# Introduction

- Decontamination is the process of removing or neutralizing contaminants. It is critical to the health and safety of personnel working with hazardous materials and wastes.
- Decontamination:
  - Protects workers from hazardous substances that can eventually permeate protective clothing, respiratory equipment, tools, and vehicles
  - Protects field personnel by minimizing the spread of hazardous substances into clean area on site
  - Prevents the mixing if incompatible wastes
  - Protects the community by preventing the migrations of contaminants from the site.

# Learning Objective

- At the end of this module, you will be able to:
  - Recognize the importance of and the steps involved in planning for decontamination
  - Determine basic decontamination and personal hygiene procedures
  - Explain the necessity of good personal hygiene practices and decontamination procedures.

# Decontamination

- Personnel engaged in hazardous waste operations, emergency responses, laboratory activities, or other field procedures may become contaminated in a number of ways, including:
  - Contacting vapors, gases, mists, or particulates in the air
  - Being splashed by materials while sampling or opening containers
  - Walking through puddles of liquids or sitting in contaminated soil
  - Using contaminated instruments or equipment.

# PPE and Contamination

- Protective clothing and respirators help prevent the wearer from becoming contaminated or inhaling hazardous substances.
- Good work practices also minimize contamination of personal protective equipment (PPE), instruments and equipment.
- Even with these safeguards, contamination may occur.

# Minimizing Contamination

- To prevent or minimize the severity of contamination, develop the following:
  - A decontamination Plan prior to site entry, that is specific to site hazards and conditions
  - Measures for developing standard operating procedures (SOPs) to minimize contamination to personnel and the environment
  - Procedures for full decontamination of employees and equipment
  - A process for monitoring of decontamination procedures by the site supervisor.

# Cross Contamination

- Cross Contamination, from protective clothing to the wearer, from equipment to personnel, and form one area to another can be minimized by:
  - Combining decontamination and good personal hygiene practices
  - Implementing correct methods for removing contaminated PPE
  - Using site work zones.
- Although disposable PPE is becoming more prevalent, some level of personnel decontamination is still needed to ensure that wearers can safely get out of their PPE.

# Contamination Avoidance

- The following are general guidelines for avoiding contamination.

- 1- Stress work practices that minimize contact.
- 2- Use remote sampling and handling.
- 3- Bag sampling equipment for protection.
- 4- Wear disposable outer garments.
- 5- Cover equipment with strippable coatings.
- 6- Encase the source of contamination.

# Test your knowledge

- Cross contamination from protective clothing or equipment can be minimized by a combination of the following.

- 1 _____Procedures.
- 2 _____Practices.
- 3 Correct Methods of _____.
- 4 Use of _____.

- Contaminated PPE Removal
- Site Work Zones
- Personal Hygiene
- Decontamination

# Planning for Decontamination


- Decontamination procedures should be:
  - Made available to employees
  - Implemented before anyone enters areas where there is suspected contamination.
- The decontamination plan must ensure that chosen decontamination methods:
  - Are effective for specific hazardous substances present
  - Do not pose any health or safety hazards.

# Planning for Decontamination

- The following factors should be considered when developing a decontamination plan.
  - Type of Contaminant
  - Type and Level or Protection
  - Extent of Permeation
  - Work Function
  - Health and Safety Hazards
  - Location of contamination
  - Amount of contamination
  - Established procedures
  - Unplanned emergencies

# Test your knowledge

- Decontamination procedures are standardized for all fields activities.

  - True

  - False

# Personal Hygiene Practices

- After working with hazardous materials, you should:

- 1- Remove all work clothing.
- 2- Dispose or Decon clothing.
- 3- Shower before donning clean clothing.

- The following activities are prohibited within potentially contaminated areas:
- Eating, Drinking, Smoking or applying Cosmetics.

# Test your knowledge

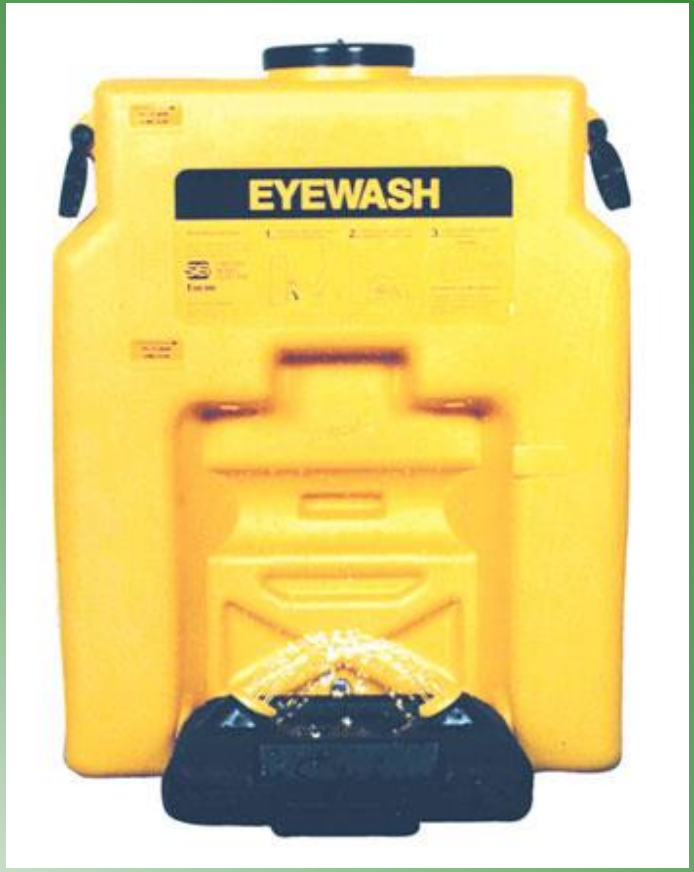
- You are allowed to eat and drink in a potentially contaminated area, as long as you thoroughly wash your hands and face before doing so

  - True
  - False

# Decontamination Equipment

- Decontamination equipment, materials, and supplies are generally selected based on availability.
- It is also necessary to consider whether the equipment itself can be decontaminated for reuse or can be easily disposed of.

# Portable Decontamination Equipment




- Portable versions of decontamination equipment are also found at emergency response and hazardous waste sites. Shown here is an example of a portable emergency system.
- Portable emergency systems such as fire extinguishers, self-contained breathing apparatuses, and eye wash stations must be:
  - Kept clean
  - Maintained and recharged
  - Periodically inspected and tested
  - Identified by signs or by other means (brightly painted)
  - Kept accessible (not blocked)
  - Suitably placed to allow access from various approaches.

# Summary

- Key concepts presented in this module are:
  - Decontamination is an essential aspect of hazardous substance operations
  - Good work practices, including personal hygiene, can minimize contamination of PPE, instruments, equipment, and personnel
  - Contamination avoidance is another critical issue related to hazardous substance operations and should be practices by all field personnel encountering hazardous materials
  - The health and safety hazards posed by contaminants depend on the degree of toxicity of the contaminant, the amount of contamination, the type and level of PPE used, and the location of contamination
  - Safety showers and eyewashes can also be used for emergency decontamination purposes.

# Summary

- Measures you can take to protect yourself against contamination include:
  - Do not walk through areas of obvious contamination
  - Avoid touching potentially contaminated substances
  - Use remote sampling, handling, and container-opening techniques
  - Protect monitoring instruments by bagging them
  - Use the appropriate PPE and ensure that it is cleaned and disposed of properly
  - Do not eat, drink, smoke, or apply cosmetics in potentially contaminated areas
  - Always wash your hands, face, or other exposed body parts after working with hazardous materials
  - Know the location of emergency decontamination equipment such as safety showers and eyewashes
  - Be aware of the hazardous materials and other contaminants in your surrounding work area.

- You have completed the module: Decontamination