

Laboratory Safety Policy

ROWAN UNIVERSITY POLICY

Title: *Laboratory Safety*

Subject: *Research*

Policy No: *Res: 2015:05*

Applies: *University-Wide*

Issuing Authority: *President*

Responsible Officer: *Vice President for Research*

Adopted: *10/20/2015*

Last Revision:

Last Reviewed:

I. PURPOSE

The purpose of this policy is to ensure a healthy and safe working place and safe work practices for its faculty, staff, students and visitors at the University's laboratories by informing and training the employees specifically about physical, chemical, microbiological and other laboratory hazards.

II. ACCOUNTABILITY

Under the direction of the President, the Vice President for Research shall implement and ensure compliance with this policy.

III. APPLICABILITY

This policy applies to all laboratories being used for research or clinical purposes under the auspices of the University by all Schools/Units/Departments located in all Rowan University- owned, leased or operated facilities.

IV. REFERENCES

Laboratory safety regulations and safety manuals applicable to Rowan University are listed in Attachment 1.

V. DEFINITIONS

Key definitions and terms are included in Attachment 2.

VI. POLICY

1. Rowan University is committed to promoting a healthy and safe working place and safe work practices for its faculty, staff, students and visitors. Rowan University's laboratory safety program depends on everyone's participation and cooperation and their commitment to perform their laboratory functions in a way that is safe for themselves and their coworkers. Failure to follow safety precautions not only

exposes the individual to risks, but often compromises the safety of fellow workers and the surrounding community, and may result in injury, loss and/or damage.

2. The laboratory safety policy at Rowan University is committed to meet all the requirements of State and federal laboratory safety standards, which are intended to safely limit laboratory workers' exposure to hazardous substances.
 - a. Laboratory workers must not be exposed to substances in excess of the permissible exposure limits (PEL) specified in Occupational Safety and Health Administration (OSHA) rule 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances.
 - b. Likewise, the Toxic Substances Control Act administered by the U.S. Environmental Protection Agency requires that prudent laboratory practices be developed and documented for research involving new chemicals that have not had their health and environmental hazards fully characterized.
 - c. OSHA's Occupational Exposure to hazardous Chemicals in laboratories standard (29 CFR 1910.1450), referred to as the Laboratory Standard, cover the laboratories where chemical manipulation generally involves small amounts of a limited variety of chemicals. This standard applies to all hazardous chemical meeting the definition of "laboratory use" and having the potential for worker exposure.
 - d. The OSHA (29 CFR 1910.1200) and New Jersey Worker and Community Right to Know standards (N.J.A.C. 8:59) require communicating information about hazardous materials used, produced or stored at work sites within the Commonwealth.
 - e. These laws and Acts provide minimum standards that employees must adhere to and responsibilities of the employer for informing employees about occupational-health hazards in the work place.
3. Over the past two decades, *Biosafety in Microbiological and Biomedical Laboratories* (BMBL) has become the code of practice for biosafety—the discipline addressing the safe handling and containment of infectious microorganisms and hazardous biological materials. The principles of biosafety introduced in 1984 in the first edition of BMBL1 and carried through in the fifth edition remain steadfast. These principles are containment and risk assessment.
 - a. The fundamentals of containment include the microbiological practices, safety equipment, and facility safeguards that protect laboratory workers, the environment, and the public from exposure to infectious microorganisms that are handled and stored in the laboratory.
 - b. Risk assessment is the process that enables the appropriate selection of microbiological practices, safety equipment, and facility safeguards that can prevent laboratory-associated infections.
 - c. The purpose of periodic updates of BMBL is to refine guidance based on new knowledge and experiences and to address contemporary issues that present new risks that confront laboratory workers and the public health. In this way the code of practice will continue to serve the microbiological and biomedical community as a relevant and valuable authoritative reference.
4. The Laboratory Safety Policy requires procedures for the use of personal protective equipment, practices that minimize the risk of injury or illness and ensures that employees have the training, information, support they need to work safely in the laboratory. It also recommends a wide spectrum of safety precautions ranging from daily housekeeping responsibilities to procedures to follow in emergency situations addressing specific issues related to general laboratory practices, biological safety, chemical safety, radiation safety and emergency procedures.

VII. COMPLIANCE WITH ENVIRONMENTAL, HEALTH AND SAFETY STANDARDS AND POLICIES

1. The president of Rowan University has ultimate authority for University's compliance with environmental, health and safety standards and policies at all facilities under university control. The president has authorized the department of Environmental Health and Safety (EH&S) and Office of Research to coordinate the University's environmental health and safety programs and to monitor the University's compliance with appropriate standards and policies.
2. Implementation of laboratory safety standards at the University is a shared responsibility of employees, supervisors, department heads, deans, senior administrative staff and Environmental Health and Safety (EH&S). See Attachment 3.

VIII. LABORATORY SAFETY PLAN

1. Rowan University provides a comprehensive health and safety program for all University laboratories which is described in the Laboratory Safety Plan. The program will be coordinated with other University health and safety policies, including those outlined in Section II of this Policy to ensure comprehensive, customized and non-redundant coverage.
2. Pursuant to this program, minimum laboratory safety standards, which comply with applicable Federal and State regulations and guidelines, are established in a written Laboratory Safety Plan for each School/Unit/Department.
3. The exact requirements of such plans are decided by EH&S, in conjunction with representatives from each School/Unit/Department. The Laboratory Safety Plan contains minimum safety standards which apply to all University laboratories. In addition to the Laboratory Safety Plan, the Select Agents Program is described in this policy.
4. The required components of a laboratory safety plan are outlined in Attachment 5.

IX. ATTACHMENTS

1. Attachment 1 - References and Safety Manuals
2. Attachment 2 - Key Definitions and Terms
3. Attachment 3 - Compliance with Environmental, Health And Safety Standards and Policies
4. Attachment 4 - Required Components of a Laboratory Safety Plan
5. Attachment 5 - Laboratory Safety Plans - Minimum Safety Standards

ATTACHMENT 1

REFERENCES AND SAFETY MANUALS

1. The Public Employees Occupational Safety and Health Act, (PEOSHA) 29 CFR 1910-1450, as implemented by the New Jersey Department of Labor, NJAC 12:100-4.2
2. The NIH Guidelines for Research Involving Recombinant DNA Molecules http://oba.od.nih.gov/oba/rac/Guidelines/NIH_Guidelines.htm.
3. The Biosafety guidelines set out in NIH's publication "Biosafety in Microbiological and Biomedical Laboratories" <http://www.cdc.gov/biosafety/publications/bmbl5/BMBL.pdf>.
4. Federal requirements for Facilities Possession, Use, and Transfer of Select Agents and Toxins, 42 CFR Part 73; Code of Federal Regulations, Title 42, Section, Part 72, Interstate Shipment of Etiologic Agents, Additional Requirements for Facilities Transferring or Receiving Select Agents. <http://www.cdc.gov/phpr/dsat.htm>.
5. USA Patriot Act 2001, Public Law 107–56. <http://www.gpo.gov/fdsys/pkg/PLAW-107pub156/html/PLAW-107pub156.htm>.
6. Public Health Security and Bioterrorism Preparedness and Response Act of 2002, Public Law 107–188, (g) Guidelines of the Center for Disease Control.
7. Department of Labor. Occupational Health & Safety. Code of Federal Regulations Title 29 - Labor; Subtitle B – Regulations Relating to Labor, Chapter XVII – Occupational Safety and Health Administration (DoL), part 1910 – Occupational Health and Safety Standards.
8. Energy Restructuring Act of 1974, Nuclear Regulatory Commission Standards and Regulations. Department of Energy. Code of Federal Regulations Title 10 – Energy; Part 20 – Standards for Protection Against Radiation.
9. Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards, Updated Edition (2011) Board on Chemical Sciences and Technology. National Research Council.

The following Rowan University Safety Manuals provide guidance for safe laboratory practices

1. General Laboratory Safety manual.
2. Biosafety Manual

3. Chemical Hygiene Plan
4. Blood borne pathogen Manual
5. NJ Workers and Community Right-To-Know

ATTACHMENT 2

KEY DEFINITIONS AND TERMS

1. **Laboratory** - a facility where relatively small quantities of hazardous chemicals or biological agents are used on a non-production basis for research or clinical purposes.
2. **Laboratory Personnel** - employees, students and other persons conducting research and clinical activities in Rowan laboratories, regardless of Rowan University employment status.
3. **Particularly Hazardous Substance** - any substance which meets the criteria defined in the PEOSH Laboratory Safety Standard of "select carcinogen," reproductive toxin, or substance with a high degree of acute toxicity (rat oral LD50 less than 50 mg/kg).
4. **Responsible Investigator** – Rowan University faculty member who has been assigned or sharing laboratory space.
5. **Responsible Facility Official (RFO)** - ensures management oversight of the transfer of select agents, consistent with the CDC Guidelines.
6. **Recombinant DNA and Synthetic Nucleic Acid Molecules** - Consistent with the NIH Guidelines, recombinant DNA molecules are either: (i) molecules that are constructed outside living cells by joining natural or synthetic DNA segments to DNA molecules that can replicate in a living cell; or (ii) molecules that result from the replication of those described in (i) above.
7. **Select Agent** - Select agents are specific pathogens and toxins as defined by Title 42 CFR Parts 73.4 and 73.5. Registration with the Secretary of the Department of Health and Human Services and approval by the Institutional Biosafety Committee is required before possession, use, and transfer of select agents and Toxins.

ATTACHMENT 3

COMPLIANCE WITH ENVIRONMENTAL, HEALTH AND SAFETY

STANDARDS AND POLICIES

Implementation of laboratory safety standards at the University is a shared responsibility of employees, supervisors, department heads, deans, senior administrative staff and Environmental Health and Safety (EH&S).

1. ACCOUNTABILITY

- a. The president of Rowan University has ultimate authority for University's compliance with environmental, health and safety standards and policies at all facilities under university control. The president has authorized the department of Environmental Health and Safety (EH&S) and Office of Research to coordinate the University's environmental health and safety programs and to monitor the University's compliance with appropriate standards and policies.
- b. Administrators, who supervise academic and administrative units of the University (colleges, schools, departments, institutes, centers, etc.) as well as principal investigators of research programs, and supervisors of academic programs such as department heads, are responsible for compliance with University environmental health and safety standards and policies in the departments under their authority. In carrying out their responsibilities for overall compliance, these administrations and supervisors, or their representatives, will consult as needed with EH&S regarding compliance with university, environmental, health, and safety standards.

- c. Administrators of all academic and administrative units of the University have the authority to see that their department members and affiliates receive compliance training regarding potential hazards associated with each person's employment with Rowan University. These administrators will also assist EH&S periodically to update employee compliance training records.-
 - d. Principal investigators and supervisors in consultation with EH&S are individually responsible for assessing the potential hazards associated with the tasks of the participants in the programs under their authority, and also for determining their ability to perform those tasks safely. Therefore, each principal investigator or supervisor is responsible for making sure that the participants in their programs are adequately trained, according to EH&S-established requirements and training modules (see points H and I) and institutionally-approved standard operating procedures for laboratory activities individuals perform are available for training laboratory personnel. If participants' competence to perform assigned tasks safely is insufficient, as well as when a new job duty is assigned, or when new equipment or processes are introduced, they must be provided with compliance training. EH&S shall track and maintain training records.
 - e. Under the Directions of Office of Research, University will establish a Laboratory Safety Committee to address issues of laboratory safety and implementation of the Laboratory Safety Program as described in this policy. The Committee will include Responsible Investigators, clinical laboratory representatives, representatives from the School/Unit/Department, Office of Research, graduate students and EH&S.
 - f. Office of Research will establish Institutional Biosafety Committee whose composition meets the requirements of the NIH "Guidelines for Research Involving Recombinant DNA and Synthetic DNA Molecules" to be established to review, approve and oversee protocols involving recombinant DNA molecules, select agents, and pathogenic microorganisms, mutagenic, carcinogenic, genotoxic and teratogenic agents or potentially infectious materials requiring work at the Biological Safety Level 2 or greater. However, the Institutional Biosafety Committee shall "catalog" a list of all Biological Safety Level 1 activities.
 - g. Under the authority of the University through technical assistance and oversight, EH&S and Office of Research will direct the campus toward compliance with environmental health & safety practices that are required by laws or regulations.
 - h. EH&S in collaboration with Office of Research is responsible for providing resources for Colleges, Schools and Departments in the development of standard operating procedures (SOPs) by identifying potentially hazardous operations and risk management strategies, for acquiring/developing training modules and providing safety training compliant with applicable regulations, and for conducting periodic safety audits towards achieving safe work practices. EHS will also provide specialized or dedicated operational services to Colleges, Schools and Departments.
 - i. EH&S in collaboration with Office of Research will develop and provide its faculty and students laboratory safety manuals. These are a collection of resources for individuals working in research and teaching laboratories. It includes a compilation of safe work procedures, chemical, biological and radioactive material safety and procedural information and laboratory equipment safety and use information. Departments, Investigators and individuals preparing standard operating procedures are directed to utilize these manuals to develop laboratory specific SOPs.
 - j. EH&S shall have the authority to audit and recommend appropriate corrective or planning strategies, including the development of safety programs.
 - k. EH&S will consult with external agencies or regulatory bodies as necessary and appropriate, on behalf of the University.
 - l. EH&S is authorized to survey and monitor all areas of the campus to assess environmental risks, life safety exposures, and training requirements, and to recommend improvements.
 - m. When necessary, EH&S will submit written reports identifying hazards and recommending corrective action. In the presence of severe hazards or in the case of non-compliance with local, state, and federal regulations or university policies, improvements will be required.
 - n. EH&S's director or designee has the authority to issue, following appropriate investigation, noncompliance citations to the appropriate individuals and administrators for lack of improvements in response to a formal report or recommendation.
2. Copies of any formal reports and noncompliance citations associated with unsafe work practices will be provided to the individual, his or her immediate supervisor, and to other administrators with

responsibility for the activity involved. Performance evaluations of all employees will include review of noncompliance citations, as they relate to their job duties.

3. EH&S' director or designee has the authority to immediately suspend or restrict any operation that
 - a. presents a serious hazard (real or potential) associated with the health, life, safety, or welfare of campus personnel or the public, or
 - b. is found to be in violation of this policy and
 - c. is detrimental to the environment.
4. Assistance from the relevant administrator, principal investigator or supervisor will be requested while making determinations listed above.
5. Cessation of an Activity
 - a. In the event that EH&S orders cessation of an activity, EH&S will immediately communicate the problem(s) and violation(s) to the individual, to his or her direct supervisor, to other administrators with responsibility for the department and the Dean of College or School involved and the appropriate regulatory agency when required by law.
 - b. The activity may be resumed only with the approval of the EH&S director or designee in consultation with the provost or vice president for research as appropriate and the relevant administrators or supervisors.
6. All questions related to laboratory safety should be directed to Environmental Health and Safety, 856 256-0000 or Office of Research, 856 256-0000.

ATTACHMENT 4

REQUIRED COMPONENTS OF A LABORATORY SAFETY PLAN

The required components of a laboratory safety plan include:

1. Establishing SOPs:
 - a. Written procedures must be developed about common topics, such as working alone, vacating laboratories, conducting laboratory safety audits, storing chemicals, using refrigerators and cold rooms, allowing visitors in laboratories, and permitting unattended operations. Copies of such procedures will be available to all laboratory personnel, to EH&S and will be used in employee training.
2. Controlling Exposure:
 - a. Preventative measures must be designed to ensure that exposure of employees to chemical substances is minimized and kept within professionally recognized standards. Such measures will include an appropriate combination of engineering controls, work practices and personal protective equipment.
3. Training:
 - a. All employees shall receive initial and subsequent periodic instruction in those safety topics specifically described in the Laboratory Safety Plan. Training will be provided by EH&S and training records will be maintained by EH&S.
4. Requiring Prior Approval:
 - a. A prior approval process must be established for those activities, specified in the plan, which may pose an increased risk to laboratory personnel and others who may be present. Examples of activities which may require prior approval include working with a particularly hazardous chemical, or working alone during off-hours such as evenings, night and holidays.
5. Ensuring Medical Consultation:
 - a. Medical consultation attention must be available when laboratory personnel develop symptoms associated with exposure to hazardous chemicals, and/or when air monitoring indicates that laboratory personnel have received chemical exposures over regulatory limits, and/or when a spill or other incident results in an acute exposure.
6. Personnel Working with Particularly Hazardous Substances:
 - a. Special procedures must be established which set out requirements governing the use of particularly hazardous chemicals, as defined by this policy.
7. Establishing Emergency Procedures and Equipment:

- a. Written emergency procedures for fires, spills, exposures and other likely laboratory accidents must be written and prominently displayed. Emergency equipment such as fire extinguishers, safety showers, and eyewashes shall be readily accessible and kept in usable condition. EH&S will provide assistance in maintaining emergency equipment.
- 8. Maintaining Properly Functioning Protective Equipment:
 - a. Protective equipment, such as chemical fume hoods, safety showers, eyewashes, and biological safety cabinets shall be maintained and tested in accordance with any and all applicable regulations and with the manufacturer's recommendations.
 - b. The Laboratory Safety Plan shall clearly specify who will be responsible for properly maintaining this equipment and for documenting in writing such maintenance.
- 9. Monitoring Exposure:
 - a. Laboratory personnel who, either have been exposed or who exhibit symptoms consistent with exposure, shall be regularly assessed and monitored by Environmental & Occupational Health Support Services (EOHSS) in accordance with applicable regulations. Whenever possible, laboratory personnel will be notified of the results of monitoring within three (3) working days of the receipt of results.
 - b. The PEOSH mandated maximum allowable time of fifteen (15) days between receipt of the results and notification, shall at no time be exceeded.
- 10. Keeping Records:
 - a. Records of the Laboratory Safety will be maintained in the offices of EH&S. Records include training records, monitoring records, investigation and analysis and actions per university record keeping policy.

ATTACHMENT 5

LABORATORY SAFETY PLANS - MINIMUM SAFETY STANDARDS

The Laboratory Safety Plan contains minimum safety standards which apply to all University laboratories. In addition to the Laboratory Safety Plan, the Select Agents Program is described in this policy.

1. Requirements

- a. Establishing a Laboratory Safety Plan:
 - i. EH&S in collaboration with Office of Research shall establish a Laboratory Safety Plan for each School/Unit/Department. Each plan shall include all of the required components listed in this Policy Section VI and made available to all laboratory personnel who work in laboratories and/or who provide support services that involve laboratories.
 - ii. If desired, Schools/Units/Departments may use an alternative plan as long as it includes all of the components of this Policy Section VI as well as the Rowan University's Minimum Laboratory Safety standards.
 - iii. All such plans, including alternative plans, must be reviewed and updated annually by the School/Unit/Department, in conjunction with EH&S to reflect any pertinent changes
- b. Select Agent Program
 - i. Select Agent Toxins are certain toxins of biological origin which are to subject to stringent regulatory requirements under 42 CFR 73 for their potential to pose a severe threat to public, animal or plant health or to animal or plant products. These toxins, along with specified biological agents (viruses, bacteria, fungi), fall under the oversight of the National Select Agents Registry (NSAR) Program <http://www.selectagents.gov/Select%20Agents%20and%20Toxins.html>. The Select Agents Program (SAP) at Rowan University ensures compliance with all applicable federal regulations (7 CFR Part 331, 9 CFR Part 121, and 42 CFR part 73) as well as the NIH Guidelines and the standards set forth in Biosafety in Microbiological and Biomedical Laboratories 5th ed.
 - ii. Possession of any quantity of select agents, or nucleic acids that encode infectious /replication competent forms of the listed viruses, or functional forms of any of the listed toxins requires registration in the program. To register the use of select agents, users must contact EH&S.

- iii. This policy requires training, safe handling, use, and storage procedures. Effective tracking (receiving, shipping, and inventory control) and security of select agents and toxins and compliance with federal regulations (42 CFR Part 73).
 - iv. A Principal Investigator (PI) and a Responsible Official (RO) ensure compliance with all aspects of biosafety, biosecurity and incident response. Researchers that handle the select agents or enter areas where they are stored must be Security Risk Assessment (SRA) approved, medically cleared, trained and have their competency assessed.
- c. Physical Plan
- i. EH&S, in conjunction with Physical Plant, Facilities Planning and Construction (FP&C) and the Laboratory Safety Committee shall develop Minimum Laboratory Safety Design Guidelines for new/renovated laboratories.
 - ii. The architect/engineer affiliated with the project must bring potential departures from the guidelines to the attention of the Project Manager who shall ensure that it is brought to the attention of Physical Plant, EH&S and the end user and discussed at a planning meeting before being accepted. FP&C shall provide the Architect/Engineer with a copy of the guidelines in the beginning of the planning stage and shall advise them of the above requirement.