



Personal Protective Equipment

***Biosafety and Biosecurity Awareness Training
For Afghan and Pakistani Bioscientists***

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Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
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Why Use Personal Protective Equipment?

To prevent the spread of contamination by providing barriers against skin, mucous membrane, and respiratory exposure to infectious agents





Class Activity: Identifying Types of PPE to Protect Against Exposure by Different Routes

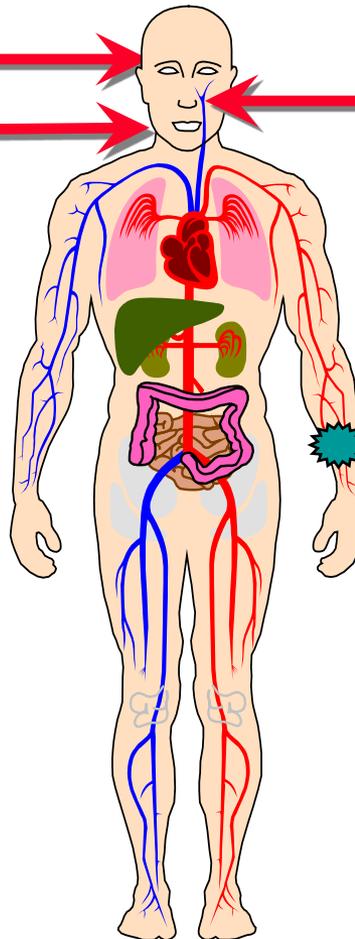
Contact



Ingestion



Inhalation



Percutaneous





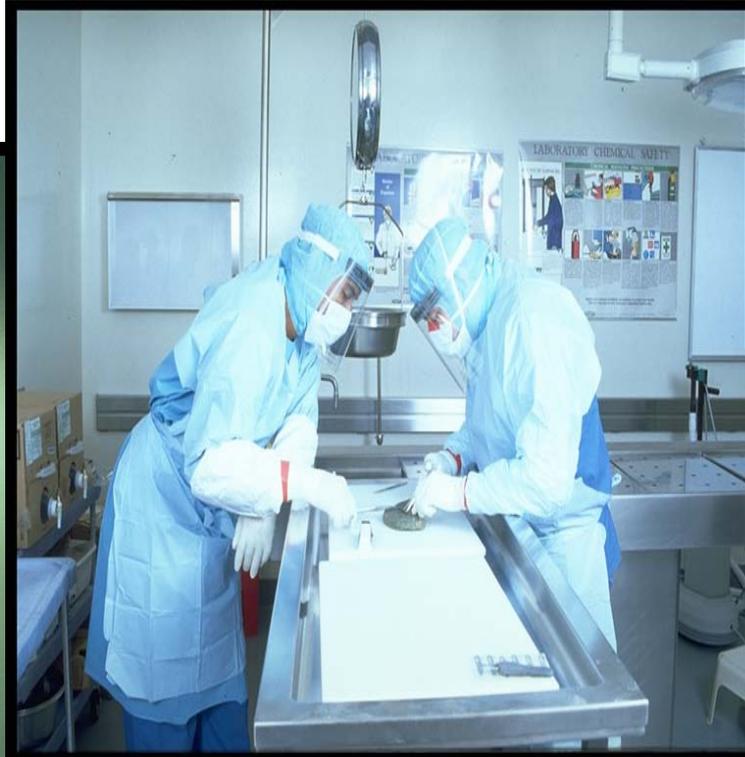
The Basics: Hand washing

- In 1847, Dr. Ignaz Semmelweis, a physician in a Vienna hospital, insisted that students and physicians clean their hands with chlorine prior to patient contact, especially after leaving the autopsy floor.
- Childbirth fatalities dropped dramatically due to the new practice.





PPE Examples





Factors Influencing PPE Selection

- **Type of exposure anticipated**
- **Appropriateness for the task**
- **Fit**



Personal Protective Equipment Policies and Procedures

- **Staff must have appropriate PPE training**
 - Not all PPE is necessary
 - Donning and doffing order
 - PPE cleaning
 - PPE maintenance
- **Respirators require medical approval and fit testing**



PPE Key Points

- **Don before working with infectious agent, generally before entering room**
- **Work carefully, don't spread contamination**
- **Remove and discard carefully, either at doorway or in anteroom**
- **Wash hands**



Donning Order

Below is an example of a donning order for a research technician working with Mycobacterium Tuberculosis

- **Gown**
- **Shoe covers**
- **Mask or Respirator**
- **Goggles or Face Shield**
- **Gloves (2 pair)**



Doffing Order

Below is an example of a doffing order for a research technician working with Mycobacterium Tuberculosis

- **Outside gloves**
- **Gown**
- **Goggles or Face Shield**
- **Mask or respirator**
- **Inside gloves**

Why is this order so important?



Example: Doffing Gloves

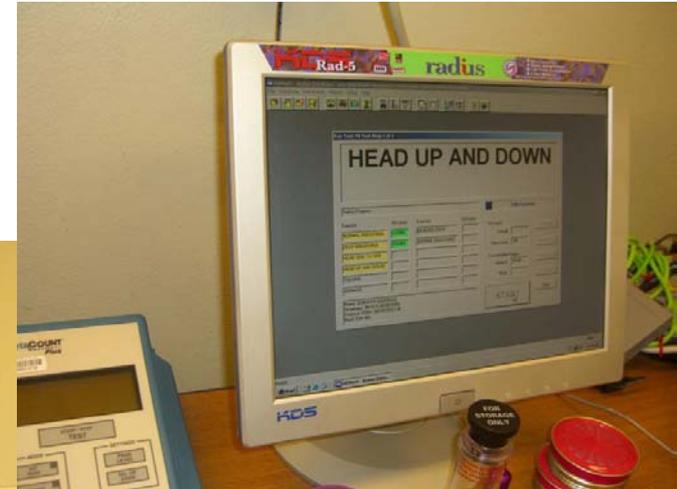




Scenes from a Respirator Fit Test

FIT TEST SUBJECT AID

1. SELECT/ASSESS AND INSPECT RESPIRATOR
2. REMOVE INTERFERENCES (e.g., HAIR)
3. INSTALL CORRECTIVE LENSES INSERT (IF REQUIRED)
4. DON & WEAR RESPIRATOR FOR COMFORT ASSESSMENT PERIOD (**AT LEAST 5 MINUTES**)
5. MOVE HEAD SIDE-TO-SIDE, UP AND DOWN, AND BREATHE DEEP SLOWLY TO SEAT THE MASK
6. PERFORM POSITIVE & NEGATIVE (**HOLD FOR 10 SECONDS**) PRESSURE **USER SEAL CHECK**
7. PERFORM FIT TEST EXERCISES IN STANDING POSITION
8. REMOVE RESPIRATOR WHEN FIT TEST IS COMPLETE
9. SIGN/DATE RECORDS
10. REVIEW RESPIRATOR AUTHORIZATION CARD FOR CORRECTNESS





Reusable PPE

- **Issues to consider with reusable PPE**
 - Is PPE contaminated?
 - How to decontaminate PPE
 - Does the lab have SOP's for reusable PPE?





PPE Final Thoughts

- **The purpose of PPE is to PROTECT YOU from exposure to infectious agents**
 - In the lab, PPE is the last line of protection
 - In the field, PPE may be the first line of protection

- **Know what type of PPE is necessary**

- **Know how to use the PPE correctly**