

PREVENTING CONTAMINATION **IN THE LABORATORY**

COURSE OUTLINE

- **Handling hazardous chemicals and specimens requires a great deal of caution.**
 - Hazards can spread and contaminate the things around them.
 - Even laboratory employees can be affected.
 - **Everyday operations call on laboratory employees to handle many hazardous substances.**
 - Toxins.
 - Corrosives.
 - Carcinogens.
 - And others.
 - **Laboratory employees think they spend a lot of time protecting themselves.**
 - Are they really doing all they can?
 - Tiny amounts of a hazardous material, combined with a few unconscious errors, can cause contamination.
- ** *"Luminescent Dye" demonstration of the spread of contamination.***
- **To prevent contamination several things must be protected:**
 - The products we work with.
 - Our work space.
 - Ourselves.
 - **To effectively shield ourselves from contamination we must be aware of potential hazards. Things we can do include:**
 - Reading product labels.
 - Consulting Safety Data Sheets.
 - **There are four major "routes of entry" by which contamination can enter the body:**
 - Inhalation.
 - Eye contact.
 - Skin contact, absorption and injection.
 - Ingestion.

- **To protect ourselves we must use a combination of:**
 - Engineering controls.
 - Safe work practices.
 - Personal protective equipment (PPE).
- **Personal protective equipment is especially important. When you use it you should:**
 - Inspect it before you put it on.
 - Replace damaged items.
 - Make sure there is a proper fit.
- **At a minimum you should wear:**
 - Gloves.
 - A lab coat.
 - Safety eyewear.
 - Face shields should be worn if there is a danger of chemical splashes.
- **You need to anticipate the hazards that are presented by the materials you are working with.**
 - Talk to your supervisor to make sure you are fully protected.
 - Monitor the condition of your PPE.
 - Immediately replace damaged PPE.
 - Also replace any PPE that may become contaminated.
- **Pay special attention to your gloves.**
 - Perspiration on the inside can make gloves permeable.
 - Liquids on the outside can have the same effect.
 - Change gloves at least once every two hours (or as soon as they get wet.)
- **Using engineering controls is also important.**
 - Splashguards and blast shields can protect against chemical contact.
 - Exhaust hoods and other ventilation devices keep fumes and vapors away.
 - Consult your supervisor about the controls that you should use.
- **Safe work practices must also be followed.**

- **Good housekeeping is very important.**
 - Keep work areas neat and orderly.
 - Avoid clutter.
 - Use small containers when possible.
 - When you are finished using something, return it to where it belongs.
- **Spills should be cleaned up as quickly as possible.**
 - Follow proper disposal procedures.
 - Always decontaminate the area.
- **When you are finished with equipment, make sure it is cleaned and decontaminated.**
 - Cleaning/decontamination should also be performed at the end of the day.
- **If glassware can't be cleaned immediately, soak it in soap and water. This:**
 - Cuts down on contamination.
 - Makes clean-up easier.
- **You should plan for the disposal of hazardous or infectious waste before starting to work.**
 - Follow your facility's written policy.
 - Don't pour chemicals down the drain.
 - Incorrect disposal could contaminate drinking water and the environment.
- **Whenever you leave your area it is important not to take contamination with you. This is true whether you are:**
 - On a break.
 - Going to lunch.
 - Going home.
- **Leave notebooks and supplies in the laboratory.**
 - Anything you use in your work area should be considered to be contaminated.
- **Other things you should do when leaving the lab area include:**
 - Washing your hands.
 - Taking off PPE and lab coats.

- **Poor safety practices can increase the risk of ingesting hazardous material. You should never:**
 - Take materials to lunch.
 - Bring food/drink into the lab.
 - Wash plates or utensils in lab sinks.
- **Remember, contaminants move easily from one part of the body to another.**
 - Avoid habits like rubbing your face or scratching your head.
 - Guard against ingestion by never mixing contaminants with non-contaminated objects.
- **It is also important to protect the materials that you are working with.**
 - Samples can be contaminated by other substances.
 - Hours or even days of work can be ruined.
- **To prevent contaminating materials:**
 - Keep work surfaces and equipment clean.
 - Check surfaces and tools before, during and after you work with them.
 - Decontaminate all equipment after using it.
 - Use proper cleaning methods (be particularly careful with powders and other dry substances).

*** * * SUMMARY * * ***

- **Keeping things free from contamination is critical to safe and productive lab operations.**
- **Work carefully.**
- **Know what you're dealing with.**
- **Don't make assumptions.**
- **Use correct engineering controls.**
- **Maintain good housekeeping skills.**
- **Wear PPE and dispose of it properly.**
- **Most importantly, be mindful of those who work before you...and considerate of those who work after you.**