Practical Tools for Radiation Emergency Preparedness

Clinician Outreach and Communication Activity (COCA) Conference Call/Webinar

November 9, 2010

Office of Public Health Preparedness and Response
Division of Emergency Operations

Accrediting Statements

CME: The Centers for Disease Control and Prevention is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The Centers for Disease Control and Prevention designates this educational activity for a maximum of 1 AMA PRA Category 1 Credit. Physicians should only claim credit commensurate with the extent of their participation in the activity.

CNE: The Centers for Disease Control and Prevention is accredited as a provider of Continuing Nursing Education by the American Nurses Credentialing Center's Commission on Accreditation. This activity provides 1 contact hour.

CEU: The CDC has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 8405 Greensboro Drive, Suite 800, McLean, VA 22102. The CDC is authorized by IACET to offer 0.1 CEU's for this program.

CECH: The Centers for Disease Control and Prevention is a designated provider of continuing education contact hours (CECH) in health education by the National Commission for Health Education Credentialing, Inc. This program is a designated event for the CHES to receive 1 Category I contact hour in health education, CDC provider number GA0082.

ACPE: CDC is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education. This program is a designated event for pharmacist to receive 1.0 Contact Hours in pharmacy education.

Objectives

At the conclusion of this hour, each participant should be able to:

1. **Describe the process flow in a Community Reception Center**
2. **Identify the key stations in a Community Reception Center**
3. **Distinguish the unique psychological effects of radiation disasters**
4. **Define skills and techniques used when performing psychological first aid in radiation disasters**

Today's Presenters:

Jeffrey Nemhauser, MD
CAPT, USPHS and Medical Officer
Radiation Studies Branch/NCEH/EHHE
Centers for Disease Control and Prevention

Kevin Caspary, MPH, RSO
Health Education Specialist
Oak Ridge Institute for Science and Education

Leeanna Allen, MPH, CHES
Health Education Specialist
Oak Ridge Institute for Science and Education

Practical Tools for Nuclear and Radiological Emergency Preparedness

Jeffrey B. Nemhauser, MD
CAPT, US Public Health Service

Radiation Studies Branch

November 9, 2010

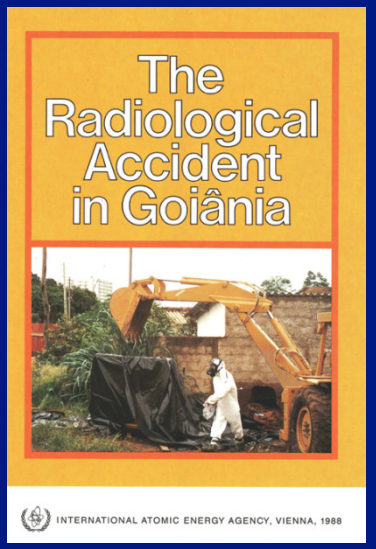
National Center for Environmental Health
Division of Environmental Hazards and Health Effects

Disclaimer

- CDC, our planners, and our content experts wish to disclose they have no financial interests or other relationships with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters.
- Presentations will not include any discussion of the unlabeled use of a product or a product under investigational use.

Goiânia

- September 1987: two men find a teletherapy head and in an abandoned cancer treatment clinic
- Unit taken home and dismantled
- More than 200 people come into contact with glowing blue powder including men, women, children



http://www-pub.iaea.org/MTCD/publications/PDF/Pub815_web.pdf

Goiânia

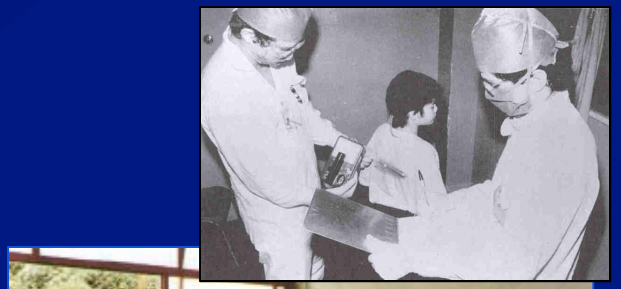
- **Glowing blue powder: ^{137}Cs**
- **249 exposed/contaminated**
  - 54 hospitalized
  - 46 treated with medication up to 150 days (ages 4 to 38)
  - 8 with radiation sickness
  - 4 deaths (including 6 year old girl)

Victim of Radiation Poisoning

http://www-pub.iaea.org/MTCD/publications/PDF/Pub815_web.pdf

Goiânia

- ~112,000 people monitored for contamination
- Hotels in Brazil refused guests from Goiânia
- Rocks thrown at cars with Goiânia license plates



http://www-pub.iaea.org/MTCD/publications/PDF/Pub815_web.pdf

Impact

- **Two major public health challenges in a radiation emergency:**
  - Conducting population monitoring
  - Addressing widespread psychosocial issues

Scenario 1: Nuclear Detonation
10-kiloton Improvised Nuclear Device

Casualties	100's of thousands
Infrastructure Damage	Total (within radius of 0.5-3 miles)
Evacuations/Displaced Persons	• 100,000 in affected area seek shelter in safe areas (decontamination needed) • 250,000 instructed to shelter-in-place as plume moves across regions • >1 million self-evacuate from major urban areas
Contamination	Various levels, up to ~3000 sq. miles
Economic impact	100's of billions of dollars
Potential for multiple events	No
Recovery timeline	Years

National Planning Scenarios: Executive Summaries

Scenario 11: Radiological Attack
Radiological Dispersal Devices

Casualties	**180 fatalities; 270 injuries; 20,000 detectible contaminations per site**
Infrastructure Damage	**Near the explosion**
Evacuations/Displaced Persons	**• 10,000 evacuated to shelters in safe areas (decontamination needed) • 25,000 instructed to shelter-in-place as plume moves across regions • >100,000 self-evacuate from major urban areas**
Contamination	**36 city blocks**
Economic impact	**Up to billions of dollars**
Potential for multiple events	**Yes**
Recovery timeline	**Months - years**

National Planning Scenarios: Executive Summaries

Community Reception Center Operations for Radiation Emergency Response

Kevin Caspary, MPH

Oak Ridge Institute for Science and Education

November 9, 2010

National Center for Environmental Health

Division of Environmental Hazards and Health Effects

Objectives

- Describe the process flow in a CRC
- Identify the key stations in a CRC

Community Reception Centers

Local response strategy for conducting population monitoring

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

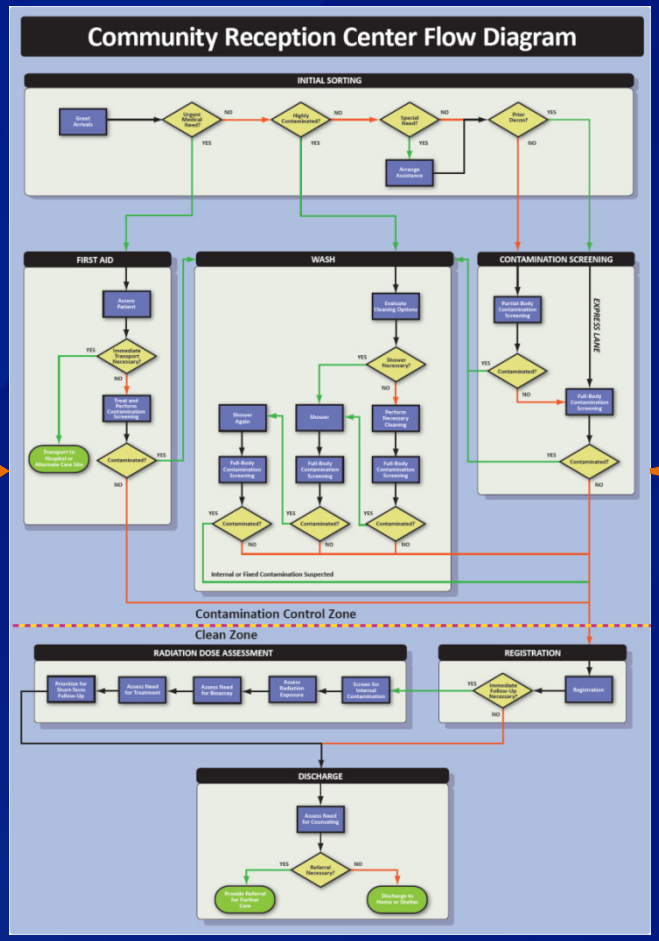
Community Reception Centers

- **Services include:**
  - External contamination screening
  - External decontamination
  - Limited medical care
- **Main purpose is to prioritize people for further care**
  - Ease burden on hospitals
  - Manage scarce medical resources

Origin → CRC → Endpoint

Affected Area

Surrounding Community

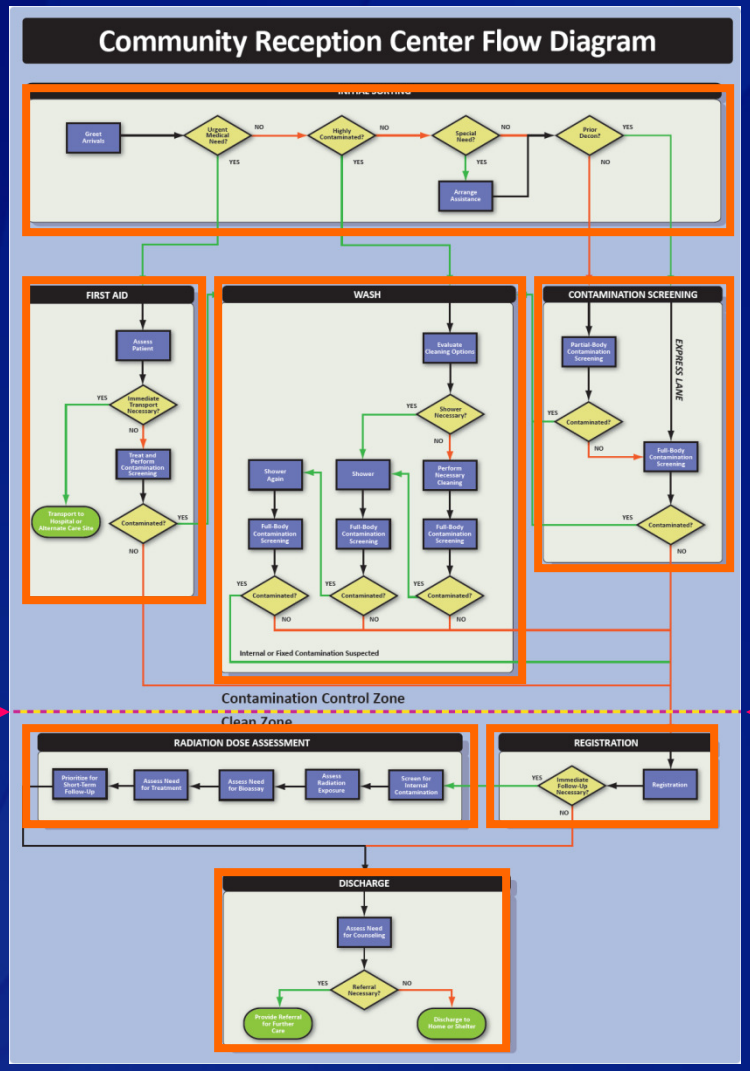


Home

Public Shelter

Hospital or Alternate Care Site

Community Reception Center Process Flow



7 Stations:

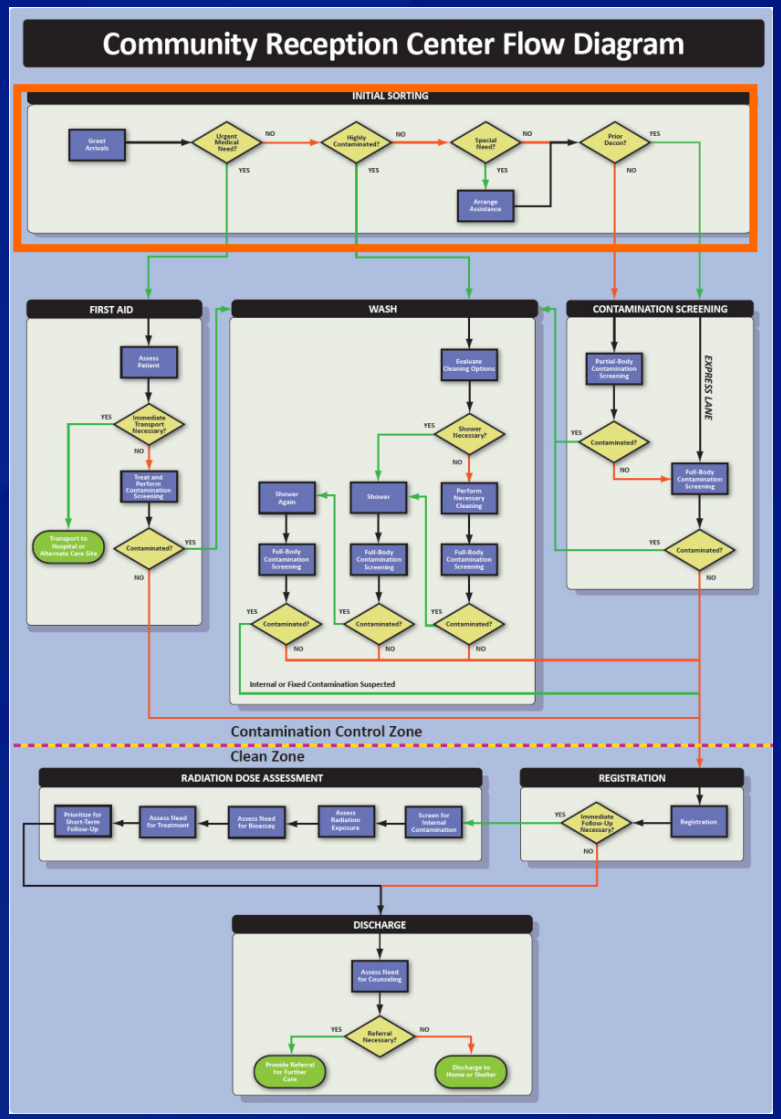
- Initial Sorting
- First Aid
- Contamination Screening
- Wash

Contamination Control Zone

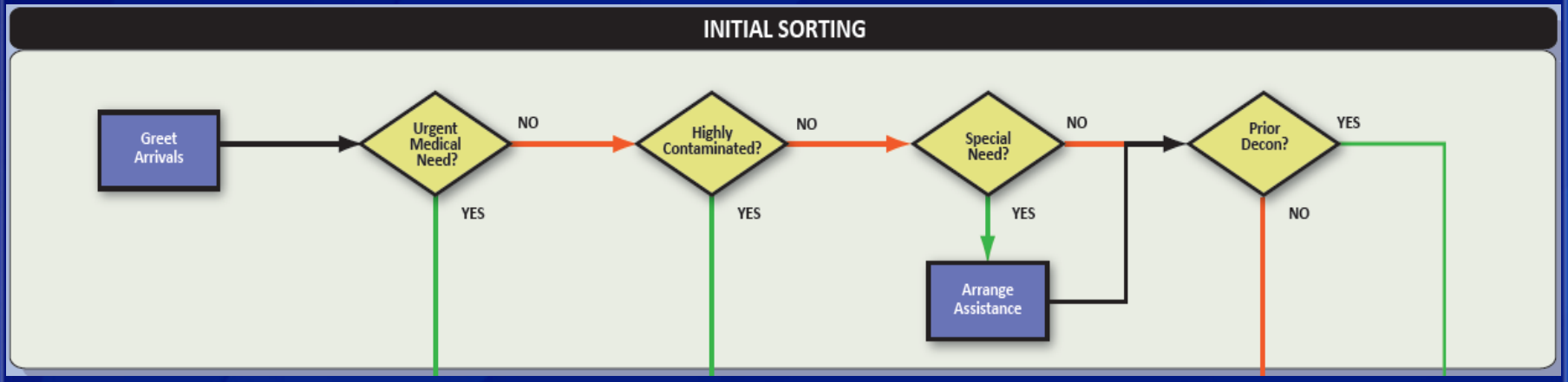
Clean Zone

- Registration
- Radiation Dose Assessment
- Discharge

Initial Sorting



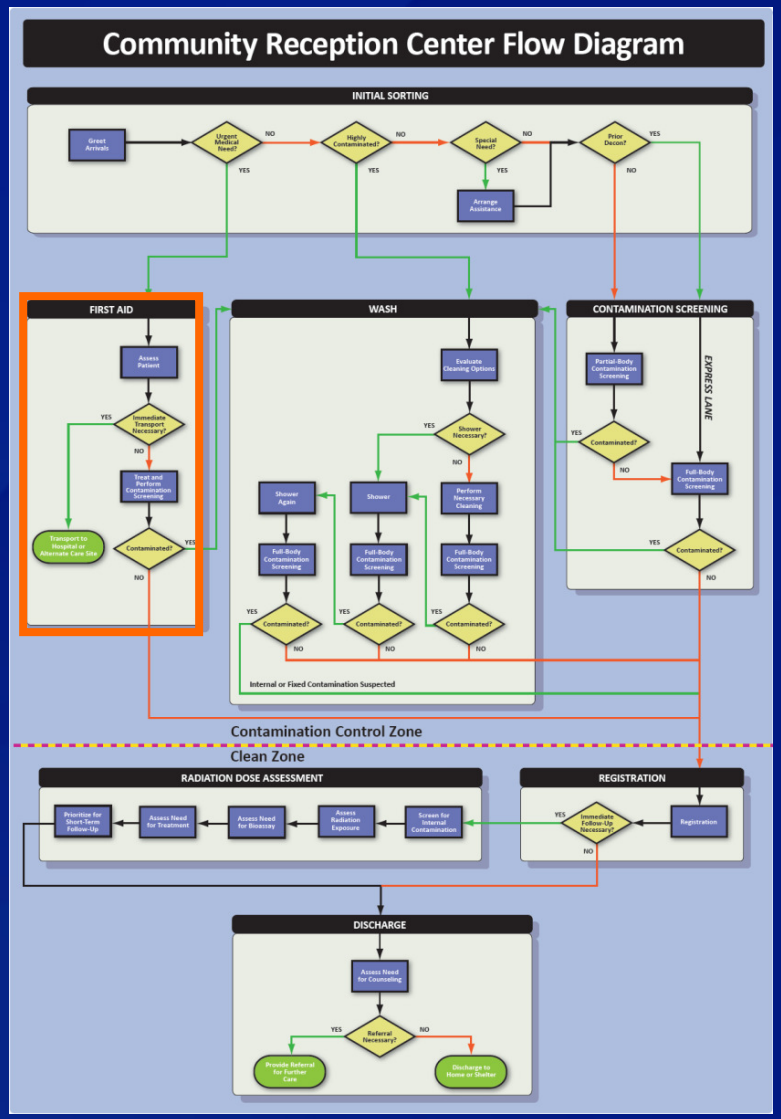
Initial Sorting



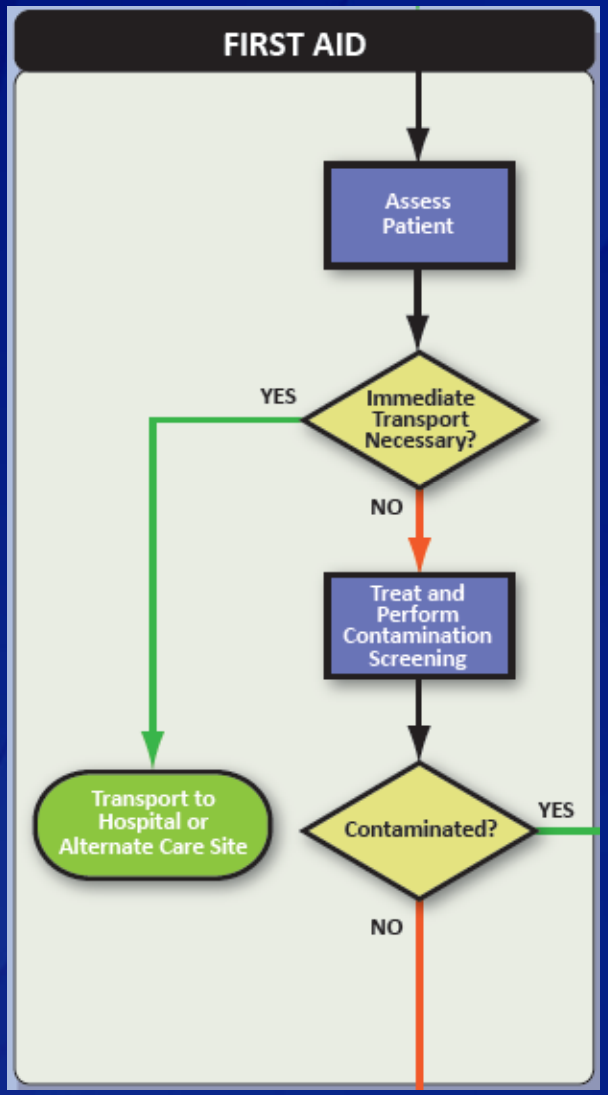
Staff identify people who have :

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

First Aid

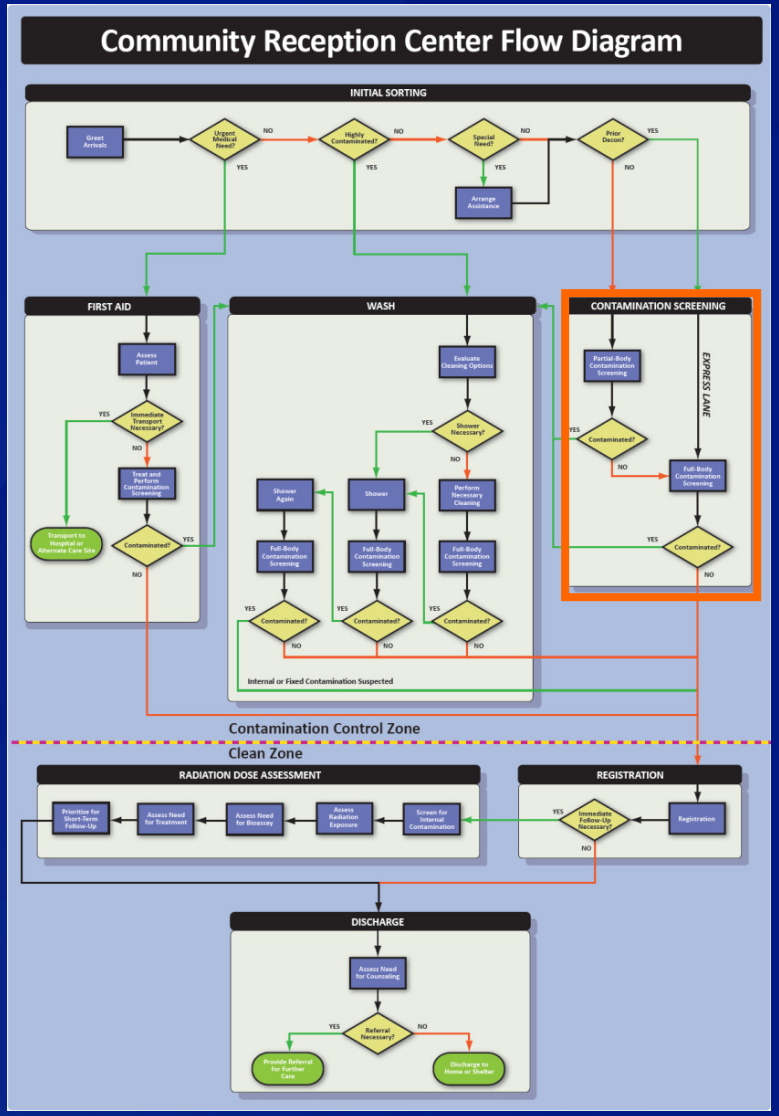

Community Reception Center Flow Diagram
INITIAL SORTING
Greet Arrivals
Urgent Medical Need?
Highly Contaminated?
Special Need?
Prior Decon?
Arrange Assistance
FIRST AID
Assess Patient
Immediate Transport Necessary?
Treat and Perform Contamination Screening
Transport to Hospital or Alternate Care Site
Contaminated?
WASH
Evaluate Cleaning Options
Shower Necessary?
Shower Again
Shower
Perform Necessary Cleaning
Full-Body Contamination Screening
Contaminated?
Internal or Fixed Contamination Suspected
CONTAMINATION SCREENING
Partial-Body Contamination Screening
EXPRESS LANE
Contaminated?
Full-Body Contamination Screening
Contaminated?
Contamination Control Zone
Clean Zone
RADIATION DOSE ASSESSMENT
Prioritize for Short-Term Follow-Up
Assess Need for Treatment
Assess Need for Bioassay
Assess Radiation Exposure
Screen for Internal Contamination
REGISTRATION
Immediate Follow-Up Necessary?
Registration
DISCHARGE
Assess Need for Counseling
Referral Necessary?
Provide Referral for Further Care
Discharge to Home or Shelter

First Aid

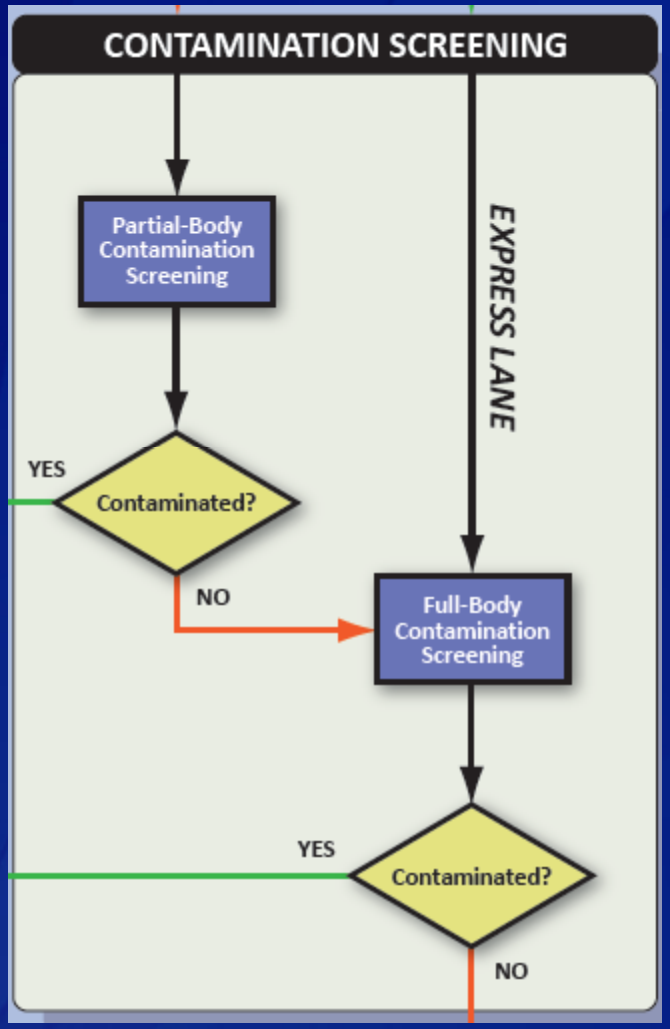


- **Medical staff care for and/or transport patients with urgent medical needs**
- **Life saving care takes priority!**
  - Do not delay transport for decontamination!

Contamination Screening

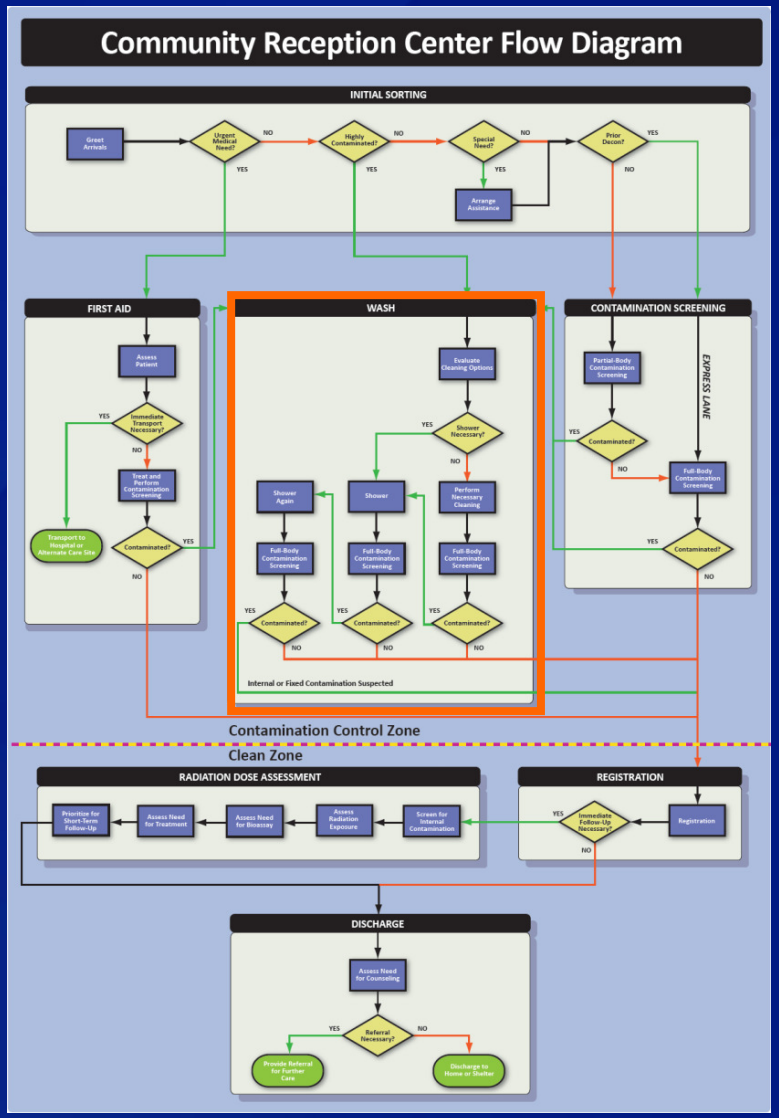


Contamination Screening

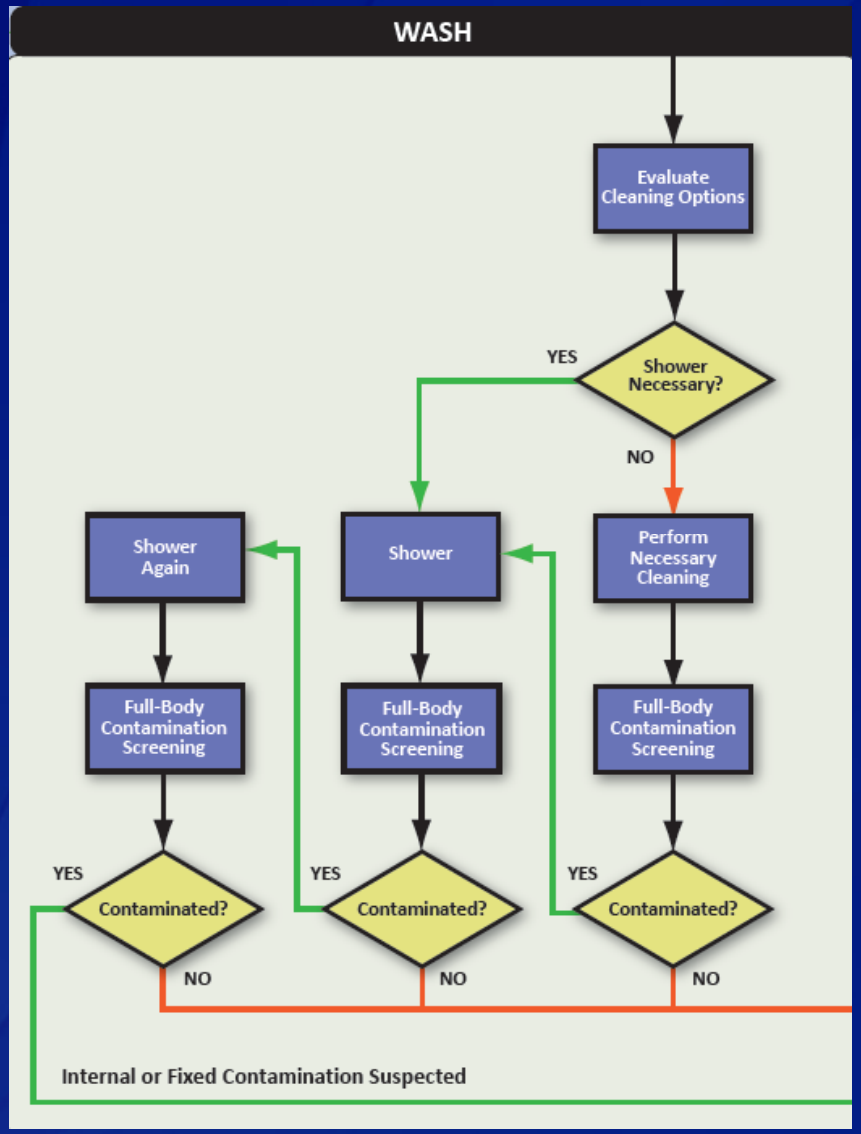


- **Staff screen people for external contamination**
- **Radiation detection equipment**
  - Consult your state or local radiation control authority for assistance

Wash

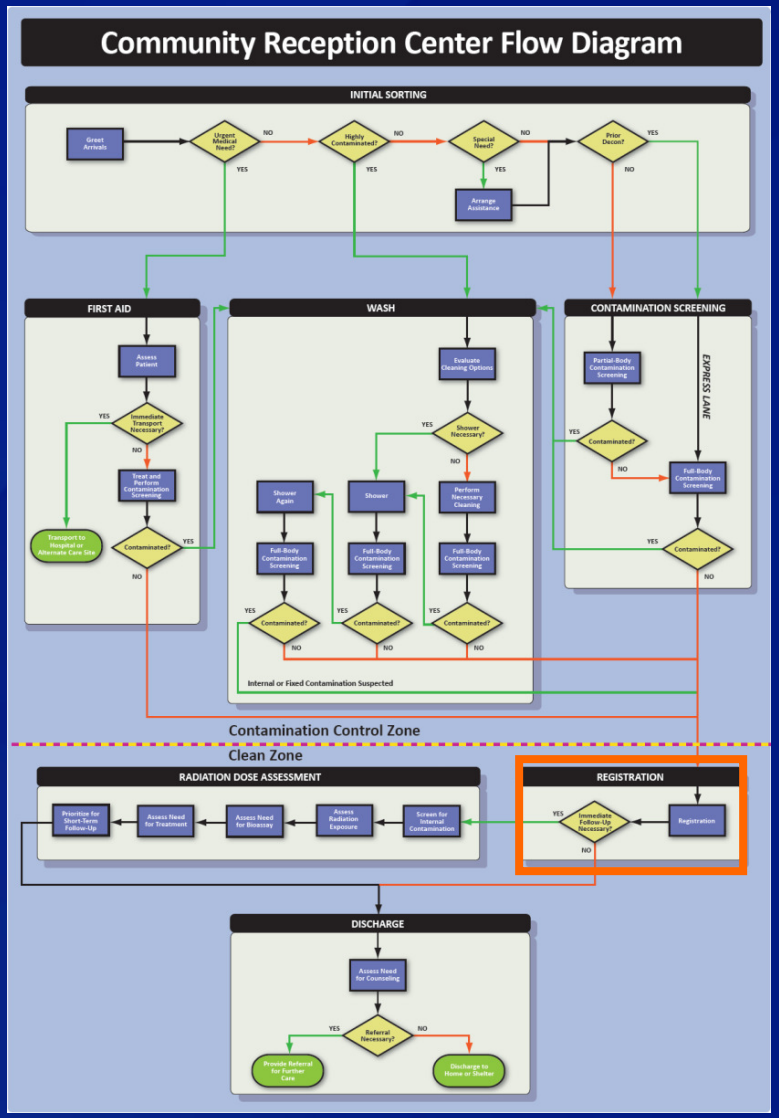

Community Reception Center Flow Diagram
INITIAL SORTING
Greet Arrivals
Urgent Medical Need?
NO
YES
Highly Contaminated?
NO
YES
Special Need?
NO
YES
Arrange Assistance
Prior Decon?
YES
NO
FIRST AID
Assess Patient
Immediate Transport Necessary?
YES
NO
Transport to Hospital or Alternate Care Site
Treat and Perform Contamination Screening
Contaminated?
YES
NO
WASH
Evaluate Cleaning Options
Shower Necessary?
YES
NO
Shower Again
Shower
Perform Necessary Cleaning
Full-Body Contamination Screening
Contaminated?
YES
NO
Internal or Fixed Contamination Suspected
CONTAMINATION SCREENING
Partial-Body Contamination Screening
Contaminated?
YES
NO
EXPRESS LANE
Full-Body Contamination Screening
Contaminated?
YES
NO
Contamination Control Zone
Clean Zone
RADIATION DOSE ASSESSMENT
Prioritize for Short-Term Follow-Up
Assess Need for Treatment
Assess Need for Bioassay
Assess Radiation Exposure
Screen for Internal Contamination
REGISTRATION
Immediate Follow-Up Necessary?
YES
NO
Registration
DISCHARGE
Assess Need for Counseling
Referral Necessary?
YES
NO
Provide Referral for Further Care
Discharge to Home or Shelter

Wash

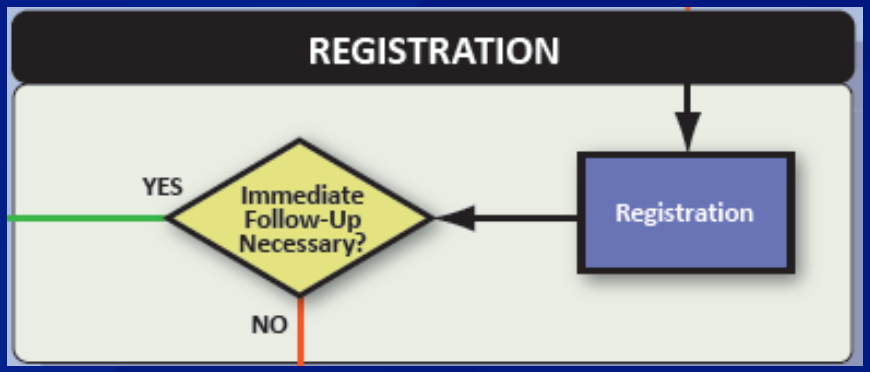


- **Staff monitor and facilitate showering**
- **People wash themselves**
  - People with special needs may require additional assistance

Registration



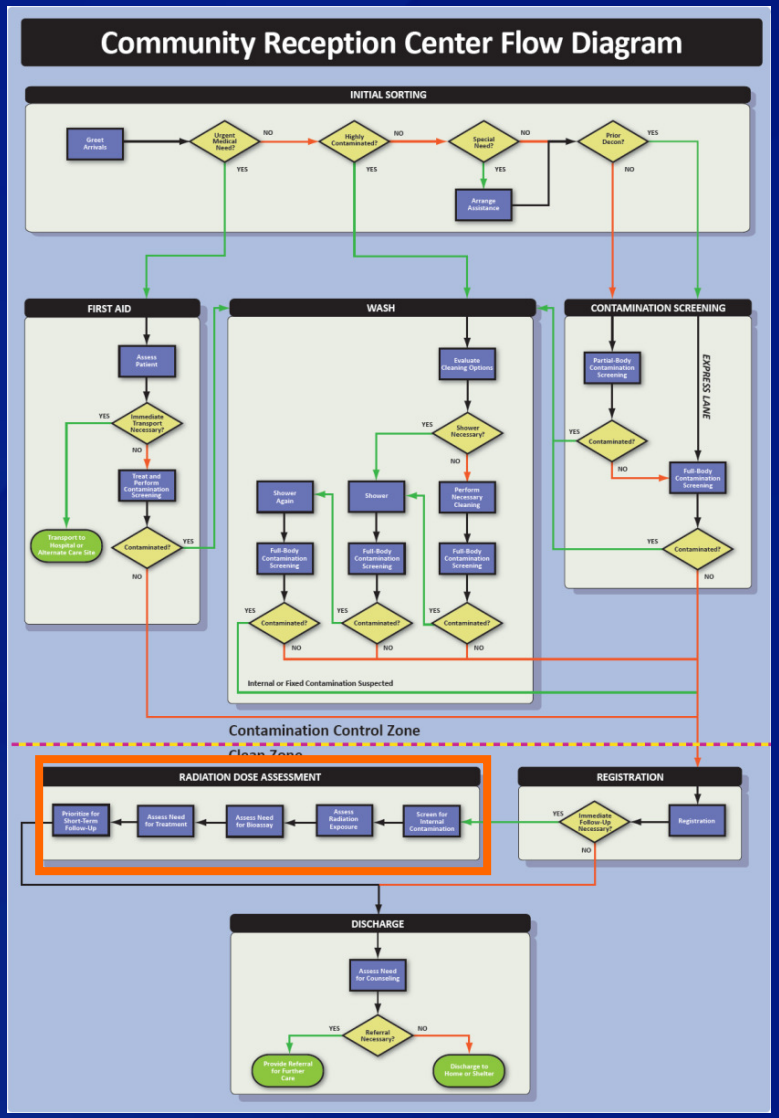
Registration



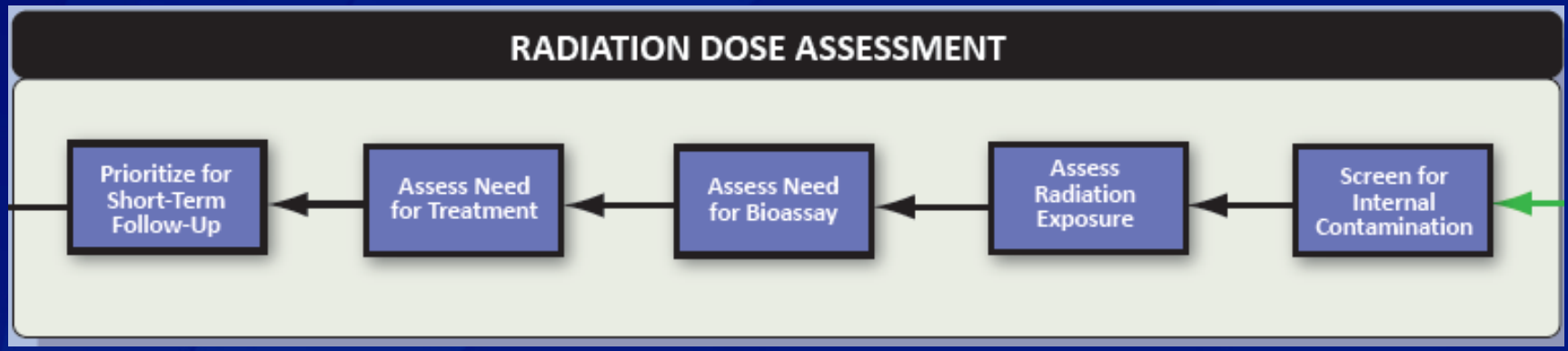
Staff collect information for registry and long-term follow-up:

- Patient name
- Contact information
- Destination
- Proximity to event
- Time in affected area

Radiation Dose Assessment



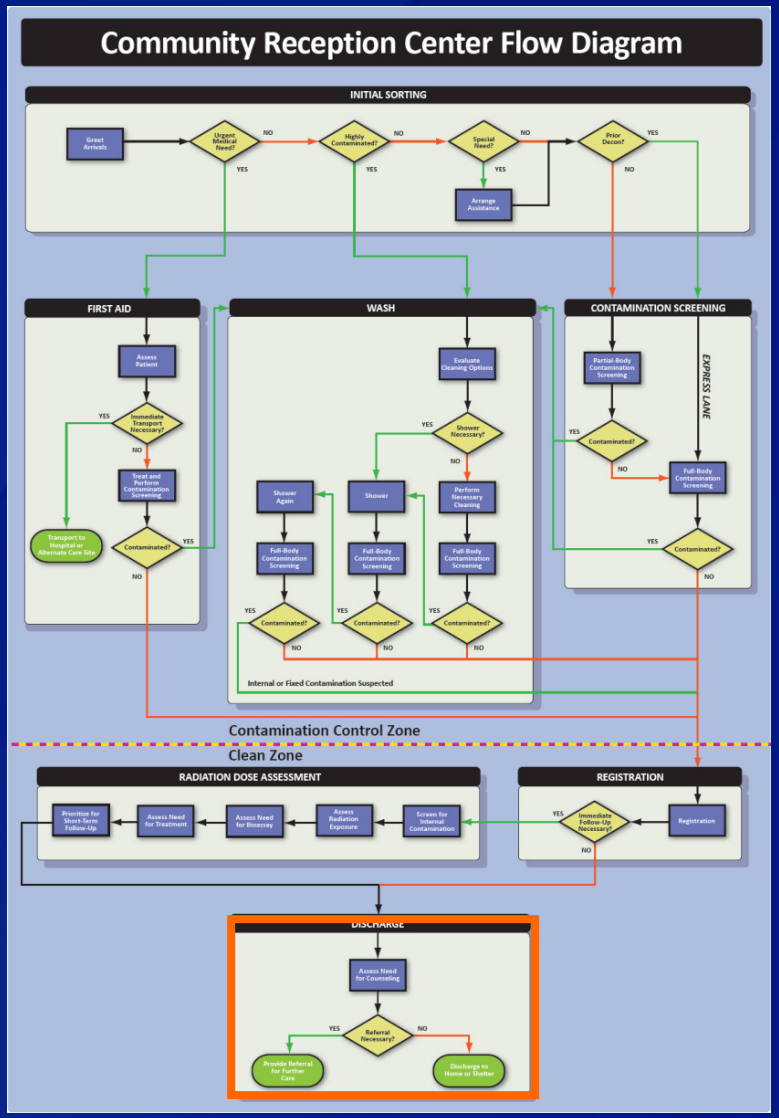
Radiation Dose Assessment



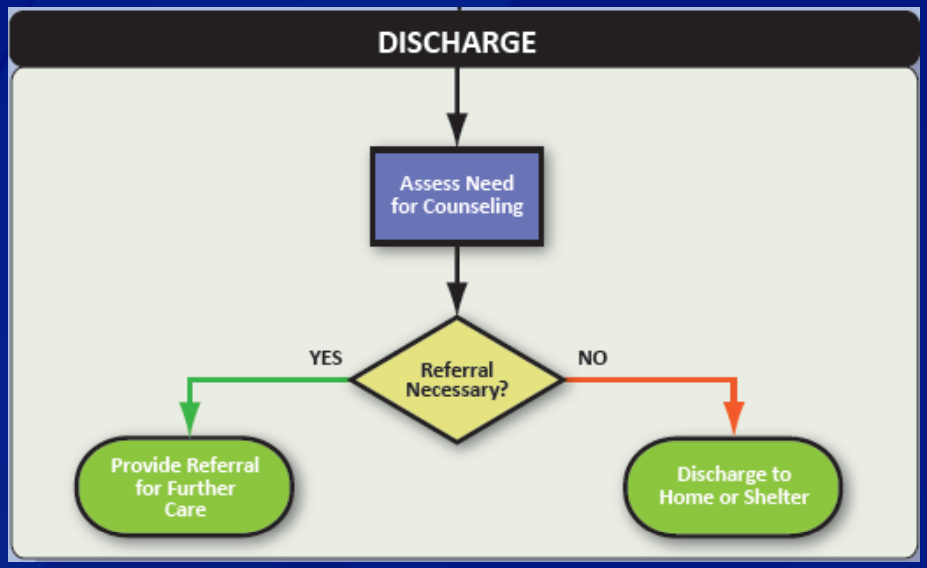
Clinical and health physics staff:

- Screen for internal contamination
- Assess radiation exposure
- Assess need for bioassay
- Assess need for treatment
- Prioritize for short-term follow-up

Discharge


Community Reception Center Flow Diagram
INITIAL SORTING
Greet Arrivals
Urgent Medical Need?
Highly Contaminated?
Special Need?
Prior Decon?
Arrange Assistance
FIRST AID
Assess Patient
Immediate Transport Necessary?
Transport to Hospital or Alternate Care Site
Treat and Perform Contamination Screening
Contaminated?
WASH
Evaluate Cleaning Options
Shower Necessary?
Shower Again
Shower
Perform Necessary Cleaning
Full-Body Contamination Screening
Contaminated?
Internal or Fixed Contamination Suspected
CONTAMINATION SCREENING
Partial-Body Contamination Screening
EXPRESS LANE
Contaminated?
Full-Body Contamination Screening
Contaminated?
Contamination Control Zone
Clean Zone
RADIATION DOSE ASSESSMENT
Prioritize for Short-Term Follow-Up
Assess Need for Treatment
Assess Need for Bioassay
Assess Radiation Exposure
Screen for Internal Contamination
REGISTRATION
Immediate Follow-Up Necessary?
Registration
DISCHARGE
Assess Need for Counseling
Referral Necessary?
Provide Referral for Further Care
Discharge to Home or Shelter

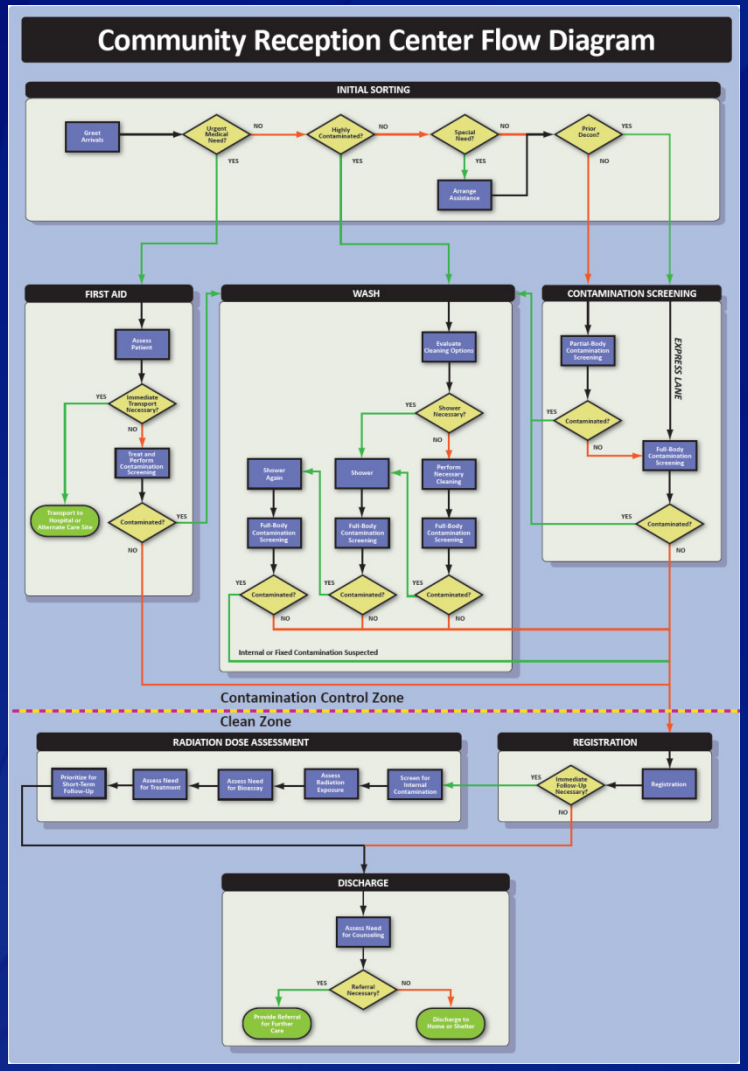
Discharge



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

vCRC


Virtual Community Reception Center
vCRC
INTRODUCTION | RESOURCES | GLOSSARY | HELP
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.
Info Spots
Resources
Flow Chart
Greet Arrivals
Urgent Medical Need?
YES
Floor Plan
Office
You are Here

vCRC available online:

www.emergency.cdc.gov/radiation/crc/vcrc

Or to request a complimentary copy:

cdcinfo@cdc.gov or 800-CDC-INFO

For more information please contact Radiation Studies Branch, CDC

4770 Buford Highway NE, Atlanta, GA 30341
Telephone, 1-770-488-3800
E-mail: rsbinfo@cdc.gov Web: emergency.cdc.gov/radiation

National Center for Environmental Health
Division of Environmental Hazards and Health Effects

Psychological First Aid in Radiation Disasters

Leeanna Allen, MPH, CHES

Oak Ridge Institute for Science and Education

November 9, 2010

National Center for Environmental Health
Division of Environmental Hazards and Health Effects

Objectives

- Distinguish the unique psychological effects of radiation disasters
- Define skills and techniques used when performing psychological first aid in radiation disasters

What is Psychological First Aid?

- **Psychological First Aid is a way to help reduce the initial distress caused by traumatic events**
- **Designed to be:**
  - Consistent with research evidence on risk and resilience following trauma
  - Applicable and practical in the field
  - Appropriate for all ages
  - Culturally informed and flexibly delivered

Examples of Roles for the Public Health/Medical Community in a Radiation Disaster

- Medical Triage and Treatment
- Population Monitoring
- Risk Communication and Public Information
- Establishing Clinical Registries
- Sheltering Displaced Populations

Who needs to use psychological first aid?

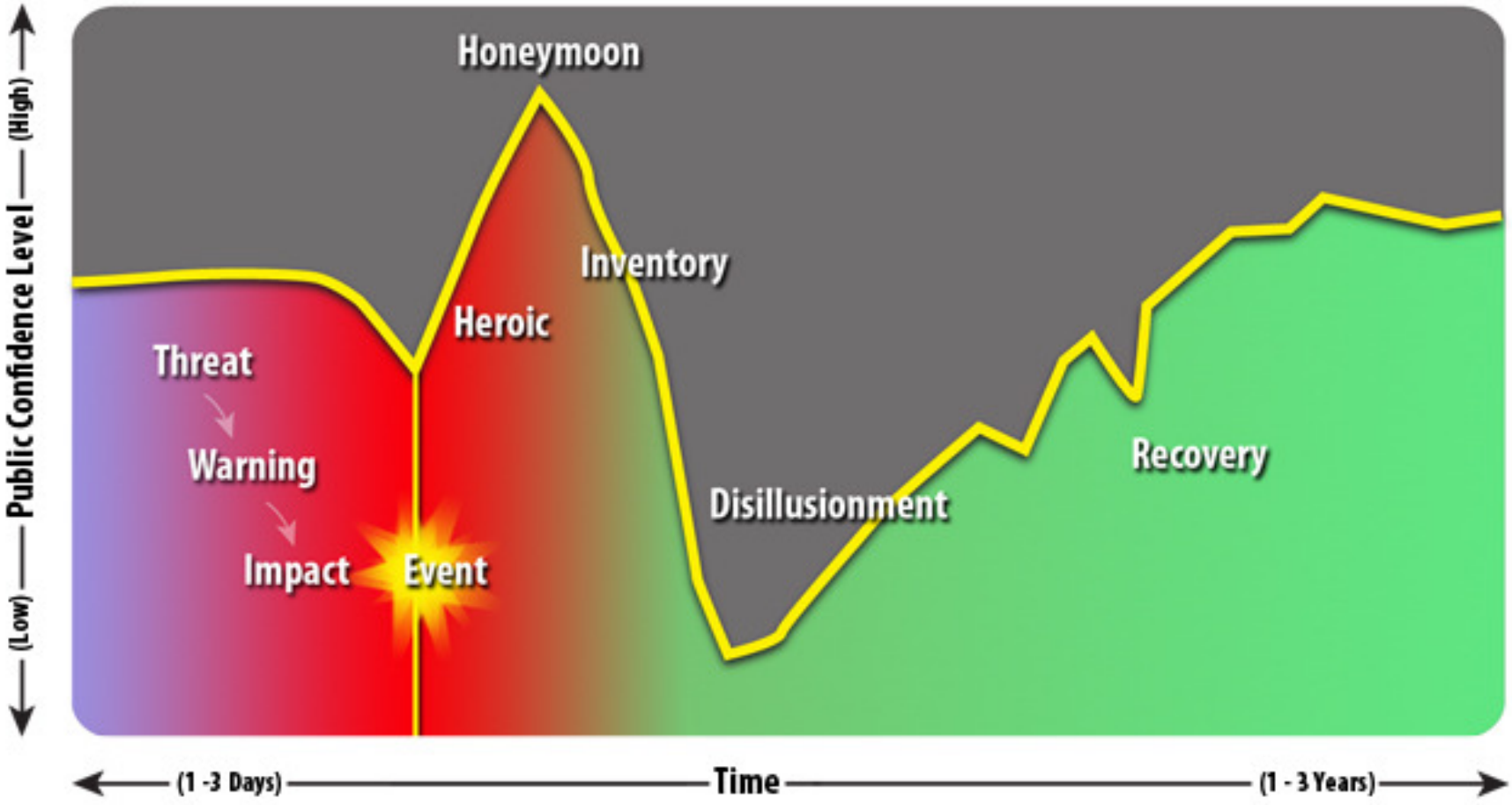
Radiation Disasters are Different

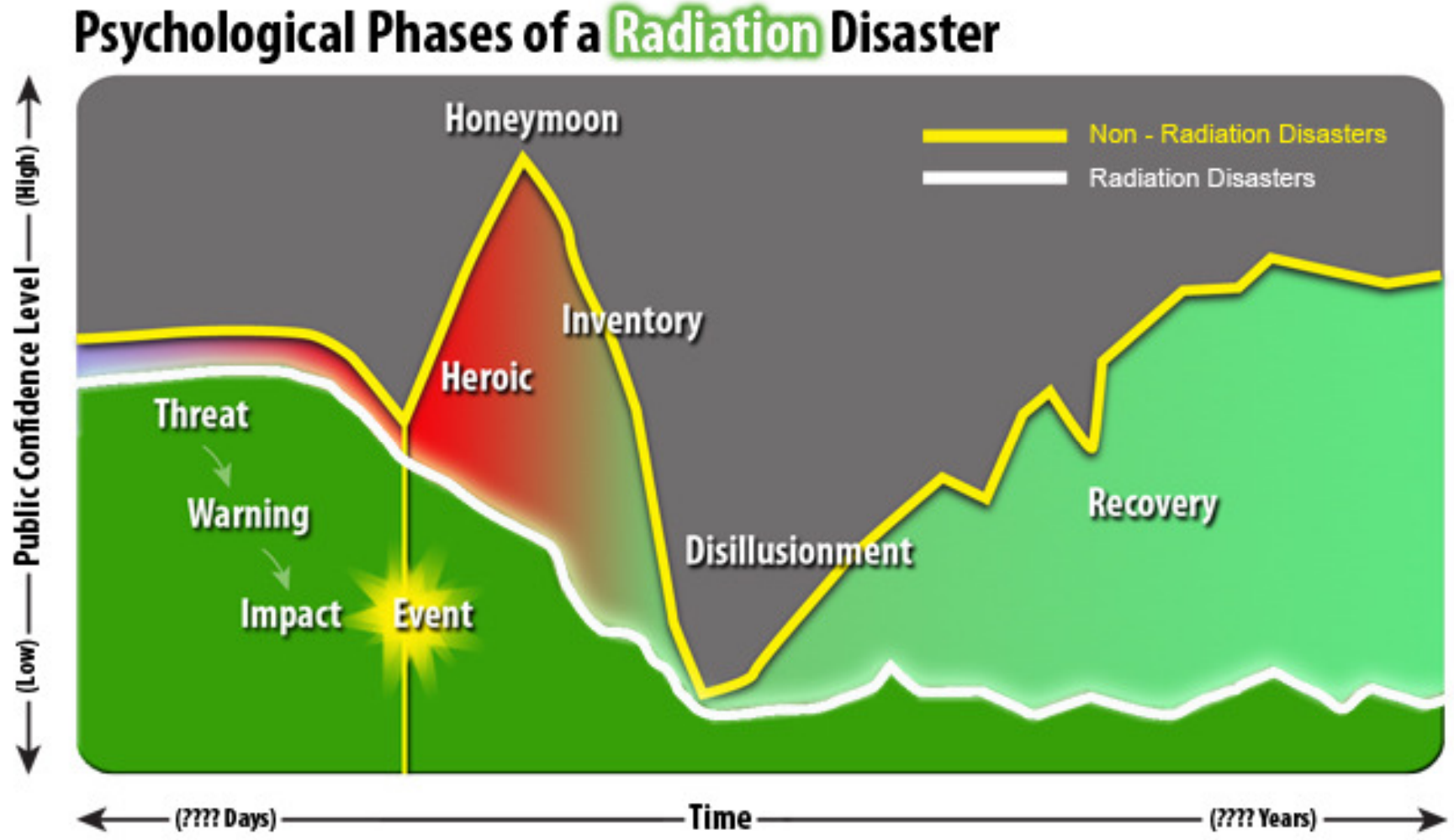
- **Radiation is:**
  - Invisible
  - Silent
  - Odorless
  - Can only be detected with specialized equipment
- **Radiation concepts, terms, and risks are poorly understood by the public**
  - Fear
  - Fatalism

Social Stigma

- Can be experienced by those contaminated or potentially contaminated
- People may choose not to assist victims of radiation disasters
- Lack of social support hinders resilience and recovery efforts
- Stigma can also be associated with receiving mental health services

Psychological Phases of Disaster




Psychological Phases of a Radiation Disaster
Honeymoon
Non - Radiation Disasters
Radiation Disasters
Inventory
Heroic
Threat
Warning
Impact
Event
Disillusionment
Recovery
(Low) — Public Confidence Level — (High)
(???? Days)
Time
(???? Years)

Psychological First Aid in Radiation Disasters

Do:

- Actively engage
- Provide accurate information
- Listen
- Use open posture
- Use a soft tone of voice
- Ask simple questions
- Make referrals if necessary
- Be respectful

Don't:

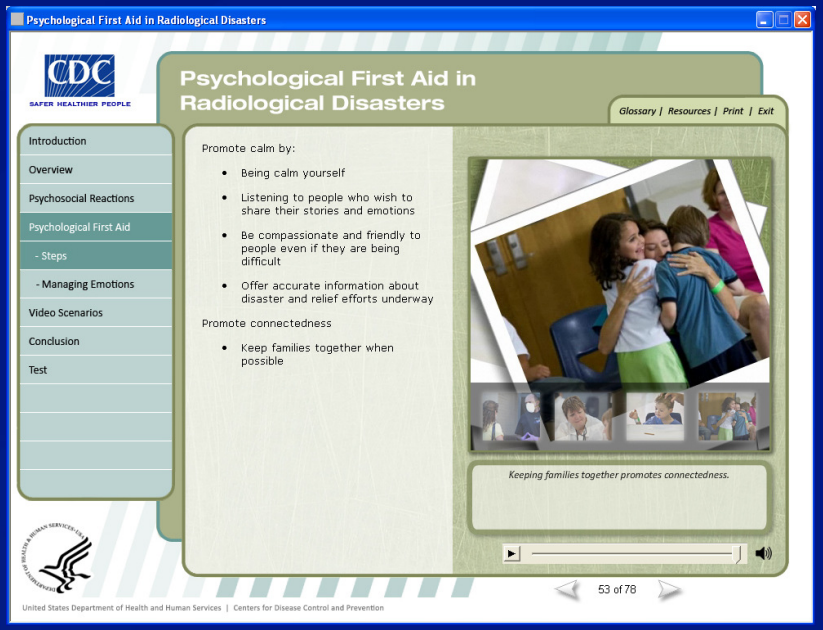
- Make promises you cannot keep
- Force people to share their stories
- Give simple reassurances
- Criticize response or relief efforts

Use Psychological First Aid to Promote

- **Safety**
  - Provide repeated, simple, and accurate information on how to meet basic needs
- **Calm**
  - Speak calmly and be compassionate and friendly
- **Connectedness**
  - Keep families together
- **Self-Efficacy**
  - Give practical suggestions to help empower survivors
- **Help**
  - Direct people to available services

Psychological First Aid in Radiation Disaster Training

- Multimedia training product (approx. 75 minutes)
- Highlights the unique psychological effects of radiation disasters
- CD-ROM or web training
- Used as a supplement to existing psychological first aid training



Psychological First Aid in Radiation Disaster Training

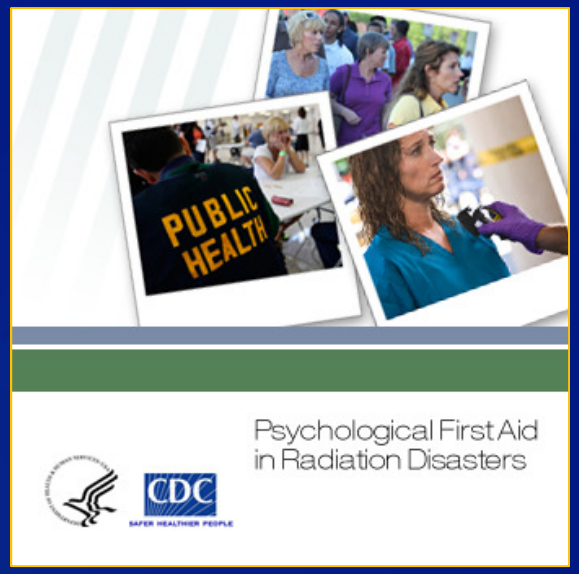
- **Overview of Radiation Disasters**
  - Interview with physician who observed tragic radiation disaster involving abandoned medical equipment in Goiânia, Brazil
- **Psychosocial Reactions to Radiation Disasters**
  - Interviews with psychologist and his son, who lived near the Three Mile Island nuclear power reactor near Harrisburg, Pennsylvania,
- **Psychological First Aid in Radiation Disasters**
  - Call Center
  - Community Reception Center
  - Hospital

Psychological First Aid in Radiation Disasters Training available online:

www.emergency.cdc.gov/radiation

Or to request a complimentary copy:

cdcinfo@cdc.gov or 800-CDC-INFO



Potential Radiological/Nuclear Events

- Transportation
- Power Plant
- Laboratory
- Medical
- Industrial
- Space
- Terrorism

Summary

- **Two major aspects of the public health response to radiation emergencies**
  - Population monitoring
  - Psychosocial issues
- **Existing plans and protocols can/should be modified to address radiation-specific concerns**

CDC Resources

- **Radiological Terrorism: A Tool Kit for Emergency Services Clinicians**
  - Just-in-Time Training CD/DVD
  - Pocket Guides
  - Radiation Triage Chart
  - Fact Sheets
  - Webcasts
  - Self-study Training

CDC Resources

- **Radiological Terrorism: A Tool Kit for Public Health Officials**
  - Population Monitoring Guide
  - EPA Risk Communication Guide
  - Contaminated Decedents Guide
  - Radiation Survey DVD
  - Webcasts
  - Fact Sheets
  - Self-study Training

Questions?

To order complimentary toolkits:

Email: cdcinfo@cdc.gov

Call: 1-800-CDC-INFO (1-800-232-4636);

TTY: (888) 232-6348

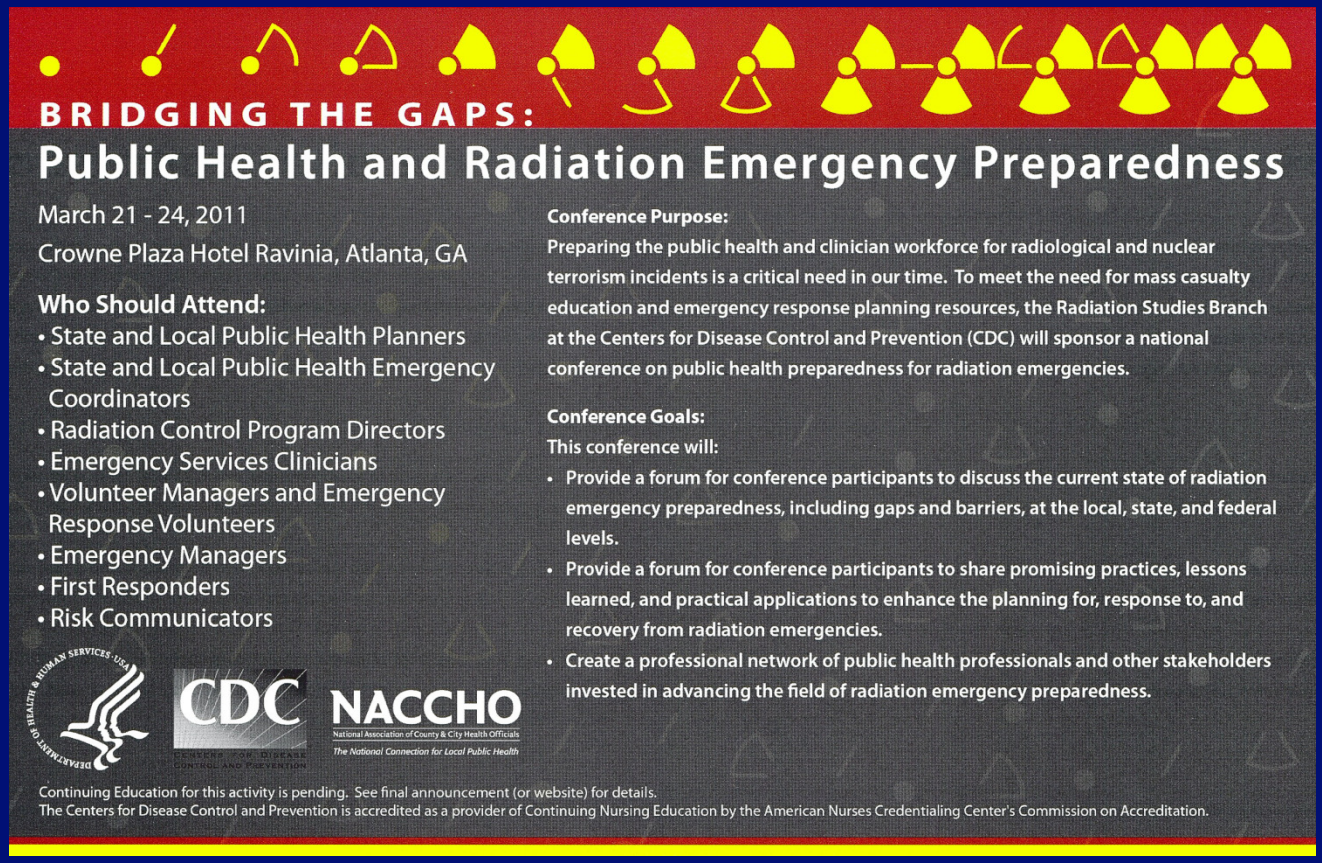
Selected material available online:

www.emergency.cdc.gov/radiation

For more information please contact Radiation Studies Branch, CDC

4770 Buford Highway NE, Atlanta, GA 30341
Telephone, 1-770-488-3800
E-mail: rsbinfo@cdc.gov Web: emergency.cdc.gov/radiation

Upcoming Conference



Upcoming Conference

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
Atlanta, GA 30333

Official Business
Penalty for Private Use $300

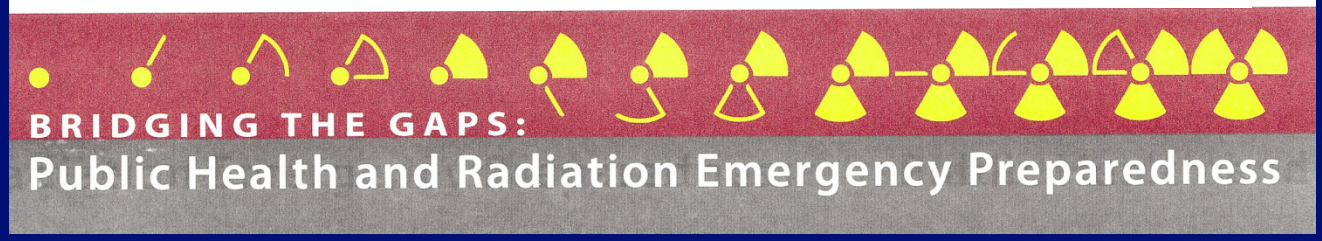
FIRST-CLASS MAIL
POSTAGE & FEES PAID
PHS/CDC
Permit No. G-284

PLEASE PLAN TO ATTEND

March 21-24, 2011

Crowne Plaza Hotel Ravinia, Atlanta GA

Register online at: http://www.cdcradiationconference.org



Continuing Education Credit/Contact Hours for COCA Conference Calls

Continuing Education guidelines require that the attendance of all who participate in COCA Conference Calls be properly documented. All Continuing Education credits/contact hours (CME, CNE, CEU, CECH, and ACPE) for COCA Conference Calls are issued online through the CDC Training & Continuing Education Online system http://www2a.cdc.gov/TCEOnline/.

Those who participate in the COCA Conference Calls and who wish to receive CE credit/contact hours and will complete the online evaluation by **Dec 16 2010** will use the course code **EC1648**. Those who wish to receive CE credits/contact hours and will complete the online evaluation between **Dec 17, 2010** and **Dec 16, 2011** will use course code **WD1648**. CE certificates can be printed immediately upon completion of your online evaluation. A cumulative transcript of all CDC/ATSDR CE's obtained through the CDC Training & Continuing Education Online System will be maintained for each user.

Thank you for joining!

Please email questions to coca@cdc.gov