# UNIVERSITY OF NEVADA LAS VEGAS LABORATORY STANDARD OPERATING PROCEDURES (SOPS)

This SOP document includes specific information for the procedures being performed in the laboratories listed below. It is meant to give details and step by step instructions for the safe execution of the procedure and what to do in the event of an accident or emergency. The safety precautions mandated do not need to exceed hazard of the materials or procedural operation.

All faculty, staff and students should familiarize themselves with this procedure and sign the last page prior to starting work in this laboratory. Questions should be directed to the Principal Investigator. A copy of the SOP must be forwarded to the Dean and a copy (hard or electronic) must be retained in the laboratory in a conspicuous location.

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| Principal Investigator: |

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| Laboratory Locations: |

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| Hazardous Materials Used: |

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| Description and recommended sequence of Procedure(s): |

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| **Hazards:** Identify potential exposures that may occur during sample preparation, and/or experimental manipulations (i.e., use of sharps, aerosol generation, mixing or sonication, etc.): |

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| **Administrative Controls:** The following administrative controls are in place to avoid exposures (i.e., training, signage, restricted entry, etc.): |

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| **Engineering Controls:** The following safety equipment must be used when carrying out this procedure. (i.e., chemical fume hood, biological safety cabinet, sealed centrifuge rotors, etc.): |

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| **Protective Equipment:** The following personal protective equipment (PPE) must be worn when performing this procedure (type of glove, eye protection, lab coat, etc.): |

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| **Additional Special Handling Procedures:** Including any transport between labs or buildings (i.e., secondary containment): |

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| **Clean- Up Procedures:** Specifics on products and procedures used to clean work areas. Include specifics on when these procedures will be performed and timing involved: |

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| **Waste Disposal Procedures:** Include specifics on collection, deactivation and transport for disposal: |

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| **Spill Response Procedures:** Procedures to follow if a spill occurs: |

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| **Injury/Exposure Response Procedures:** Steps to be taken in the event of an exposure incident: |

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| **Unattended Operations:** Portions of the experiment that may run unattended and steps taken to prevent accidental exposures: |

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| **Additional Laboratory Specific Safety Procedures:** |

I have read and understood all portions of this SOP. I agree to contact the Principal Investigator should I have any questions or plan on making any modifications to the procedures detailed here.

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Standard UNLV Laboratory Safety Practices and Procedures:

1. *Standard Laboratory Practices*
   1. Access to the laboratory is limited or restricted at the discretion of the Principal Investigator when experiments are in progress.
   2. Persons must wash their hands after they handle materials, after removing gloves, and before leaving the laboratory.
   3. Eating, drinking, smoking, handling contact lenses, and applying cosmetics are not permitted in the work areas. Food must be stored outside the work area in cabinets or refrigerators designated for this purpose only.
   4. **Mouth pipetting is prohibited**; mechanical pipetting devices should be used.
   5. Policies for the safe handling of sharps are instituted.
   6. All procedures are performed carefully to minimize the creation of splashes or aerosols.
   7. Work surfaces are cleaned on completion of work or at the end of the day and after any spill or splash.
   8. All old stock solutions and other regulated wastes are properly containerized, labeled, and segregated before disposal. Materials to be decontaminated outside of the immediate laboratory are placed in a durable, leak-proof container and closed for transport from the laboratory. Materials to be decontaminated off-site from the facility are packaged in accordance with applicable local, state, and federal regulations, before removal from the facility.
   9. An insect and rodent control program is in effect.
2. *Special Practices*
   1. Access to the laboratory is limited or restricted by the Principal Investigator (or Laboratory Director or Manager).
   2. The Principal Investigator establishes policies and procedures whereby only persons who have been advised of the potential hazards and meet specific entry requirements. (e.g., Hazard Awareness training) may enter the laboratory.
   3. An NFPA sign must be posted on the entrance to the laboratory where hazardous materials are present. Appropriate information to be posted includes the NFPA numerical hazard level, biosafety level, radiation or laser hazards, any personal protective equipment that must be worn in the laboratory, and any procedures required for exiting the laboratory.
   4. Laboratory personnel receive appropriate immunizations or tests for the agents handled or potentially present in the laboratory (e.g., hepatitis B vaccine or TB skin testing).
   5. Biosafety procedures are incorporated into standard operating procedures or in a biosafety manual if it is a Bio-Chem process adopted or prepared specifically for the laboratory by the laboratory director.
   6. Personnel are advised of special hazards and are required to read and follow instructions on practices and procedures.
   7. The Principal Investigator ensures that laboratory and support personnel receive appropriate initial and annual refresher training on the potential hazards associated with the work involved, the necessary precautions to prevent exposures, and the exposure evaluation procedures. Personnel must receive annual updates or additional training as necessary for procedural or policy changes.
   8. A high degree of precaution must always be taken with any contaminated sharp items, including needles and syringes, slides, pipettes, capillary tubes, and scalpels.
      1. Needles and syringes or other sharp instruments should be restricted in the laboratory for use only when there is no alternative, such as aspiration of fluids from laboratory diaphragm bottles. Plastic ware should be substituted for glassware whenever possible.
      2. Only needle-locking syringes or disposable syringe-needle units (i.e., needle is integral to the syringe) are used for injection or aspiration of hazardous materials. Used disposable needles must not be bent, sheared, broken, recapped, removed from disposable syringes, or otherwise manipulated by hand before disposal; rather, they must be carefully placed in conveniently located puncture-resistant containers used for sharps disposal. Non- disposable sharps must be placed in a hard-walled container for transport to a processing area for decontamination, preferably by autoclaving.
      3. Syringes which re-sheathe the needle, needleless systems, and other safety devices are used when appropriate.
      4. Broken glassware must not be handled directly by hand, but must be removed by mechanical means such as a brush and dustpan, tongs, or forceps. Containers of contaminated needles, sharp equipment, and broken glass are decontaminated before disposal, according to any local, state, or federal regulations.
   9. Laboratory equipment and work surfaces should be cleaned with an effective and appropriate disinfectant/cleaning product on a routine basis, after work with infectious materials is finished, and especially after evident spills, splashes, or other contamination by infectious materials. Contaminated equipment must be decontaminated according to any local, state, or federal regulations before it is sent for repair or maintenance or packaged for transport in accordance with applicable local, state, or federal regulations, before removal from the facility.
   10. Spills and accidents that result in overt exposures to hazardous materials are immediately reported to the Principal Investigator. Medical evaluation, surveillance, and treatment are provided as appropriate and written records are maintained.
   11. Animals not involved in the work being performed are not permitted in the lab.
3. *Safety Equipment* (Primary Barriers)
   1. Properly maintained chemical fume hood or other appropriate personal protective equipment or physical containment devices are used whenever:
      1. Procedures with a potential for creating aerosols or splashes are conducted. These may include centrifuging, grinding, blending, vigorous shaking or mixing, sonic disruption, opening containers of materials whose internal pressures may be different from ambient pressures.
      2. Strong concentrations or large volumes of chemicals are used. Such materials may be use in the open laboratory but it is recommended that most procedures be conducted in the fume hood or under a snorkel vent.
   2. Face protection (goggles, mask, face shield or other splatter guard) must be used for anticipated splashes or sprays of energetic or other hazardous materials to the face.
   3. Protective laboratory coats, gowns, smocks, or uniforms designated for lab use are worn while in the laboratory. This protective clothing is removed and left in the laboratory before leaving for non-laboratory areas (e.g., cafeteria, library, administrative offices). All protective clothing is either disposed of in the laboratory or laundered by the institution or outside vendor that is aware of the use and potential hazard; it should never be taken home by personnel.
   4. Gloves are worn when hands may contact chemicals, contaminated surfaces or equipment. Nitrile is the recommended glove type if it is compatible with the hazardous materials used. Gloves are disposed of when overtly contaminated, and removed when work with chemicals is completed or when the integrity of the glove is compromised. Disposable gloves should not be washed, reused, or used for touching "clean" surfaces (keyboards, telephones, etc.), and they should not be worn outside the lab. Alternatives to (powdered) latex gloves should be available for those allergic/sensitive to latex. Hands are to be washed following removal of gloves and exiting the laboratory.
4. *Laboratory Facilities* (Secondary Barriers)
   1. Provide lockable doors for facilities that house restricted agents (as defined in 42 CFR 72.6).
   2. Consider locating new laboratories away from public areas.
   3. Each laboratory contains a sink for handwashing.
   4. The laboratory is designed so that it can be easily cleaned. Carpets and rugs in laboratories are inappropriate.
   5. Bench tops are impervious to water and are resistant to moderate heat and the organic solvents, acids, alkalis, and chemicals used to decontaminate the work surfaces and equipment.
   6. Laboratory furniture is capable of supporting anticipated loading and uses. Spaces between benches, cabinets, and equipment are accessible for cleaning. Chairs and other furniture used in laboratory work should be covered with a non-fabric material that can be easily washed.
   7. An eyewash station is readily available.
   8. Illumination is adequate for all activities, avoiding reflections and glare that could impede vision.
   9. Facilities should consider mechanical ventilation systems that provide an inward flow of air without recirculation to spaces outside of the laboratory. If the laboratory has windows that open to the exterior, they are fitted with fly screens.