Clinical Laboratory Safety

1. Introduction

1.1 Introduction

Notes:

Welcome to the University of California’s online Clinical Laboratory Safety training. This course was created for all clinical laboratory safety workers at your location.
1.2 How to use

Notes:

Before we begin please note that you can read the information presented (without having to listen to the narrator) at anytime by clicking on the “Script” tab. To disable the audio click on the sound icon at the bottom.

Also, this is an interactive tutorial. You will often be prompted to click on an area, or make a decision, before proceeding to the next section of the course.

If you cannot access content or use features in this training due to a disability or other accessibility-related issue, please complete the Accessibility Needs Request form located in the “Resources” tab of your training player.
1.3 Menu

Menu

To begin, click “Overview”.

- Lab Hazards: Identify hazards in the laboratory workspace
- Personal Protective Equipment: Choose appropriate protection
- Waste Management: Assess the types of waste and disposal methods
- Incident Response: Determine how to respond in the case of a spill or injury
- Resources: Access location resources

Notes:

In this training, you will be able to:

- Identify hazards in the laboratory workspace
- Choose appropriate personal protective equipment
- Assess the types of waste and disposal methods
- Determine how to respond in the case of a spill or injury
- Access location resources
2. Lab Hazards

2.1 Objectives

By the end of this section, you will be able to:
- Identify physical hazards
- Categorize chemical hazards
- Recognize methods to reduce ergonomic injuries

Notes:

By the end of this section, you will be able to:
- Identify physical hazards
- Categorize chemical hazards
- Recognize methods to reduce ergonomic injuries
2.2 Physical Hazards

<table>
<thead>
<tr>
<th>Physical Hazards</th>
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</thead>
<tbody>
<tr>
<td>Slips, Trips, and Falls</td>
</tr>
<tr>
<td>Sharps</td>
</tr>
<tr>
<td>Handling Equipment</td>
</tr>
</tbody>
</table>

Click each box to learn more.

**Notes:**

Identify Physical Hazards. Click each box to learn more.

**Slips, Trips, and Falls**
Enroll in your location’s slip resistant shoe program. This will ensure you have the proper footwear for your work.

**Sharps**
Be mindful when working with sharp objects. Properly dispose of all sharps in appropriate sharps containers. This includes needles, razor blades, scalpels, slides, cover slips, and any broken glassware.

**Handling Equipment**
Examine equipment prior to working with it to ensure it is working properly. Take all appropriate safety training prior to handling new equipment.
Slips (Slide Layer)

Physical Hazards

Slips, Trips, and Falls
Enroll in your location’s slip resistant shoe program. This will ensure you have the proper footwear for your work.

Sharps (Slide Layer)

Physical Hazards

Sharps
Be mindful when working with sharp objects. Properly dispose of all sharps in appropriate sharps containers. This includes needles, razor blades, scalpels, slides, cover slips, and any broken glassware.
Physical Hazards

Click each box to learn more.

Handling Equipment
Examine equipment prior to working with it to ensure it is working properly. Take all appropriate safety training prior to handling new equipment.
2.3 Chemical Hazards

Notes:

Identifying Chemical Hazardous Waste can be remembered by using the acronym TRIC: Toxic, Reactive, Ignitable and Corrosive. Click each box to learn more.

Toxic
- Poses a hazard to health or the environment.
- If you would not eat or wear it, assume it is toxic.

Reactive
- Normally unstable and readily undergoes violent change
- Unstable, explosive, capable of detonation, or react violently with water

Ignitable
- Generally are liquids with flashpoint below 140 degrees Fahrenheit.
- Capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes
- Any oxidizer

Corrosive
- Generally aqueous with pH<2 (strong acidic) or pH>12.5 (strong base)
Toxic (Slide Layer)

Chemical Hazards

Click each box to learn more.

- Toxic
- Reactive
- Ignitable
- Corrosive

Reactive (Slide Layer)

Chemical Hazards

Click each box to learn more.

- Toxic
- Reactive
- Ignitable
- Corrosive

Poses a hazard to health or the environment. If you would not eat or wear it, assume it is toxic.

Normally unstable and readily undergoes violent change.

Unstable, explosive, capable of detonation, or react violently with water.
Ignitable (Slide Layer)

Click each box to learn more.

- Toxic
- Reactive
- Ignitable
- Corrosive

Corrosive (Slide Layer)

Click each box to learn more.

- Toxic
- Reactive
- Ignitable
- Corrosive

Generally are liquids with flashpoint below 140 degrees Fahrenheit.

Capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes

Any oxidizer

Generally aqueous with pH<2 (strong acidic) or pH>12.5 (strong base)
2.4 Biological Hazards

Notes:

Engineering Controls
Understand the impact of airflow design and direction of primary engineering controls, such as, biological safety cabinets and fume hoods.
2.5 Fire Prevention

- Identify ignition sources and keep them away from areas where flammable liquids are used and stored.
- Properly store flammable liquids.
- Evaluate the size and type of fire before taking control measures.

Notes:

Fire Prevention

- Identify ignition sources and keep them away from areas where flammable liquids are used and stored.
- Properly store flammable liquids.
- Evaluate the size and type of fire before taking control measures.
2.6 Evacuation

Notes:

Evacuation

• Keep all hallways, walkways, and exits clear of clutter
• Identify multiple evacuation routes in your laboratory
• Locate the emergency procedures at your location
2.7 Ergonomics

Notes:

To avoid ergonomic injuries:
• Change tasks periodically
• Take breaks
• Stretch between tasks

1.
For more information, refer to your location’s ergonomics training module.
2.8 Summary

To Do:
- Identify physical hazards
- Categorize chemical hazards
- Recognize methods to reduce ergonomic injuries

Notes:

You should now be able to:
- Identify physical hazards
- Categorize chemical hazards
- Recognize methods to reduce ergonomic injuries
3. Personal Protective Equipment

3.1 Objectives

By the end of this section, you will be able to:

- Identify types of personal protective equipment
- Locate appropriate places to wear personal protective equipment
- Distinguish necessary gloves

Notes:

By the end of this section, you will be able to:

- Identify types of personal protective equipment
- Locate appropriate places to wear personal protective equipment
- Distinguish necessary gloves
3.2 PPE Overview

Notes:

Employees at risk for biohazard or chemical exposure shall be provided appropriate personal protective equipment (PPE). The PPE provided to employees includes but is not limited to: gloves, gowns, laboratory coats, eye protection, face shields or masks and other items as necessary.
3.3 PPE Doning and Doffing

Notes:

All PPE shall be removed prior to leaving the work area and shall be placed in an appropriate designated area or container for storage, washing, decontamination or disposal. This includes removing your lab coat and gloves when leaving the work bench.
3.4 Eye and Face Protection

Notes:

Eye protection devices such as goggles or glasses with solid side shields or chin length face shields, shall be worn whenever splashes, spray, splatter or droplets of blood or other potentially infectious materials may be generated and eye, nose or mouth contamination can be reasonably anticipated. Masks or face shields should be worn when specified by written procedures for handling particularly dangerous pathogens or hazardous chemicals.
### 3.5 Types of Gloves

<table>
<thead>
<tr>
<th>Types of Gloves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrile Gloves</td>
</tr>
<tr>
<td>Cryogloves</td>
</tr>
<tr>
<td>Needle Resistant Gloves</td>
</tr>
</tbody>
</table>

Identify and use the appropriate gloves for each of your tasks.

**Notes:**

Identify and use the appropriate gloves for each of your tasks. Change gloves between tasks or when you wear them for long time durations. Non-latex glove inserts are also available. In addition, remember to decontaminate hands using soap and water after removing gloves.
3.6 Summary

Notes:

You should now be able to:
• Identify types of personal protective equipment
• Locate appropriate places to wear personal protective equipment
• Distinguish necessary gloves
4. Waste Management

4.1 Objectives

Notes:

By the end of this section, you will be able to:

• Establish safe medical waste storage
• Differentiate types of waste
• Identify appropriate waste containers
4.2 Medical Waste

Medical Waste

- Biohazardous (non-sharp) wastes are contained separate from other trash/waste
- Storage areas for regulated medical wastes are maintained secure to only authorized personnel

Notes:

Medical Waste
Biohazardous (non-sharp) wastes are contained separate from other trash/waste
Storage areas for regulated medical wastes are maintained secure to only authorized personnel
4.3 Biohazardous Waste Examples

<table>
<thead>
<tr>
<th>Biohazardous Waste</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contaminated Sharps</td>
<td>hypodermic needles, razor blades, slides, cover slips</td>
</tr>
<tr>
<td>Solid Red Bag Waste</td>
<td>contaminated PPE, tissues, petri dishes</td>
</tr>
<tr>
<td>Liquid Waste</td>
<td>blood, blood products, bodily fluids, contaminated culture media</td>
</tr>
<tr>
<td>Pathological Waste</td>
<td>tissues, organs, body parts</td>
</tr>
</tbody>
</table>

Notes:

**Contaminated Sharps**
Examples: hypodermic needles, razor blades, slides, cover slips

**Solid Red Bag Waste**
Solid biohazardous waste are materials that have been contaminated by biological materials that need to be disposed and treated according to the Medical Waste Management Act.
Examples: contaminated PPE, tissues, petri dishes

**Liquid Waste**
Liquid biohazardous waste is defined as waste in liquid form that has been contaminated by biological materials.
Examples: blood, blood products, body fluids, contaminated culture media

**Pathological Waste**
Pathological waste is defined by waste from any human or animal body parts.
Examples: tissues, organs body parts
4.4 Waste Storage

**Storage**

Store until the container reaches the fill line
Then close the container

Notes:

**Storage**

Store until the container reaches the fill line
Then close the container
4.5 Labeling

Ensure all chemical waste is labeled properly before placing for pickup.

Notes:

Labeling
Ensure all chemical waste is labeled properly before placing for pickup.
4.6 Waste Containers

Notes:

Red (Biohazardous/Infectious Waste)

- Biohazardous waste:
- Tubing and syringes containing blood and other potentially infectious material (OPIM)
4.7 Waste Containers

Notes:

Hazardous Drugs Waste Disposal
Please note that waste bins and colors may vary by location.

Black (Hazardous Pharmaceutical Waste/RCRA)
• Chemotherapy drugs
• Other highest hazard or RCRA drugs
• Bulk waste or items saturated in waste from highest hazard drugs
• Full or partial amounts of these drugs from:
  • syringes with and without needle
  • IV bags

Yellow (Trace Waste from Highest Hazard Drugs)
• Contaminated items generated during the use of chemotherapy and other highest hazard drugs:
  • trace contaminated gowns, gloves, masks
  • empty IV bags/bottles
  • empty syringes
  • empty drug vials
  • empty packaging
4.8 Summary

To Do:
- Establish safe medical waste storage
- Differentiate types of waste
- Identify appropriate waste containers

Notes:
You should now be able to:
- Establish safe medical waste storage
- Differentiate types of waste
- Identify appropriate waste containers
5. Incident Response

5.1 Objectives

By the end of this section, you will be able to:
- Recognize what to do in the event of a spill
- Establish where to go in the event of an injury
- Identify how to submit a report

Notes:

By the end of this section, you will be able to:
- Recognize what to do in the event of a spill
- Establish where to go in the event of an injury
- Identify how to submit a report
5.2 Spill Clean Up

Notes:

Before cleaning up a hazardous drugs spill on your own, all of the following criteria should be met:

1. You have been trained on spill procedures
2. You have the correct PPE and clean up equipment
3. You know about the hazards and other properties of the material
4. The spill volume is within the range you have been trained for
**5.3 Spill Response**

**Responding to a Spill**

- **Alert** nearby people about the spill and obtain a spill kit.
- **Follow** local policy on spill cleanup.
- **Contact** Environmental Health and Safety or Safety Services for cleanup and disposal.

**Notes:**

**Responding to a Spill**

When there is a spill, responders should immediately:
- **Alert** nearby people about the spill and obtain a spill kit.
- **Follow** local policy on spill cleanup.
- **Contact** Environmental Health and Safety or Safety Services for cleanup and disposal.
5.4 Spill Kit

Notes:

Specific spill kits should be provided in the laboratory.
**Select** all checkboxes below to see what should be included in a common spill kit.

Please note that spill kits vary by the location.

**Hint (Slide Layer)**
5.5 Exposure Response

Notes:

In the event of an exposure,

- **Remove** contaminated gloves or clothing.

- **Wash** skin exposures, punctures, and cuts with lukewarm water. Hot water will open pores and increase skin absorption.

- For eye exposure, **immediately flush** the affected eye with water for at least 15 minutes.
5.6 Medical Attention

Notes:

For direct skin or eye exposure, obtain medical attention as soon as possible. Be sure to contact your supervisor or tell someone before you go.

Employees should go to the Occupational Health Center or Employee Health during operating business hours.

After hours, please immediately seek medical attention in the After Hours Clinic or Emergency Room (rules vary by location).

*Please note that procedures may vary by location. Refer to your location’s Injury and Illness Prevention Program (IIPP).
5.7 Reporting

Notes:

In the event of an incident, create a report after the individual is taken care of.

Ensure all incidents are reported in the Incident Reporting System and that the appropriate parties are notified.
5.8 Summary

Notes:

You should now be able to:

- Recognize what to do in the event of a spill
- Establish where to go in the event of an injury
- Identify how to submit a report
7. Resources

7.1 Location

<table>
<thead>
<tr>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCDAVIS HEALTH</td>
</tr>
<tr>
<td>UCI Health</td>
</tr>
<tr>
<td>UCLA Health</td>
</tr>
<tr>
<td>UC San Diego Health</td>
</tr>
<tr>
<td>UCSF Health</td>
</tr>
</tbody>
</table>

Notes:

Location Resources
Select your campus or location to access specific information and resources.
7.2 UC Davis Health

For more information, view resources at your location.

Notes:

When you are ready, select “next” to continue.
Notes:

When you are ready, select “next” to continue.
7.4 UCLA Health

Notes:

When you are ready, select “next” to continue.
7.5 UC San Diego Health

For more information, view resources at your location.

Notes:

When you are ready, select “next” to continue.
7.6 UCSF Health

Notes:

When you are ready, select “next” to continue.
6. Conclusion

6.1 Summary

Notes:

In summary, you should now be able to:
- Identify hazards in the laboratory workspace
- Choose appropriate personal protective equipment
- Assess the types of waste and disposal methods
- Determine how to respond in the case of a spill or injury
- Access location resources
6.2 For more information

Notes:

To receive credit for this course you must complete the test. When you’re ready, proceed to take test.
6.3 Question 1

(Multiple Choice, 10 points, 1 attempt permitted)

How can you reduce ergonomic injury?

- Take breaks
- Stretch in between tasks
- Change tasks periodically
- All of the above

Feedback when correct:
That's correct! All of the above, you can reduce ergonomic injury by taking breaks, stretching in between tasks, and changing tasks periodically.

Feedback when incorrect:
That is incorrect. All of the above, you can reduce ergonomic injury by taking breaks, stretching in between tasks, and changing tasks periodically.
6.4 Question 2

(Multiple Choice, 10 points, 1 attempt permitted)

Where should your personal protective equipment be worn?

- Outside the building
- Inside your office
- In the laboratory work area
- In the lunchroom

Feedback when correct:
That's correct! You should only be wearing your personal protective equipment in the laboratory work area.

Feedback when incorrect:
That is incorrect. You should only be wearing your personal protective equipment in the laboratory work area.

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6.5 Question 3

(Multiple Choice, 10 points, 1 attempt permitted)

Which color waste container does biohazardous waste belong in?

- Red
- Blue
- Yellow
- Black

Feedback when correct:
That's correct! Biohazardous waste belongs in the red waste container.

Feedback when incorrect:
That is incorrect. Biohazardous waste belongs in the red waste container.
6.6 Question 4

(Multiple Choice, 10 points, 1 attempt permitted)

**When is it appropriate to clean up a spill?**

- When the spill volume is large
- When personal protective equipment is not available
- When you do not know the contents of the spill
- **X** When the spill is small and you have been trained

**Feedback when correct:**

That's correct! It is only appropriate to cleanup a spill if the spill is small and you have been trained.

**Feedback when incorrect:**

That is incorrect. It is only appropriate to cleanup a spill if the spill is small and you have been trained.
6.7 Question 5

(Multiple Choice, 10 points, 1 attempt permitted)

**What should you do in the event of an injury?**

- [ ] Write an incident report immediately
- [ ] Go home and not tell anyone
- [X] Tell your supervisor and go to Occupational Health or Employee Health for medical attention
- [ ] Continue working

**Feedback when correct:**

That's correct! Tell your supervisor and go to Occupational Health or Employee Health for medical attention.

**Feedback when incorrect:**

That is incorrect. Tell your supervisor and go to Occupational Health or Employee Health for medical attention.
6.8 Results Slide

(Results Slide, 0 points, 1 attempt permitted)

Your Score: %Results1.ScorePercent/100

Passing Score: %Results1.PassPercent/100

Result:

Notes:

Thank you for taking the UC Clinical Laboratory Safety training. If you have time, please evaluate the course. Click “Finish” when you are done.
Success (Slide Layer)

Results

Your Score: %Results1.ScorePercent%%

Passing Score: %Results1.PassPercent%%

Result:
✓ Congratulations, you passed.

Finish course  Evaluate course

Failure (Slide Layer)

Results

Your Score: %Results1.ScorePercent%%

Passing Score: %Results1.PassPercent%%

Result:
✗ You did not pass.

Retry test  Exit

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