

**LESSON PLAN**

**PART I**  
**COVER SHEET**

**LESSON TITLE:** Peacetime Accident Radiological Contamination Control

**TRAINING METHOD:** Lecture

**REFERENCES:** DoD 5100.52-M, Nuclear Weapon Accident Response Procedures (NARP)  
(Sep 90)  
AFI 32-4001, Disaster Preparedness Planning and Operations, 6 May 1994

**AIDS AND** None  
**HANDOUTS:**

**LESSON OBJECTIVE:** Given an explanation of radiological contamination control, the student must demonstrate understanding of at least three of the samples of behavior listed below.:

**SAMPLES OF BEHAVIOR:**

1. State the purpose of the Site Restoration Plan.
2. Understand the term "fixing contamination".
3. Identify the various methods of peacetime accident radiological decontamination.
4. State who determines the appropriate method and procedures to dispose of radiological contaminated material.

**ORGANIZATIONAL PATTERN:** Topical

**SUGGESTED COURSE(S) OF INSTRUCTION:** Disaster Preparedness Support Team  
Contamination Control Team

**STRATEGY:** In major accidents involving radiological material, there is a chance of radiological contamination. Fixation and decontamination measures will be taken to control the spread of contamination and protect public health. Major fixation and decontamination decisions will be made by the Response Task Force (RTF) staff. In this lesson, develop a basic understanding of items and concepts to include methods of fixing contamination, decontamination, and disposal of contaminated. Specialized equipment is taught in other RTPs and functional training.

**LESSON OUTLINE:**

- MAIN POINT 1. SITE RESTORATION PLAN
- MAIN POINT 2. FIXING CONTAMINATION
- MAIN POINT 3. DECONTAMINATION METHODS
  - A. Scraping
  - B. Burial
  - C. Washing
  - D. Abrasion
  - E. Vacuuming
  - F.. Steaming
  - G. Caustic removal
- MAIN POINT 4. DISPOSAL OF CONTAMINATED WASTE

**PART II**  
**TEACHING PLAN**  
**INTRODUCTION**

**ATTENTION:** Radiological contamination is a real threat during any accident involving radioactive materials. Do you know any decontamination methods that can be used to restore the area to its previous condition?

**MOTIVATION:** Radiological contamination can't be neutralized, only removed. Therefore, radiological decontamination is the process of making any person, object, or area safe by removing the radioactive material clinging to or around it. Once removed, it can be left to decay. By understanding decontamination methods, you can help restore an area or object to its previous condition.

**OVERVIEW:** This lesson will cover

1. Site restoration plan
2. Fixing contamination
3. Decontamination methods
4. Disposal of contaminated waste

**TRANSITION:** Let's begin with who is responsible.

**BODY**MAIN POINT 1.  
SITE  
RESTORATION  
PLAN

The site restoration plan is the responsibility of the Response Task Force (RTF) on-scene commander. Some topics considered in the site restoration plan include:

⇒ Determining the need and identifying methods of fixing contamination

⇒ Identifying the methods of decontamination

⇒ Decontaminating by removing and reducing the level of contamination in order to return the affected area to an acceptable level

MAIN POINT 2.  
FIXING  
CONTAMINATION

In nuclear accident situations, most of the ground contamination is normally contained within one inch of the top surface. Therefore, it may be necessary to immobilize or “fix” contamination to prevent spreading and to facilitate removal. Fixing the contamination in heavily contaminated areas will significantly decrease the subsequent spread of contamination. Three methods of fixing contamination are:

⇒ Spraying with water

⇒ Covering with plastic

MAIN POINT 3.  
DECONTAMINATION  
METHODS

A. SCRAPING

B. BURIAL

⇒ Covering with fresh earth  
Decontamination methods used to clean up an accident area may vary widely. Factors that influence the method chosen include soil, amount of vegetation in the area, type and level of contamination present, buildings, and the clean-up criteria selected by the RTF on-scene commander and local, state, and federal agencies concerned.

Some decontamination methods are:

A. Scraping

⇒ This is the most effective method of removing contamination from land surfaces.

⇒ It involves removing the top layer of contaminated soil until the acceptable standard is met.

B. Burial

⇒ Cover or bury a contaminated object in an area not essential to day-to-day operations.

⇒ Monitor the area periodically to ensure no contamination escapes.

## C. WASHING

## C. Washing

⇒ Wash nonporous surfaces to remove contamination.

⇒ Hose with high-pressure water. Work from the top to bottom to avoid recontamination. Work upwind to avoid spray. Detergents will increase cleaning efficiency, but will not neutralize the contamination.

⇒ Control the drainage from the decontamination site since the runoff is also contaminated.

## D. ABRASION

## D. Abrasion

⇒ Use on nonporous surfaces, such as metal, plastics, or glass.

⇒ Use procedures such as sanding, filing, and chipping to remove the outer surface. Keep the surface slightly damp to avoid a dust hazard.

## E. VACUUMING

## E. Vacuuming

⇒ Use on any dry surfaces.

⇒ Use a conventional vacuum cleaner to remove contaminated dust.

F. STEAMING

F. Steaming

⇒ Use on nonporous surfaces.

⇒ Work from top to bottom and from an up-wind direction. Detergents will increase cleaning efficiency, but will not neutralize contamination.

⇒ Control the drainage from the decontamination site.

G. CAUSTIC  
REMOVAL

G. Caustic Removal

⇒ Use caustics to remove the surface of painted objects or areas.

⇒ Use caution when dealing with caustics because of their destructive effect on aluminum and magnesium.

⇒ Some examples of caustics are lye, potassium hydroxide, and calcium hydroxide.

MAIN POINT 4.  
DISPOSAL OF  
CONTAMINATED  
WASTE

The methods and procedures used for contaminated waste disposal will require coordination between the on-scene commander, senior federal emergency management agency (FEMA) official, and appropriate civilian authorities/officials.

## **CONCLUSION**

**SUMMARY:**

The following information was covered:

1. Planning for site restoration
2. Fixing contamination
3. Decontamination methods
4. Disposal of contaminated waste

**REMOTIVATION:**

Now that you have an understanding of peacetime accident radiological decontamination, you can help restore an area back to its previous condition.

**CLOSURE:**

This concludes this lesson.

**TRANSITION:**

(Develop locally to transition to the next topic.)

**PART III**  
**EVALUATION**  
**STUDENT PERFORMANCE STANDARDS**

**TEST ITEMS**

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1. LESSON OBJECTIVE: Understand the term “fixing contamination”.

QUESTION 1. (TRUE OR FALSE)

Fixing contamination means to immobilize the contamination to prevent its spread and facilitate its removal.

- a. True
- b. False

KEY: a

REFERENCE: Main Point 2

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2. LESSON OBJECTIVE: State various methods of peacetime accident radiological decontamination.

QUESTION 1: (MULTIPLE CHOICE)

Which of the following methods is the most effective decontamination method to remove contamination from land surfaces?

- a. Burial
- b. Burning
- c. Scraping
- d. Vacuuming

KEY: c

REFERENCE: Main Point 3A

QUESTION 3: (MULTIPLE CHOICE)

Chipping is a characteristic of what method of decontamination?

- a. Abrasion
- b. Washing
- c. Scrubbing
- d. Caustic Removal

KEY: a

REFERENCE: Main Point 3D.

**PART IV**  
**RELATED MATERIALS**

**DPTP G2 - Wartime Decontamination of Chemical/Biological Agents**



TRAINING PACKAGE COMMENT REPORT

RTP # \_\_\_\_\_

RTP DATE \_\_\_\_\_

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