





Nuclear Plant Emergency Response



Nuclear Plant Emergency Response

Population Monitoring and the Community Reception Center



Module 4



Nuclear Plant Emergency Response

Objectives

- Discuss population monitoring in the aftermath of a nuclear power plant accident.
- Describe the structure and function of the community reception center.



Nuclear Plant Emergency Response

What is Population Monitoring?

- A process of immediate monitoring after an incident.

AND

- Long-term monitoring for health effects from the event.



Nuclear Plant Emergency Response



Population Monitoring in Aftermath

- Four parameters should be assessed:
 - Contamination
 - Dose
 - Level of anxiety
 - Physical symptoms



Nuclear Plant Emergency Response



Immediate Monitoring

- In the first hours after an incident:
 - Determine who is contaminated
 - Internal vs. external
 - Decontamination
 - Dose assessment and health risk
- There may be hundreds/thousands of people involved!



Nuclear Plant Emergency Response



Long-term Monitoring

- Establish a health registry:
 - Exposed persons will be enrolled
 - Document health effects over time
 - Effects from radiation
 - Effects from stress of event



Nuclear Plant Emergency Response



National Response Framework

- Guiding principles for national response to all-hazards disaster.
 - After a nuclear plant disaster:
 - CDC will be lead agency for population monitoring guidance
 - Described in Nuclear/Radiological Incident Annex of NRF
- <http://www.fema.gov/emergency/nrf>



Nuclear Plant Emergency Response



CDC Responsibilities

- Provide guidance to state, local, tribal governments for:
 - Establishing monitoring operations
 - Treating internal contamination
 - Creating a health registry
 - Determining radiation doses and health risk



Nuclear Plant Emergency Response



Community Reception Center (CRC)



Nuclear Plant Emergency Response



CRC Overview

[Click to play video](#)



Nuclear Plant Emergency Response



Guiding Principles

1. The first priority is to save lives: respond to and treat the injured first.
2. Contamination with radioactive materials is not immediately life-threatening.
3. Initial population monitoring activities should focus on preventing acute radiation health effects.
4. Scalability and flexibility are an important part of the planning process.
5. Fear of radiation is high, perhaps higher than with other agents of terrorism.



Nuclear Plant Emergency Response



Guiding Principles

1. A key resource for implementing this population monitoring guide is a state's lead agency for radiation control.
2. First responders and local officials may not be aware initially that a radiation incident has occurred (applies to terrorism incidents).
3. Radiological decontamination recommendations differ from those for chemical agents.
4. Law enforcement agencies will be involved in response to a radiological terrorism incident.



Nuclear Plant Emergency Response



CRC

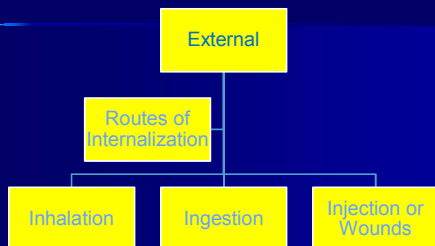
- A monitoring and decontamination facility.
- Used to screen for contamination, decontaminate, and enroll people in health registry.
- Prioritizing further care



Nuclear Plant Emergency Response



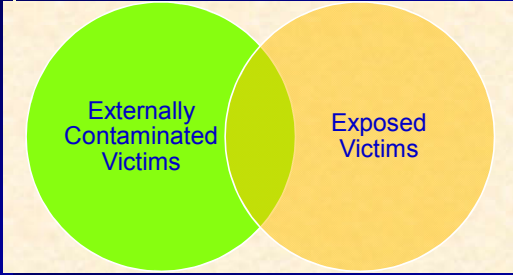
Contamination



Nuclear Plant Emergency Response



Externally Contaminated Patients can be Exposed



Nuclear Plant Emergency Response



All Internally Contaminated Patients are Potentially Exposed Depending on the Specific Situation



Nuclear Plant Emergency Response

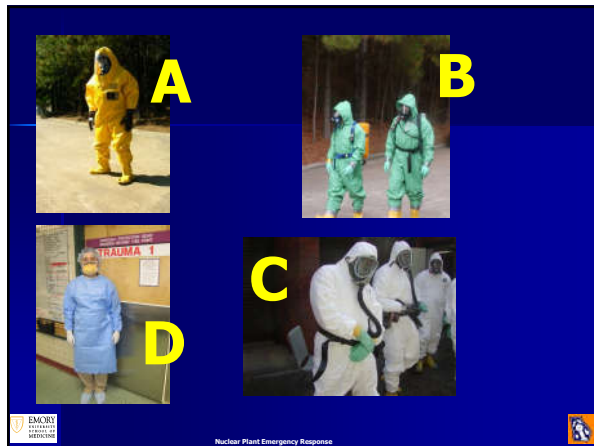


Video (Contamination-CDC)





Nuclear Plant Emergency Response





Respiratory Protection


- Commonly available protective masks are generally sufficient pre-decontamination.
- OSHA/NIOSH: Hospital staff taking care of patients in the pre-decontamination and decontamination areas, PAPRs or HEPA filter negative pressure masks are described as

EMORY UNIVERSITY SCHOOL OF MEDICINE | Nuclear Plant Emergency Response


Personal Protection

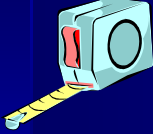
- Standard Precautions

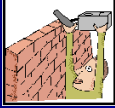


EMORY UNIVERSITY SCHOOL OF MEDICINE | Nuclear Plant Emergency Response

Radiation Protection Principles from External Exposure

Time 

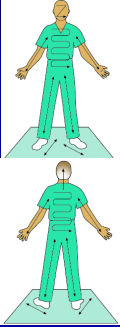
Distance 

Shielding 

EMORY UNIVERSITY MEDICAL CENTER
Nuclear Plant Emergency Response

Radiation Detection in the CRC

- Survey patient for contamination with radioactive material and mark areas on body diagram.
- May use partial body contamination screening (hands, face, shoulder and head)



EMORY UNIVERSITY MEDICAL CENTER
Nuclear Plant Emergency Response

Except for an instance of highly-radioactive shrapnel, contamination should NOT deter medical staff from treating life-threatening injuries.

EMORY UNIVERSITY MEDICAL CENTER
Nuclear Plant Emergency Response

Monitoring Equipment



Nuclear Plant Emergency Response



External Decontamination

- Paired with radiological survey.
- Soap and Water.



Nuclear Plant Emergency Response



Further Evaluation

- Internal contamination
- Exposure to radiation



Nuclear Plant Emergency Response

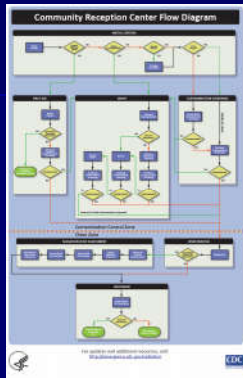


Questions or Comments?



Nuclear Plant Emergency Response





Nuclear Plant Emergency Response



Summary

- Population monitoring involves immediate and long-term efforts.
- Appropriate triage crucial to prevent health system overload.
- Radiation detection and decontamination can be performed at the CRC as well as internal contamination and exposure evaluation.



Nuclear Plant Emergency Response