

Radiological Preparedness & Emergency Response

Session III

Introduction to Radiation Surveys and Detection

- ### Objectives
- Discuss exposure and contamination.
 - Discuss the concept of radiation detection.
 - Describes the use of a radiation detector.
 - Describe the performance of a radiation survey.

- ### 2 Different yet Possible Overlapping Entities
- | | |
|----------------|-----------------|
| ■ Exposure | ■ Contamination |
| – Whole body | – External |
| – Partial body | – Internal |

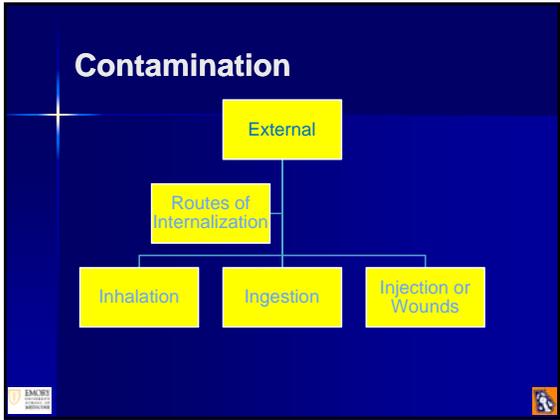
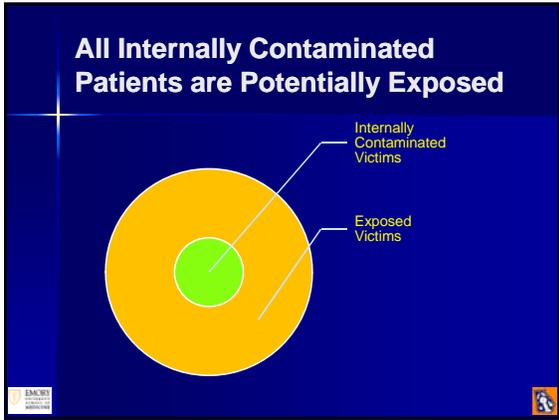
Contamination vs. Exposure

□ **Exposure:** coming in contact with radioactive waves or particles, e.g., having a chest x-ray

□ **Contamination:** deposition of radioactive material in undesired locations

A person can be exposed but not contaminated – think x-ray exams!





To Explain this Important Concept Better:

- ### What is a Radiation Detector
- Identifies the presence of radioactive material.
 - Gas-filled
 - Liquid-filled
 - Solid-filled

- ### Before Performing a Radiation Survey
- Select your equipment.
 - Check your equipment battery.
 - Obtain a background reading.



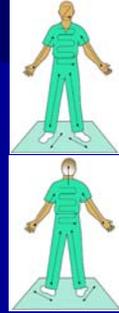
Radiation Detection in the ED

- Victims should be surveyed with Geiger-Muller counters.
- Standard G-M cannot detect radiation exposure; they detect external gamma, some beta, and no alpha unless using a specialized alpha probe.
- They can detect internal gamma, less beta, and no alpha regardless of the probe.



Radiation Survey

- Survey patient for radiological contamination and mark areas on body diagram.
- Remove contaminated clothes and label them.
- Except for an instance of highly-radioactive shrapnel, contamination should NOT deter medical staff from treating life-threatening injuries.



Radiation Survey in the ED and Decontamination



RadEye B-20ER



RadEye G's



Radiation Detection

- Pocket dosimeters.
- Film badges.
- Thermoluminescent dosimeters (TLD)



In Vivo Measurements

- Whole body counters.
- Chest counters for Plutonium and Uranium.
- Wound monitoring instruments.



Portal Monitors

- Gamma detectors.
- Patients walk through the monitor.
- The State of Georgia has 36 of these monitors in health districts – 10 more in counties near nuclear plants.



Summary Points

- Radiation is relatively easily detectable.
- There are different types of detectors with a similar operation principle.
- Performing a detection survey is an easy but meticulous step.

Any Questions?