



College of Natural Sciences  
& Mathematics

# CNSM Biohazardous Materials Training

Science Safety Office

California State University, Long Beach

Includes employee training on the hazards of bloodborne pathogens in the workplace (CCR, Title 8, Sec. 5193).

Updated February 2022

[www.csulb.edu/cnsm/safety](http://www.csulb.edu/cnsm/safety)

# Instructions

1. Download and review this document.
2. Review the other documents found on the [Biohazardous Materials and Bloodborne Pathogen Training](#) web page.
3. Attend the hands-on training which runs the third Wednesday of each month at 1:00pm. Training will begin MIC-006.

Contact the Science Safety Office via email ([Chris.Frost@csulb.edu](mailto:Chris.Frost@csulb.edu)) or phone 562.985.5623 if you have any questions about completing this training.

# Course Topics

This training will help you to recognize potential hazards and reduce your risk.

- **Think before you do anything**
  - What could possibly happen?
  - What is the worst thing that could happen?
  - What can I do to prevent it?
  - What will I do if an incident occurs?

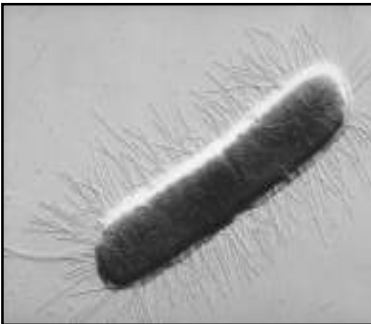


# General Overview

**Pathogen: any microorganism that can cause disease.**

Examples of Illnesses Pathogens Cause

- Viruses: AIDS, Hepatitis B, colds, flu, Herpes
- Bacteria: Intestinal diseases, Tuberculosis, Gonorrhoea
- Fungi: Athlete's foot, Farmer's lung, Asthma/allergies
- Parasites: Giardiasis, Malaria, Trichinosis



*E. Coli* (bacteria)

Image courtesy Indigo  
Instruments



*Trichinella* (parasite)

# What is Biosafety

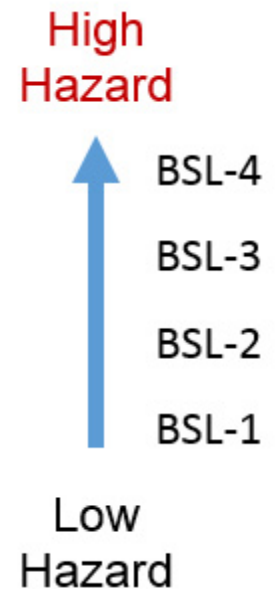
- Biosafety is the application of practices and containment necessary to reduce the risks associated with biological hazards, such as potentially pathogenic organisms and toxic agents.
- Biosafety describes the conditions under which such agents can be safely used to prevent the:
  - exposure of lab personnel to potentially biohazardous agents
  - release of potentially biohazardous agents to the environment



# Biological Safety Level

A Biosafety Level (BSL) is assigned to laboratory work.

- Each Biosafety Level describes the practices and containment that will reduce the risk of exposure to potential biohazards.
- There are 4 levels of biosafety:
  - Level 1 (BSL-1) represents the practices and containment required for biohazards that pose the lowest hazard.
  - BSL-4 is reserved for labs using materials that pose the greatest hazard.
  - Determined based on characteristics of the agent or material and how it will be manipulated.



# Biological Safety Level Examples

Biosafety Level	Agent Description	CNSM Examples
BSL-1	Not known to cause disease in health adults	K-12 Escherichia coli strains, Saccharomyces cerevisiae (Brewer's Yeast), CHO and most mouse cell lines, recombinant vectors containing non-pathogenic elements
BSL-2	Agents associated with human disease, routes of transmission include percutaneous injury, ingestion, mucous membrane exposure	Toxoplasma gondii, E. coli (certain serotypes), Klebsiella pneumonia, adenoviral and lentiviral cloning vectors, human blood or other potentially infectious materials (OPIM) including human cell lines (may contain bloodborne pathogens)
BSL-3	Agents with potential for aerosol transmission, disease may have serious or lethal consequences	N/A: There are no BSL-3 labs at CSULB. (Outside CSULB example: Mycobacterium tuberculosis)
BSL-4	Dangerous/exotic agents which pose high risk of life-threatening disease, aerosol-transmitted LAI occurred or risk of transmission unknown	N/A: There are no BSL-4 labs at CSULB. (Outside CSULB examples: Multidrug resistant TB, Ebola Virus)

# Bloodborne Pathogens

Bloodborne Pathogens (BBPs) as defined Cal/OSHA  
Bloodborne Pathogen Standard:

“Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV) and the human immunodeficiency virus (HIV).”



# Bloodborne Pathogen Examples

<b><i>Virus</i></b>	<b>Hepatitis B</b>	<b>Hepatitis C</b>	<b>HIV</b>
<i>General Information</i>	Attacks the liver	Attacks the liver	Attacks the immune system
<i>Average Incubation Period</i>	4 months	2 months	10 years
<i>Source of Virus</i>	Blood/OPIM	Blood/OPIM	Blood/OPIM
<i>Chronic or Long Term Infection</i>	Chronic for 5% of adults	Chronic for 75-85% of cases	Long Term
<i>Prevention</i>	Vaccine	None	Truvada
<i>Symptoms</i>	Fever, Fatigue, Abdominal pain, Loss of appetite, Nausea, Jaundice	Fever, Fatigue, Abdominal pain, Loss of appetite, Nausea, Jaundice	Fever, Enlarged lymph nodes, Sore throat, Rash
<i>Epidemiology of general population</i>	300,000 cases annually	16,000 new cases in 2009	50,000 cases annually
<i>Treatment</i>	None	Triple therapy	Limited, no cure

# Other Potentially Infectious Materials

Other Potentially Infectious Materials (OPIM) means:

1. The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;
2. Any unfixed tissue or organ (other than intact skin) from a human (living or dead), human cell lines; and
3. HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV”.

OPIM is a “catch-all” term. Tears, saliva, urine and feces are not OPIM unless contaminated with blood or other OPIM.

# Human Cadavers

Human cadavers can also pose infection hazards.

- Not all fixatives are effective against all infectious agents.
- Not all fixatives penetrate 100% in all tissues.
- Special training provided by the Curator of Cadavers required prior to handling of tissues or other specimens.
- “Cadaver Suite Guidelines” strictly adhered to.



# Biosafety Terminology

- **Contaminated**

- “means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface”.

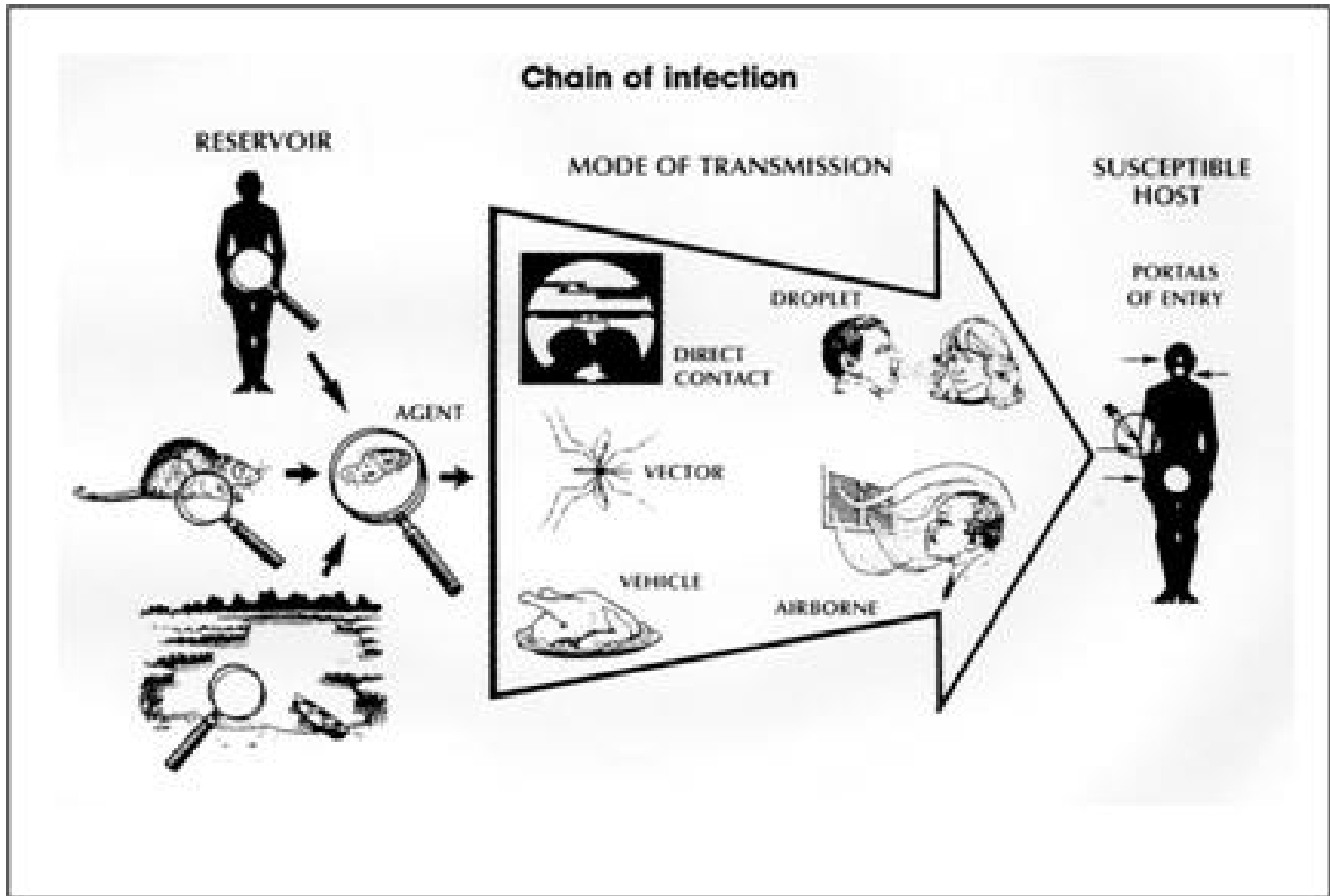
- **Exposure Incident**

- “means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that result from the performance of an employee's duties”.

- **Modes of Transmission**

- the ways in which a pathogen causing a communicable disease is spread from a reservoir to a susceptible host. Numerous but we will only discuss those of occupational relevance.

# Biosafety Terminology Illustrated



# Modes of Transmission

Modes of transmission can be direct or indirect.

- **Direct**

- Direct Contact: “skin-to-skin” contact via touching, contact with mucous membranes, etc.
- Droplet Spread: contact/inhalation of small drops/splatters

- **Indirect**

- Airborne: contact/inhalation of fine droplets (aerosols) or dusts that remain suspended in air or become resuspended in air currents
- Vehicleborne: from contact with contaminated food, water, blood/OPIM, tools, other inanimate objects
- Vectorborne: from living vectors such as fleas, mosquitoes, ticks, others

# Entry Points

Pathogens (including BBPs) can enter your body through:

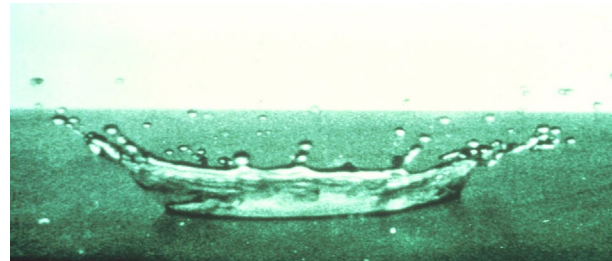
- Percutaneous injuries – needle sticks, contaminated sharps
- Breaks in the skin (cut, lesion, etc.)
- Contact with mucus membranes (eyes, nose, mouth) from splatters, spills, aerosols
- Ingestion of contaminated food or beverages
- Inhalation of aerosols or contaminated dusts from lab operations



# Procedures that Create Aerosols

Here are some common laboratory procedures that may produce aerosols:

- blowing out pipettes
- dropping / breakage of culture containers
- **carelessly removing protective gloves**
- harvesting infected material
- flaming inoculating needles, slides or loops
- inserting a hot loop into a culture
- opening lyophilized cultures, culture plates, tubes and bottles
- **pouring liquids**
- **removing stoppers**
- stirring liquids
- streaking inoculum





# Devices that Create Aerosols

In addition, there are many devices that, if used incorrectly, may create aerosols, including:

- blenders and vortexers
- bottles and flasks
- centrifuges
- homogenizers
- needles and syringes
- pipettes
- pressurized vessels
- rubber stoppers
- shakers
- sonicators
- vacuum and aspirating equipment

# Risk of Infection

Risk of infection depends on several factors:

- The pathogen involved
- The type/route of exposure
- The amount of virus in the infected blood at the time of exposure
- The amount of infected blood involved in the exposure
- Whether post-exposure treatment was taken
- Specific immune response of the individual

# Risk Group

NIH Guidelines have Risk Group Designations for many pathogens that may be used in the laboratory.

- Risk Group (1-4) characterization based on the severity of the pathological condition produced in a healthy human in response to the agent.
- Risk Group along with other factors determines BSL (1-4)

# Health Care Workers and BBPs

## Occupational Transmission

- Risk of infection following a needlestick or cut from a positive (infected) source:
  - HBV: 6%-30%
  - HCV: 1.8% (range 0%-7%)
  - HIV: 0.3%



# Exposure Control Plan

The purpose of the Exposure Control Plan is to eliminate/minimize your risk of exposure:

- Exposure determination
- Exposure controls
- Training and Hazard Communication
- Hepatitis B Vaccine
- Post exposure evaluation & follow-up
- Recordkeeping



**Copies of our plan are located at the Science Safety Office.**

# Biosafety Policies and Guidelines

Campus Environmental Health & Safety (EH&S) and CNSM policies:

1. EH&S Exposure Control Plan
2. CNSM Biohazard Control Plan
3. CNSM Biohazardous Waste Policy
4. CNSM Needle Handling Policy

# Regulatory Requirements and Oversight

Campus EH&S and CNSM policies meet or exceed requirements of:

- **Biosafety in Microbiological and Biomedical Research Laboratories** (the BMBL) from the Centers for Disease Control and Prevention (CDC).
- **The NIH Guidelines for Research Involving Synthetic and Recombinant Nucleic Acid Molecules** (the NIH Guidelines) from the National Institutes of Health (NIH).
- **Bloodborne Pathogens Standard** (in California Code of Regulations, Title 8) from Cal Occupational Safety and Health Administration (Cal/OSHA)
- **Medical Waste Management Act** (in CA Health and Safety Code) from California Department of Public Health
- City of Long Beach Public Health Department inspector

# Exposure Determination

## Who is at risk at this worksite?

- All employees who could “reasonably anticipate” as the result of performing their job/duties contact blood and other potentially infectious materials
- “Good Samaritan” acts such as assisting a co-worker with a nosebleed would NOT be considered occupational exposure



# Occupational Exposure List

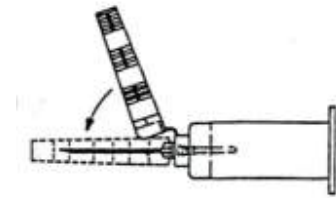
CSULB employees in the following job classifications may have occupational exposure to blood or other potential infectious materials.

- Faculty (Department of Nursing)
- Physician
- Registered Nurse
- Nurse Practitioner
- Clinical Aid
- Radiologic Technologist
- Clinical Laboratory Technologist
- Pharmacist
- Custodian (those assigned to the Student Health Center)
- Director of Public Safety
- Supervising Public Safety Officer
- Public Safety Investigator
- Office of Safety and Risk Management
- Environmental Health and Safety

# Exposure Controls

How to reduce your risk.

- Universal precautions (Blood/OPIM)
- Engineering controls
- Work practice controls (administrative controls)
- Regulated waste
- Personal protective equipment (PPE)
- Hazard communication (labeling)
- Housekeeping



# Universal Precautions

A system of infection control that treats all human blood and OPIM as if they contain infectious agents.

- Part of Bloodborne Pathogen Standard



# Engineering Controls

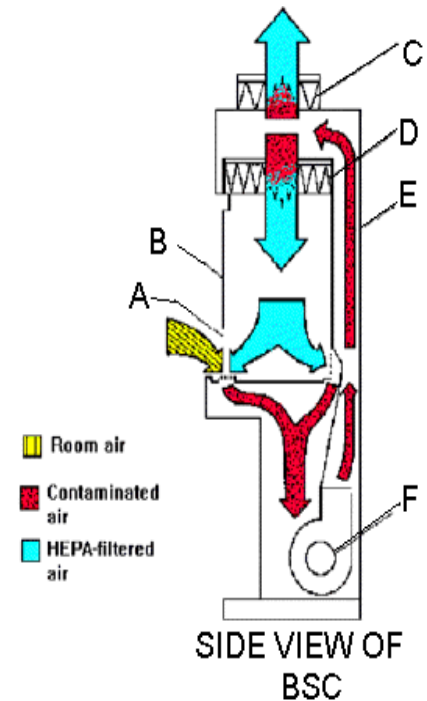
Physical guards, barriers, shields, environmental controls that reduce employee exposure by removing the hazard.

- Examples commonly found in the CNSM include:
  - Biosafety Cabinets (BSCs) -- contain aerosols
  - Sealed centrifuge rotor caps -- also contain aerosols
  - Leak-proof containers
  - Sharps disposal containers
  - Safer medical devices
    - Sharps with engineered sharps injury protections

# Biological Safety Cabinets

Biological Safety Cabinets (BSCs) are required for any work that may generate biohazardous aerosols.

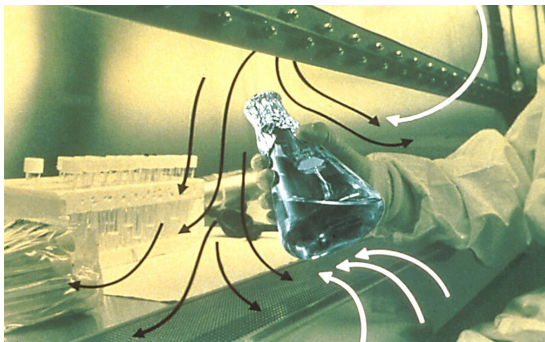
- BSCs used for BSL-2 work must be annually certified



# Tips for Using a BSC Correctly

Preplanning is important to minimize contamination.

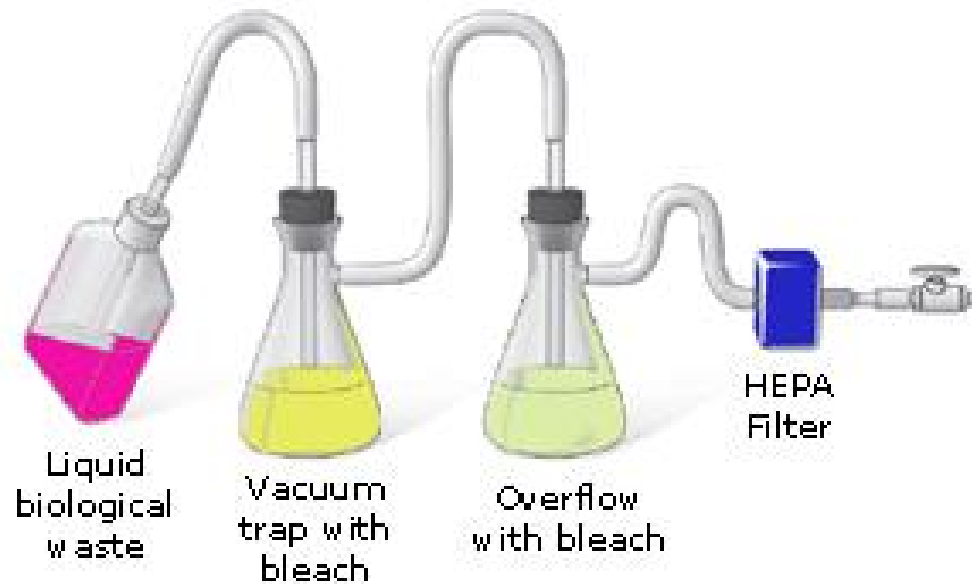
- Every movement in and out of the cabinet disrupts the delicate air barrier
- Avoid having materials in the cabinet that are not required for your procedure
- Placing items on the grate at the front of the cabinet disrupts the air flow patterns
- Use of a flame (for sterilization) inside a BSC is discouraged



# Tips for Using a BSC Correctly 2

Vacuum lines should be protected with dual disinfectant traps

- In-line filter may also be necessary



# Sealed Centrifuge Rotor Caps

Required for centrifugation of biohazardous samples.

- Rotors/buckets are removed and opened in a certified BSC
- Sealed rotor lid traps any aerosols released from centrifuge tubes





# Secondary Containers

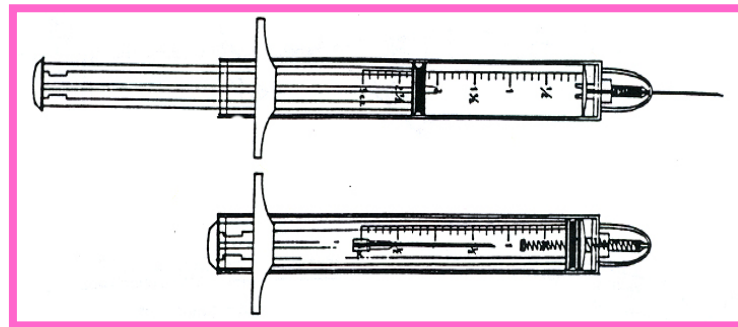
**Samples Being Transported Outside of a BSL-2 Lab Require Secondary Containment.**

- Use secondary containers.
- Secondary containers should be leak-proof, closable and labeled with the biohazard symbol.
- A cart may be used to help prevent accidents where materials are dropped.



# Sharps

- Sharps Container
  - For GLASS pipets, needles and other sharp objects.
- Safer Medical Devices
  - Sharps with engineered sharps injury protections (SESIP)
  - Needleless systems
  - Self-blunting needles
  - Plastic capillary tubes



# Work Practice Controls

The following Work Practice Controls apply to both BSL-1 and BSL-2.

- Use personal protective equipment (e.g., lab coats, eye protection and gloves).
- Wash hands after removing gloves and again before leaving the lab.
- Restrain long hair so that it cannot contact hands, specimens, containers, or equipment.
- No eating, drinking, smoking, or applying cosmetics in the lab. No placing food or drink in refrigerators, freezers, shelves, cabinets or on countertops or bench tops in work areas.
- Always use mechanical pipetting devices (**never** mouth pipette).
- Decontaminate work surfaces following procedures after spills.
- Use procedures that minimize the formation of splashes and aerosols.
- Follow CNSM Needle Handling Policy.
- Prepare a laboratory safety manual specific to biological materials, agents, or microorganisms handled.
- For recombinant DNA (rDNA) materials, place all solid biological waste in clear autoclavable bags for disposal.

# Work Practice Controls 2

**In addition**, the following work practice controls are specific to BSL-2 (previous controls also apply).

- Decontaminate work surfaces following procedures after spills *and anytime contamination is suspected*.
- A laboratory-specific biosafety manual must be prepared and adopted as policy.
- Use procedures that minimize the formation of splashes and aerosols. *Conduct all procedures that may produce aerosols inside a certified Biosafety Cabinet.*
- Follow CNSM Needle Handling Policy *and use Biohazards sharps containers.*
- Place all solid biohazardous (including rDNA with pathogenic inserts) waste in RED double bag lined pails or barrels for disposal. Liquids must be disinfected before sink disposal.

# Project Specific Practices/Procedures

- The BSL-2 project specific practices/procedures are detailed in the lab specific Biosafety Manual.
  - Description of the “rules of the lab”
  - A copy is in your lab – ask where it is and review it!
  - It will help you to recognize and reduce hazards
- Standard Operating Procedures (SOPs) serve as a resource to train new lab staff, supplement recurring training and as a valuable reference in the event of an emergency.
  - Examples in manuals:
    - “Biosafety SOP for working with unfixed human- and mouse-derived materials in the laboratory of ... This SOP reflects the use of BL2 precautions.”
    - “Biosafety SOP for utilizing rDNA with *E. coli*, yeast, and *Drosophila* (cell lines and flies) in the laboratory of ... This SOP reflects the use of BL1 precautions.”

# Needles and Sharps Precautions

Because percutaneous exposure (through the skin) is a primary route of transmission, extreme caution should be taken with contaminated needles or sharps.

- Sharps include items such as needles, razor blades, scalpel blades, broken glass or glass that is likely to break.



# CNSM Needle Handling Policy

The following are BBP Highlights from the CNSM Needle Handle Policy:

- Needles used for withdrawing human blood/bodily fluids must have engineered sharps protection
- Needles contaminated with human blood/blood products must NEVER be removed from their original syringes
- Never bend, break, shear or recap needles or other sharps
- Used needles/sharps must be immediately discarded after use (without recapping) into a specially labeled BIOHAZARD sharps container
  - Sharps containers shall be leak-proof, tip-proof (keep in tip-proof secondary containment), maintained in an upright position, closeable, puncture resistant and easily accessible
  - Available at no charge from Science Safety Office
- Report needle/sharps injuries to Science Safety Office

# Regulated Wastes

The following are considered regulated wastes:

- Any materials contaminated with biohazards including blood or OPIM (also referred to as medical waste) or infectious cultures.
- Contaminated sharps
- These items may not be placed in the regular trash cans or down sinks. Special Biohazard waste receptacles and disposal practices must be used

**BSL-2/Medical Waste shall not be autoclaved for purposes of final disposal.**



# Waste Containers

- Use large “kick-top” pails (double bag lined) or red barrels for solid waste (contaminated culture plates/flasks, PLASTIC pipets), contaminated paper towels and other solid items. Container must be closed.
- Use sturdy, competent containers with secure closures in secondary containment for liquid wastes
- Sharps (including contaminated GLASS pipets or glass slides) go in rigid sharps containers
- Reduce waste: non-contaminated trash can go in regular lab trash



# Recombinant DNA

- Recombinant DNA (rDNA) is DNA that has been formed artificially by combining constituents from different organisms.
  - Many CNSM labs that work with rDNA
  - Work involving rDNA must be approved by the Institutional Biosafety Committee (IBC)
  - Examples of recombinant materials include genetically modified strains of *Escherichia coli* and plasmid vectors
- Recombinant material may or may not be biohazardous but all must be destroyed or inactivated prior to disposal.
  - Recombinant materials that are biohazardous or may be contaminated with biohazards must be disposed of as biohazardous waste
  - Recombinant materials that are NOT biohazardous may be autoclaved or treated with disinfectant and DO NOT need to be disposed of as biohazardous waste

# Regulated Biohazardous and Biological Waste Handling (BSL-2)

Waste Type	Container	What You Need To Do
Solid BSL-2 biological infectious waste or medical waste	Double bag lined red barrel or kick-top pail	Fill until $\frac{3}{4}$ full then contact CNSM Safety for pick-up. CNSM Safety sends out weekly reminders.
Liquid BSL-2 biological infectious waste or medical waste	Sturdy, competent container in secondary containment having a secure closure.	Fill until $\frac{3}{4}$ full then contact CNSM Safety for disposal.
BSL-2 biological infectious waste or medical waste contaminated sharps (needles, syringes, blades, Pasteur pipettes, etc.)	Biohazard labeled rigid red sharps container	Fill until $\frac{3}{4}$ full, close top then contact CNSM Safety for pick-up.

# Regulated Biohazardous and Biological Waste Handling (other)

Waste Type	Container	What You Need To Do
Non-biohazardous sharps- no chemical or radiological hazard	Sharps container without biohazard label(s)	Fill until $\frac{3}{4}$ full, close top then contact CNSM Safety for pick-up.
rDNA BSL-1 materials (used cultures, contaminated tubes, pipettes or pipette tips, etc.)	Clear autoclave bag	Autoclave or disinfect with bleach then place in regular trash.
Animal Carcasses- no biological, chemical or radiological hazard	Black trash bag	Deposit in animal carcass freezer. Contact CNSM safety for details.
Animal Carcasses- intentionally infected	Contact CNSM Safety for details.	Contact CNSM Safety for details.
Pathology Waste	Red barrel double bag lined with white biohazard bags	Contact CNSM Safety for details.

# Personal Protective Equipment

You must wear all required Personal Protective Equipment (PPE). Your employer provides you with the following PPE at no cost. Contact your supervisor for more information.

- Lab coat\*
- Disposable lab coat
- Closed toed shoes
- Gloves
- Safety glasses with side shields\*\*
- Splash goggles
- Face shield

\*Lab coats should remain in the area where biohazards work takes place

\*\*May be used for some work involving biohazardous material only, no hazardous chemicals

# Gloves

- Latex
- Nitrile
- Vinyl
- Utility



latex gloves



nitrile and vinyl gloves

# Proper Use of Gloves

- Gloves should NOT to be worn outside of the work area.
  - DO NOT wear gloves to open doors or touch equipment (i.e. phones, keyboards, door handles) that others will be handling without gloves.
- Gloves must be replaced as soon as possible after they become contaminated, torn, punctured or compromised.
- Disposable gloves cannot be reused.
- Gloves must be removed CORRECTLY prior to washing hands and leaving the laboratory.
  - With both hands gloved, pinch the top of one glove, carefully pull it off so that it is inside out and hold it in the gloved hand.
  - Using the ungloved hand, grab the inside top of the second glove and pull it off so that it is inside the first glove.
- PPE must be disposed of as biohazardous waste.

# Communication of Hazards and Restricted Access

- Laboratory access is limited to those authorized, door should be self-closing and be lockable.
- Immunocompromised individuals are advised of the increased risk and an individual risk assessment can be conducted for these individuals.
- There are requirements for workers in the lab, such as Bloodborne Pathogen Training.
- Doors are kept closed during experiments
- An approved sign indicating the presence of biohazards must be posted at all access areas of the BSL-2 lab.

**BIOHAZARD**



Biosafety Level 2

AUTHORIZED PERSONNEL ONLY



# Biohazard Labels

- All equipment -- hoods, freezers, incubators, centrifuges, etc. that are used with biohazardous materials in a BSL-2 lab must have a biohazard label. CNSM Unit Label must also be used for storage units including freezers, refrigerators and incubators.
- Also, transport containers and biohazard waste containers must display a biohazard label on the outermost part.



# Housekeeping

Maintain a clean and sanitary workplace.

- Written cleaning and decontamination schedule and procedures
  - Decontaminate all work surfaces after the completion of procedures or whenever contamination is suspected
- Approved disinfectant – bleach (1:10), EPA-approved
- Contaminated waste disposal methods
- Laundry – Onsite Only



# Spill Clean-Up

During clean-up of spills contaminated with biohazardous material, do the following:

- Contact CNSM Safety for spills that are large or that involve sharps. For large spills outside of BSCs clear the area/lab of all personnel.
- Wear all BSL-2 PPE including eye protection.
- Cover the area of the spill with absorbent paper towels and saturate with disinfectant (10% bleach or other), allow 20 minutes contact time.
- Wipe up the spill from the edges to the center and discard all materials into the appropriate biohazardous waste container.
- Apply additional disinfectant to the spill area, allow 10 minutes of contact time, wipe up as above.

NOTE: Following initial decontamination any sharps are picked up with tongs (NEVER handled directly) and placed in a medical waste sharps container. Broom and dustpan shall be used exclusively to dispose of any remaining materials.

# Exposure Incident

If you have an exposure incident to biohazardous materials, immediately do the following:

- Follow the procedure in your lab's Biosafety Manual SOP.
  - Thoroughly clean the affected area
    - Wash needle sticks, cuts or skin with soap and water for 5-15 minutes. Then cover the wound with a clean dressing.
    - For membrane exposure (eyes, nose, mouth) flush with water for 5-15 minutes.
- Report exposure to supervisor and Science Safety Office, fill out an incident report.



# Post-Exposure Evaluation

After an exposure incident, it is CSULB's responsibility to:

- Provide immediate post-exposure medical evaluation and follow-up to exposed employee:
  - At no cost
  - Confidential
  - Testing for HBV, HCV, HIV
  - Preventive treatment when indicated
- Test blood of source person if HBV/HCV/HIV status unknown, if possible; provide results to exposed employee, if possible

# Post-Exposure Evaluation 2

(CSULB's responsibility continued)

- Provide exposed employee with copy of the evaluating health care professional's (HCP) written opinion within 15 days of completion of evaluation
- Provide employee with information about laws on confidentiality for the source individual
- Provide post-exposure treatment as needed, including counseling

**Our HCP is Memorial Occupational Medical Services.**

# Post-Exposure Treatment

- HCV: no treatment
- HBV: immune globulin and vaccination if not immune
- HIV: anti-HIV medications for high risk exposures
- Tested for infection at baseline, 3, and 6 months

# Hepatitis B Vaccine

The Hepatitis B Vaccine is available at no cost to you.

- 3 shots: 0, 1, and 6 months
- Effective for 95% of adults
- Post-vaccination testing for high risk HCW
- Post-exposure treatment (if not vaccinated)
- Immune globulin
- Begin vaccination series
- If decline, you must sign a “Declination Form”
- vaccine available at later date if desired





# Recordkeeping

## Medical Records

- Confidential
- Hepatitis B vaccination and post-exposure evaluations
- HCP's written opinions
- Information provided to HCP as required
- Maintain for length of employment + 30 years

## Training Records

- Dates
- Content summary
- Trainer name and qualifications
- Attendee's names and job titles
- Maintain for 3 years

# Sharps Injury Log

We are required to keep an injury log specific to sharps.

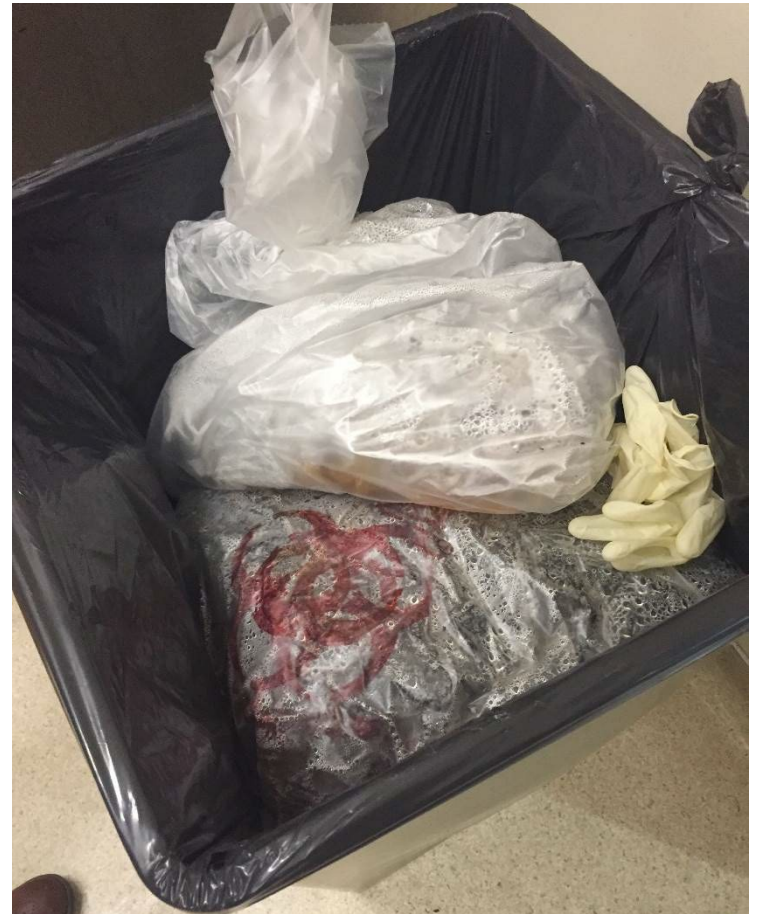
- The injury is recorded as a confidentiality case
- The log includes the following information:
  - type and brand of device involved
  - department or work area where exposure occurred
  - An explanation of how the incident occurred

# Refresher Training Requirement

Annual refresher training is required, material presented today is reviewed.

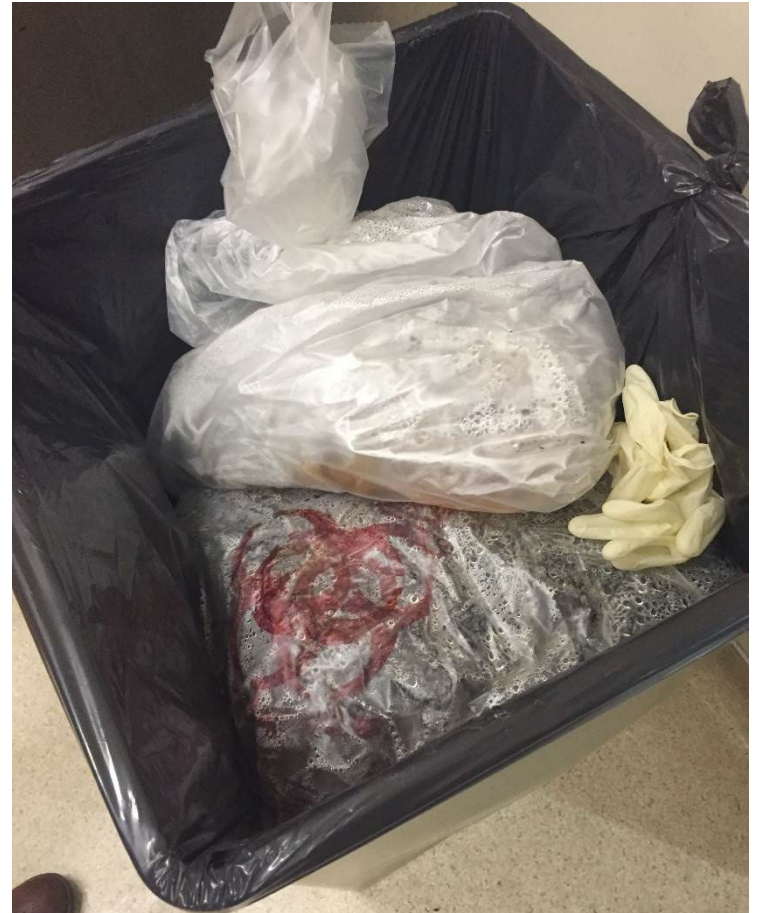
# Training Exercise 1

What is wrong in this picture?



# Training Exercise 1: Answers

- Biohazardous waste autoclave and thrown in regular trash
- Clear not red biohazard bag used



# Training Exercise 2

What is wrong in these pictures?





# Training Exercise 2: Answer

- Bulky non-contaminated items in biohazard waste



# Training Exercise 3

What is wrong in this series of pictures?





# Training Exercise 3: Answer

- Glass sharps found in non-sharps biohazard waste



# Training Exercise 4

What is wrong in this series of pictures?

*Hint: note the red biohazard bag*



# Training Exercise 4: Answer

- Glass sharps found in non-sharps biohazard waste



# Training Exercise 5

What is wrong in these pictures?





# Training Exercise 5: Answers

- Biohazard sharps containers overfilled and not in tip-proof secondary containment



# Training Exercise 6

What is wrong in this picture?



# Training Exercise 6: Answer

- Improper sharps container



# Training Exercise 7

What is wrong in this picture?

*Hint: assume unattended*





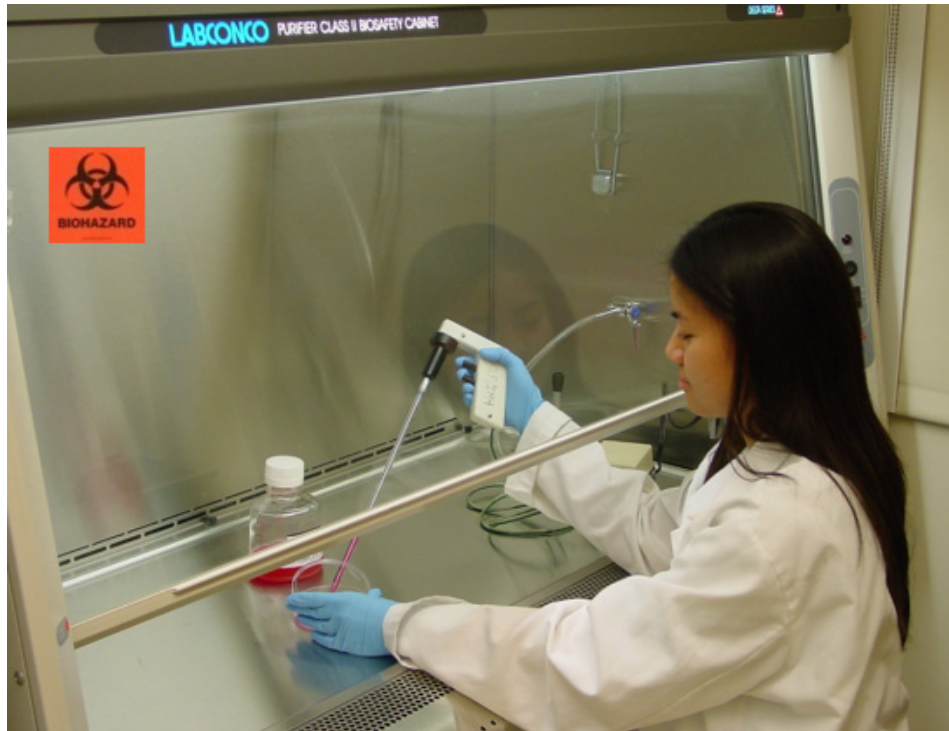
# Training Exercise 7: Answer

- Needs label for contents and any hazard(s)



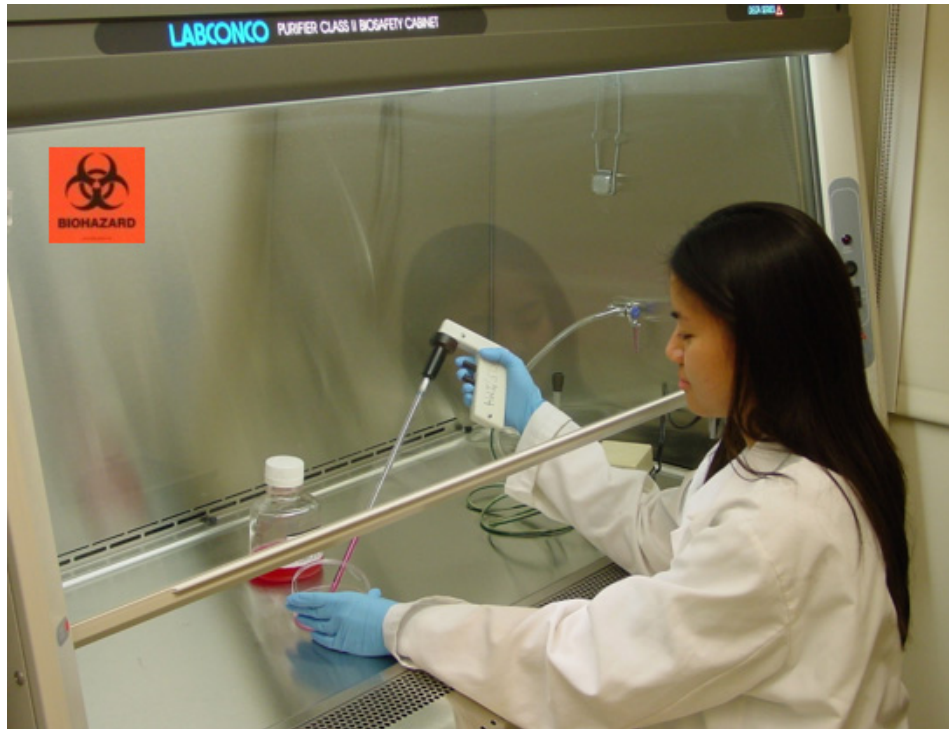
# Training Exercise 8

What is wrong in this picture?



# Training Exercise 8: Answer

- No eye protection



# Pop Quiz

1. T/F: It is OK to recap needles used with biohazards for safety purposes.
2. T/F: BSL-2 biohazardous waste can be thrown in the regular trash as long as you autoclave it first.
3. T/F: A biological safety cabinet (BSC) is the most appropriate device to use when working with infectious materials where an aerosol may be produced.
4. T/F: Glass Pasteur pipets are considered “sharps” and shall be placed in a biohazards sharps container after use with any BSL-2 agents.
5. T/F: BSL-1 organisms normally do not cause disease in humans.
6. T/F: Universal precautions need only be employed when working with human blood.
7. T/F: Needles and other sharps that have been wrapped in paper towels do not need to be disposed of in a sharps container.

# Question 1

1. **FALSE:** It is OK to recap needles used with biohazards for safety purposes.
2. T/F: BSL-2 biohazardous waste can be thrown in the regular trash as long as you autoclave it first.
3. T/F: A biological safety cabinet (BSC) is the most appropriate device to use when working with infectious materials where an aerosol may be produced.
4. T/F: Glass Pasteur pipets are considered “sharps” and shall be placed in a biohazards sharps container after use with any BSL-2 agents.
5. T/F: BSL-1 organisms normally do not cause disease in humans.
6. T/F: Universal precautions need only be employed when working with human blood.
7. T/F: Needles and other sharps that have been wrapped in paper towels do not need to be disposed of in a sharps container.

# Question 2

1. FALSE: It is OK to recap needles used with biohazards for safety purposes.
2. **FALSE:** BSL-2 biohazardous waste can be thrown in the regular trash as long as you autoclave it first.
3. T/F: A biological safety cabinet (BSC) is the most appropriate device to use when working with infectious materials where an aerosol may be produced.
4. T/F: Glass Pasteur pipets are considered “sharps” and shall be placed in a biohazards sharps container after use with any BSL-2 agents.
5. T/F: BSL-1 organisms normally do not cause disease in humans.
6. T/F: Universal precautions need only be employed when working with human blood.
7. T/F: Needles and other sharps that have been wrapped in paper towels do not need to be disposed of in a sharps container.

# Question 3

1. FALSE: It is OK to recap needles used with biohazards for safety purposes.
2. FALSE: BSL-2 biohazardous waste can be thrown in the regular trash as long as you autoclave it first.
3. **TRUE:** A biological safety cabinet (BSC) is the most appropriate device to use when working with infectious materials where an aerosol may be produced.
4. T/F: Glass Pasteur pipets are considered “sharps” and shall be placed in a biohazards sharps container after use with any BSL-2 agents.
5. T/F: BSL-1 organisms normally do not cause disease in humans.
6. T/F: Universal precautions need only be employed when working with human blood.
7. T/F: Needles and other sharps that have been wrapped in paper towels do not need to be disposed of in a sharps container.

# Question 4

1. FALSE: It is OK to recap needles used with biohazards for safety purposes.
2. FALSE: BSL-2 biohazardous waste can be thrown in the regular trash as long as you autoclave it first.
3. TRUE: A biological safety cabinet (BSC) is the most appropriate device to use when working with infectious materials where an aerosol may be produced.
4. **TRUE:** Glass Pasteur pipets are considered “sharps” and shall be placed in a biohazards sharps container after use with any BSL-2 agents.
5. T/F: BSL-1 organisms normally do not cause disease in humans.
6. T/F: Universal precautions need only be employed when working with human blood.
7. T/F: Needles and other sharps that have been wrapped in paper towels do not need to be disposed of in a sharps container.



# Question 5

1. FALSE: It is OK to recap needles used with biohazards for safety purposes.
2. FALSE: BSL-2 biohazardous waste can be thrown in the regular trash as long as you autoclave it first.
3. TRUE: A biological safety cabinet (BSC) is the most appropriate device to use when working with infectious materials where an aerosol may be produced.
4. TRUE: Glass Pasteur pipets are considered “sharps” and shall be placed in a biohazards sharps container after use with any BSL-2 agents.
5. **TRUE:** BSL-1 organisms normally do not cause disease in humans.
6. T/F: Universal precautions need only be employed when working with human blood.
7. T/F: Needles and other sharps that have been wrapped in paper towels do not need to be disposed of in a sharps container.

# Question 6

1. FALSE: It is OK to recap needles used with biohazards for safety purposes.
2. FALSE: BSL-2 biohazardous waste can be thrown in the regular trash as long as you autoclave it first.
3. TRUE: A biological safety cabinet (BSC) is the most appropriate device to use when working with infectious materials where an aerosol may be produced.
4. TRUE: Glass Pasteur pipets are considered “sharps” and shall be placed in a biohazards sharps container after use with any BSL-2 agents.
5. TRUE: BSL-1 organisms normally do not cause disease in humans.
6. **FALSE:** Universal precautions need only be employed when working with human blood.
7. T/F: Needles and other sharps that have been wrapped in paper towels do not need to be disposed of in a sharps container.

# Question 7

1. FALSE: It is OK to recap needles used with biohazards for safety purposes.
2. FALSE: BSL-2 biohazardous waste can be thrown in the regular trash as long as you autoclave it first.
3. TRUE: A biological safety cabinet (BSC) is the most appropriate device to use when working with infectious materials where an aerosol may be produced.
4. TRUE: Glass Pasteur pipets are considered “sharps” and shall be placed in a biohazards sharps container after use with any BSL-2 agents.
5. TRUE: BSL-1 organisms normally do not cause disease in humans.
6. FALSE: Universal precautions need only be employed when working with human blood.
7. **FALSE:** Needles and other sharps that have been wrapped in paper towels do not need to be disposed of in a sharps container.

# If You Have Any Questions

- Ask your research advisor or supervisor
- Check out the lab SOPs, the Biosafety Manual or CNSM policy documents
- Contact the CNSM Biosafety Officer
  - Chris Frost ([Chris.Frost@csulb.edu](mailto:Chris.Frost@csulb.edu))
    - Science Safety Office, MIC-006
    - (562) 985-5623
  - Alternate contact:
    - John de la Cuesta ([John.deLaCuesta@csulb.edu](mailto:John.deLaCuesta@csulb.edu))