



**University of Nevada, Reno
Environmental Health and Safety Policy**

Title: Laboratory Safety Assessment Program

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POLICY:

Assessments of environmental health and safety conditions in University laboratories will be conducted on a regular and continuing basis in order to evaluate compliance with regulatory requirements and other recognized laboratory safety practices. Results of these assessments will be documented, and noted deficiencies will be resolved.

RESPONSIBLE AUTHORITY:

Vice President for Research; Environmental Health and Safety Department

SCOPE:

This policy applies to all teaching and research laboratories, and laboratory stockrooms and storerooms maintained by the University of Nevada, Reno that possess chemical, biological, or physical hazards.

BACKGROUND:

Regulatory, moral, and legal obligations require the University to implement an effective laboratory safety program. Inherent in these obligations is the expectation that recognized hazards are identified, evaluated, and managed to an acceptable level of risk. These hazards must be communicated to laboratory personnel, and personnel must be trained in safe work practices that minimize the risks associated with these hazards.

As an educational institution, UNR has a unique obligation to teach and promote safe laboratory practices and regulatory compliance, and to provide safe laboratory facilities for teaching and research. The importance of laboratory safety in academia is highlighted by reports that accident rates in academic laboratories are significantly higher than in industrial research and development laboratories with well developed laboratory safety programs in place (1, 2).

Many of the regulatory requirements, and prudent laboratory safety practices, applicable to laboratories are outlined in the UNR Chemical Hygiene Plan (CHP), and the Biological Safety Manual (BSM).

REFERENCE REGULATIONS:

- 29 CFR 1910.1450 “Occupational Exposure to Hazardous Chemicals in Laboratories”
- 29 CFR 1910.1030 “OSHA Bloodborne Pathogen Standard”
- National Institutes of Health “NIH Guidelines for Research Involving Recombinant DNA Molecules” (latest edition)
- Centers for Disease Control and Prevention/National Institutes of health, “Biosafety in Microbiological and Biomedical Laboratories” (latest edition)
- 42 CFR subpart 73 “Possession, Use and Transfer of Select Agents and Toxins”

DEFINITIONS:

Laboratory – The physical space for which a laboratory supervisor is responsible and which is used for the purpose of conducting scientific research, storage of research materials, or teaching laboratory techniques and scientific experimental procedures.

Laboratory Safety Assessment – An assessment of the laboratory with regard to regulatory compliance, UNR health and safety policy, recommended industry standards, and recognized prudent practices.

Laboratory Supervisor – Person who has been assigned responsibility for a particular laboratory space or activity. Principal investigators assume this responsibility for laboratory space assigned to them for research activities. Teaching faculty assume this responsibility for academic laboratory courses for which they are the designated course instructor.

RESPONSIBILITIES:Deans, Department Chairs, and Directors

Ensure that laboratory supervisors are aware of the responsibilities and procedures contained in this policy, provide administrative enforcement, and ensure compliance with this policy.

Promote laboratory self-inspections and departmental laboratory inspections.

Environmental Health and Safety (EH&S)

The Environmental Health and Safety Department is responsible for providing guidance to laboratory personnel with regard to regulatory compliance and implementation of safe and prudent work practices in the laboratory. EH&S performs laboratory assessments of each laboratory within the time frames discussed in the “Procedures” section, prepares a written report describing the results of each assessment, transmits this report to the laboratory supervisor, discusses solutions for the given deficiencies with the responsible laboratory supervisor, and tracks the resolutions of these deficiencies.

Laboratory Supervisors

Laboratory supervisors are responsible for ensuring a safe work environment in the laboratory. This must be demonstrated during the EH&S laboratory safety assessment through the following action items:

- Ensure that the employees and students receive all mandatory training, and implement preventative measures to control hazards and minimize risks to personnel as stated in the UNR Laboratory Supervisor Safety Responsibilities Policy.
- Evaluate laboratory operations and prepare Standard Operating Procedures (SOPs) for higher risk activities. Chapter three of the UNR Chemical Hygiene Plan further discusses SOP preparation. The SOPs must provide clear guidance on performing the particular activity safely so that risks to personnel, facilities,

- and the environment are minimized, and facilitate compliance with all government regulations.
- Ensure that all UNR laboratory safety policies are adhered to during teaching laboratory sessions. Responsibility for the supervision of individual laboratory sessions can be delegated to the qualified Teaching Assistants (TAs) or other laboratory instructors.
 - The laboratory supervisor must have available for review by EH&S during the laboratory assessment all SOPs, training records, and administrative paperwork (i.e. MOUA) required by the UNR laboratory safety program.
 - The laboratory supervisor must work with the EH&S representative to remedy deficiencies found during the lab assessment within the prescribed time frame.

Laboratory Personnel

It is the responsibility of laboratory personnel to attend training and obey all laboratory safety policies as well as prudent laboratory practices while working in the laboratory, and to report any safety, policy, or regulatory compliance problems to their supervisor. Laboratory personnel must be proactive in providing a safe work environment, must be fully aware of the hazards associated with their work, and know how to reduce the risks of these hazards. The laboratory supervisor may designate laboratory personnel to be responsible for carrying out the above mentioned supervisory responsibilities; however, the laboratory supervisor always maintains responsibility for overall safety in the laboratory. Laboratory personnel may be present during the laboratory assessment; especially if requested by the laboratory supervisor, and may be requested to present the above mentioned tasks to the EH&S representatives.

PROCEDURE:

The laboratory safety assessment process conducted by EH&S is a general review of laboratory safety, including implementation of prudent laboratory safety practices, government regulations, and recommendations and requirements stated in the UNR safety manuals. Any unsafe condition or work practice will be noted, as well as training documentation, and SOP preparation will be checked. Deficiencies will be prioritized as either “required” or “recommended.” EH&S will assign resolution dates based on the level of risk posed by the deficiencies. Depending on the condition of the laboratory, or the severity of the noted deficiencies, a follow up visit within six months may be scheduled.

Should this visit be the initial visit for a new researcher at UNR, the meeting will be an introduction to the UNR laboratory safety program, and the requirements of this program will be discussed with the investigator.

Upon the completion of the laboratory safety assessment, a memorandum will be sent to the laboratory supervisor and copied to other participating parties, and any other persons requested by the supervisor (Department Chair, etc.). This memo will itemize all deficiencies found in the laboratory. A completion time for each deficiency will be included in the memo.

The Environmental Health and Safety representative will follow-up to determine if the deficiencies have been resolved. As described above, the follow-up time will depend on the type of deficiency noted. A memorandum will be sent to the laboratory supervisor addressing whether the deficiencies were resolved. Laboratory supervisors that are tardy in addressing deficiencies will be referred to the Chair of their respective departments, and/or the Dean of their respective College. Should a laboratory supervisor feel that a given deficiency is not valid; the laboratory safety committee can be consulted as to whether or not the cited deficiency is valid.

All records with regard to each laboratory assessment will be maintained by EH&S for at least three years.

All the laboratories at the University of Nevada, Reno will be assessed by EH&S yearly as resources permit. Depending on the amount and severity of deficiencies, follow-up may be done via phone or email, a “pop in” visit, or a scheduled second laboratory assessment.

Laboratory supervisors are required to internally monitor laboratory safety conditions by conducting documented laboratory safety self-inspections at least annually. Such self-inspections can be conducted by individuals or teams of laboratory workers, including undergraduate and graduate students, postdoctoral associates, and teaching assistants. Laboratory supervisors, instructors, and stockroom supervisors are encouraged to tailor assessment checklists to suit conditions in their own facilities. Refer to the appendix for a sample checklist.

REFERENCES:

1. The Laboratory Safety Institute, LSI web site: <http://www.labsafety.org>.
2. Furr, Keith A. (ed.). 1995. *CRC Handbook of Laboratory Safety*, 4th Edition, pg. 218, Boca Raton: CRC Press.

RELATED DOCUMENTS:

- University of Nevada, Reno Chemical Hygiene Plan, latest edition
- University of Nevada, Reno Biological Safety Manual, latest edition
- University of Nevada, Reno Bloodborne Pathogen Exposure Control Plan

APPENDIX:

Laboratory Assessment Checklist

Appendix - Laboratory Assessment Checklist

Date: _____ **Inspected By:** _____
Building: _____ **Room Number:** _____
Lab Supervisor/PI: _____ **Department:** _____

Yes No NA

LABORATORY MANAGEMENT

- | | | | |
|---|-----|-----|-----|
| 1. Laboratory personnel are familiar with, and know how to access, the Chemical Hygiene Plan and Biosafety Manual, as applicable. | ___ | ___ | ___ |
| 2. Written SOPs have been developed to cover specific laboratory operations. | ___ | ___ | ___ |
| 3. Laboratory-specific safety training is provided and documented. | ___ | ___ | ___ |
| 4. MSDSs and other hazard information are available and personnel know how to access them. | ___ | ___ | ___ |
| 5. A current inventory of chemical and biological hazards is readily available. | ___ | ___ | ___ |
| 6. An approval or review process is used prior to the introduction of significant new risks to the laboratory. | ___ | ___ | ___ |

GENERAL LABORATORY SAFETY

- | | | | |
|---|-----|-----|-----|
| 1. Lab emergency contact information is posted at lab entrance. | ___ | ___ | ___ |
| 2. Warning signs are posted to designate specific hazards. | ___ | ___ | ___ |
| 3. Aisles are clear and without tripping hazards. | ___ | ___ | ___ |
| 4. All exits are free and unobstructed. | ___ | ___ | ___ |
| 5. Appropriate safety eyewear, gloves, lab coats and other personal protective equipment is available and used. | ___ | ___ | ___ |

CHEMICAL LABELING AND STORAGE

- | | | | |
|--|-----|-----|-----|
| 1. Chemical containers are labeled with the content identity and hazard warnings. | ___ | ___ | ___ |
| 2. Chemicals are segregated by major hazard categories and incompatibles are separated. | ___ | ___ | ___ |
| 3. Peroxide forming chemicals are dated and tested at least annually. | ___ | ___ | ___ |
| 4. Flammable and combustible liquids storage volumes are minimized and stored in flammable storage cabinets or safety cans. | ___ | ___ | ___ |
| 5. Compressed gas cylinders are properly secured. | ___ | ___ | ___ |
| 6. Compressed fuel gases are separated from oxidizing gases. | ___ | ___ | ___ |
| 7. Flammable and toxic gases are stored in a well ventilated area, with highly toxic gases stored in a ventilated enclosure. | ___ | ___ | ___ |

Yes No NA

SAFETY EQUIPMENT

- | | | | |
|---|-----|-----|-----|
| 1. Operable eyewash and emergency shower are unobstructed.
Eyewash, shower inspection date _____ | ___ | ___ | ___ |
| 2. Fire extinguishers are available, unobstructed, and operational. | ___ | ___ | ___ |
| 4. Chemical fume hoods are available, operational, and annual inspection is current. | ___ | ___ | ___ |
| 5. Biological safety cabinets are available, operational, and annual inspection is current. | ___ | ___ | ___ |

WASTE

- | | | | |
|--|-----|-----|-----|
| 1. Chemical waste containers are labeled and lids are closed. | ___ | ___ | ___ |
| 2. Chemical waste is segregated by hazard class. | ___ | ___ | ___ |
| 3. Storage of waste is minimized and full waste containers are not allowed to accumulate. | ___ | ___ | ___ |
| 4. Biohazardous waste containers display the universal biohazard warning label. | ___ | ___ | ___ |
| 5. Sharps are collected in puncture-proof, leak-proof containers displaying the biohazard warning label. | ___ | ___ | ___ |

ELECTRICAL SAFETY

- | | | | |
|--|-----|-----|-----|
| 1. Extension cords are not used as permanent wiring. | ___ | ___ | ___ |
| 2. Electrical cords are not frayed or damaged. | ___ | ___ | ___ |
| 3. Electrical cords contain a ground wire (three-prong plug). | ___ | ___ | ___ |
| 4. High voltages are shielded and adequately marked and labeled. | ___ | ___ | ___ |

EMERGENCY RESPONSE

- | | | | |
|--|-----|-----|-----|
| 1. Personnel have been trained to properly respond to spill, fire, and other incident scenarios. | ___ | ___ | ___ |
| 2. Chemical spill cleanup materials are available. | ___ | ___ | ___ |
| 3. Biological disinfectant and spill cleanup materials are available. | ___ | ___ | ___ |
| 4. First aid kit is available and appropriately stocked. | ___ | ___ | ___ |
| 5. Emergency phone numbers are posted by phone. | ___ | ___ | ___ |

Comments:
