENTER (CRC) FORM**

**EXPOSURE INFORMATION**
*Instructions: Section E should be completed by the interviewer.*

<table>
<thead>
<tr>
<th>E1.</th>
<th>Were you inside the Lime County Convention Center on July 12, 2011 between 10 am and 2 pm? □ Yes □ No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Instructions: If yes, complete E1. If no, skip to E2.</em></td>
</tr>
<tr>
<td></td>
<td>E1a. If yes, were you inside the G25 main meeting room? □ Yes □ No</td>
</tr>
<tr>
<td></td>
<td><em>Instructions: If no, skip to E2.</em></td>
</tr>
<tr>
<td></td>
<td>E1b. If yes, how long were you inside the G25 main meeting room? From <strong>:</strong>__ □ am □ pm to <strong>:</strong>__ □ am □ pm</td>
</tr>
<tr>
<td></td>
<td>E1c. If yes, were you sprayed with water from the ceiling? □ Yes □ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E2.</th>
<th>Since 10am on July 12, 2011, did you work as a responder at the Lime County Convention Center? □ Yes □ No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Since July 12, 2011 at 10 am, have you or do you currently have any of the following symptoms?</td>
</tr>
<tr>
<td>E3.</td>
<td>Vomiting or diarrhea more than once? □ Yes □ No</td>
</tr>
<tr>
<td>E4.</td>
<td>Passing out or loss of consciousness? □ Yes □ No</td>
</tr>
<tr>
<td>E5.</td>
<td>Loss of memory or disorientation? □ Yes □ No</td>
</tr>
</tbody>
</table>

*Instructions: If yes to any of the following: E1, E2, E3, E4, E5, send individual to Station 6: Radiation Dose Assessment. Otherwise, check “Released to home” under H1. AND send individual to Station 7: Discharge.*

Station 6: Radiation Dose Assessment

*INSTRUCTIONS: Complete Section D and E for those individuals who did not go through Station 5: Registration.*
# Florida CRC Exercise

## Station 6: Radiation Dose Assessment
**INSTRUCTIONS:** Complete Section D and E for those individuals who did not go through Station 5: Registration.

### MEDICAL ASSESSMENT
**Instructions:** Section F should be completed by the public health professional conducting the medical assessment.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1. Have you received nuclear medicine tests or therapy procedures during the last 30 days? Examples include cardiac stress test, lung scan, PET scan, bone scan, thyroid uptake or ablation, and implanted radioactive seeds (brachytherapy).</td>
<td>Yes ☐  No ☐  Unknown ☐</td>
</tr>
<tr>
<td>F2. What is your height?</td>
<td>_______ feet _________ inches</td>
</tr>
<tr>
<td>F3. What is your weight?</td>
<td>_______ (pounds)</td>
</tr>
<tr>
<td>F4. Urine sample collected for bioassay?</td>
<td>Yes ☐  No ☐  Refused ☐</td>
</tr>
</tbody>
</table>

**Instructions:** Collect urine if B4 is “positive for contamination” AND E1 is “yes.” These question numbers are marked with squares on the form. If urine collected, complete the rest of section F. If urine is not collected, continue completing the form at section G.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>F5. If yes, time since last urination:</td>
<td>Don’t know ☐  Hours or Minutes ☐</td>
</tr>
<tr>
<td>F6. Bioassay priority:</td>
<td>Yes ☐  No ☐</td>
</tr>
</tbody>
</table>

**Instructions:** Priority is “yes” if B10, C1a, E2, E3, E4, or E5 is “yes”, or if B5b is “face/front of neck”, or if D3 is age less than 18 years, or if D7 is “yes” or “possible”. These question numbers are marked with circles on the form. If yes, write “PRIORITY” on specimen container.

### INTERNAL CONTaminaTION SURVEY
**Instructions:** Section G should be completed by the professional conducting the assessment for internal contamination. Check the appropriate disposition under H1. according to your results.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1. Detector type:</td>
<td></td>
</tr>
<tr>
<td>G2. Isotope(s)/Isotope Ratio:</td>
<td></td>
</tr>
<tr>
<td>G4. Proximity Distance:</td>
<td>Contact ☐  30 cm ☐  100 cm ☐  200 cm ☐</td>
</tr>
<tr>
<td>G5. Gross count rate:</td>
<td>CPS ☐  CPM ☐</td>
</tr>
<tr>
<td>G6. Background count rate:</td>
<td>CPS ☐  CPM ☐</td>
</tr>
<tr>
<td>G7. Route of Exposure:</td>
<td>Inhalation ☐  Ingestion ☐</td>
</tr>
<tr>
<td>G8. Time since exposure:</td>
<td>Hours</td>
</tr>
<tr>
<td>G9. Estimated effective dose:</td>
<td>mRem ☐  REM ☐  mSv ☐  Sieverts ☐</td>
</tr>
<tr>
<td>G9a. Isotope:</td>
<td></td>
</tr>
<tr>
<td>G10. Estimated effective dose:</td>
<td>mRem ☐  REM ☐  mSv ☐  Sieverts ☐</td>
</tr>
<tr>
<td>G10a. Isotope:</td>
<td></td>
</tr>
</tbody>
</table>

### Station 7: DISCHARGE
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1. Disposition:</td>
<td>Released to home ☐  Referred to healthcare facility ☐  Other:</td>
</tr>
<tr>
<td>H2. Date (MM/DD/YYYY):</td>
<td>/ /</td>
</tr>
<tr>
<td>H3. Time (Military Time):</td>
<td>:</td>
</tr>
</tbody>
</table>
Urine Radiobioassay

- Technique for measuring internal contamination with radionuclides using a urine sample
- Urine radioactivity result, along with other variables, to estimate dose
  - Variables that improve dose estimation model precision
    - Age
    - Time of last urinary void
    - Time of sample collection
    - Height and weight
- Limited capacity for rapid analysis of large number of samples
# Urine Radiobioassay Prioritization Criteria

<table>
<thead>
<tr>
<th>Explosive RDD (Complex Engineering)</th>
<th>IND Detonation (10kT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 18 or pregnant female</td>
<td>Age &lt; 18 or Pregnant female</td>
</tr>
<tr>
<td>Outdoors at time of explosion</td>
<td>Outdoors at time of explosion</td>
</tr>
<tr>
<td>Within 1 mile of the explosion</td>
<td>Within 20 miles of explosion</td>
</tr>
<tr>
<td>External contamination detected around face and chest or known internal contamination</td>
<td>External contamination detected around face and chest or known internal contamination</td>
</tr>
<tr>
<td>Wounds or embedded foreign bodies from the explosion</td>
<td>Wounds or embedded foreign bodies from the explosion</td>
</tr>
<tr>
<td>First responder that worked at the scene of the explosion without PPE</td>
<td>First responder that worked at the scene of the explosion</td>
</tr>
<tr>
<td>Clinical co-morbidities/Injuries</td>
<td>Signs/symptoms of ARS</td>
</tr>
<tr>
<td>Receiving decorporation therapy</td>
<td>Receiving decorporation therapy</td>
</tr>
</tbody>
</table>
Long Term Health Studies

- Monitor affected populations for health effects
- Integrate data collected during the response phase into a health registry
  - Contact information
  - Epidemiology
  - Dose estimation
- Timely public health response will improve ability to capture these data
vCRC Demo

Virtual Community Reception Center

My View: Initial Sorting

Greet Arrivals

Continue

Information

Area Description

Initial Sorting
The Initial Sorting Station is where people enter the community reception center (CRC). Staff here welcome and direct people where they need to go in the CRC.

Flow Chart

Greet Arrivals

Urgent Medical Need?

Floor Plan

You are here
Additional Planning Tools...

RealOpt CRC
vCRC available online:
www.emergency.cdc.gov/radiation/crc/vcrc.asp

Or to request a complimentary copy: cdcinfo@cdc.gov or 800-CDC-INFO