CHAPTER 17
LABORATORY SAFETY

A. References

a. EH&S Laboratory Safety
b. EH&S Laboratory Signage Program
c. EH&S Laboratory Safety Manual
d. EH&S Chemical Safety
e. EH&S Laser Safety
f. EH&S Nanotechnology
g. WSU Safety Policies and Procedures Manual – Laboratory Safety
h. WAC 296-828 Hazardous Chemicals in Laboratories
i. WAC 296-901 Hazard Communication

B. Scope

Personnel shall adhere to the requirements of this chapter, the rules, policies and procedures referenced above, and make every effort to minimize exposure to chemicals and other potential health and safety hazards in the laboratory facilities.

C. Responsibilities

DEPARTMENT CHAIR/DIRECTOR
The department chair or director:

- Is responsible for ensuring that this policy is implemented.
- Is responsible for the safety of all employees, students, and visitors in his or her areas of control.
- Ensures that the department maintains a file of required authorizations to use restricted or regulated hazardous chemicals.
- Reviews all Incident Reports.
- Ensures that appropriate corrections are made.

PRINCIPAL INVESTIGATOR/FACULTY/SUPERVISOR
The principal investigator, faculty member, or laboratory supervisor:

- Is the laboratory safety officer for their laboratory(ies).
- Prepares and implements a laboratory safety plan keyed to the specific needs of each research and teaching activity under his or her direction.
- Enforces University laboratory safety rules and establishes specific procedures for the laboratory.
- Trains employees and students in safety procedures.
- Corrects improper work practices.
- Identifies defective environmental conditions which could result in personal injury.
- Develops a positive attitude among employees toward accident prevention.

- Reviews and evaluates the effectiveness of the Laboratory Safety plan at least annually, and updates as necessary.
- Consults with the EH&S Lab Safety Officer with questions, as needed, to ensure correct and adequate development of the plan.
- Reports and investigates all accidental injuries and work-related illnesses within 24 hours using the Incident Report (see SPPM 2.24).
  Completes Supervisor's Accident Investigation Reports, if applicable (see SPPM 2.26).
- Initiates corrective action to ensure maximum safety for his or her employees.

EMPLOYEE/STUDENT
The employee or student:

- Knows and complies with safety guidelines and policies required for the task assigned.
- Reports unsafe conditions to the principal investigator, faculty member, immediate supervisor, or EH&S.
- Reports accidents, injuries, and occupational illnesses to immediate supervisor for evaluation and possible investigation.
  a. Utilizes fume hoods, laboratory safety devices, and personal protective equipment properly as trained (EH&S Personal Protective Equipment)

EH&S LABORATORY SAFETY OFFICER
The laboratory safety officer:

- Promotes laboratory health and safety programs.
- Assists supervisors with implementing laboratory safety policies and procedures.
- Records, evaluates, and reports laboratory accidents and laboratory incidents.
- Develops and maintains training resources and provides laboratory safety training.

D. **Entering Laboratories and Shops**

CAHNRS personnel, students and visitors can potentially be exposed to hazards when entering research laboratories and shops. Any person entering the laboratory or shop must review signage posted at entrances for hazard information and the personal protective equipment (PPE) required to enter.

E. **Laboratory Signage**

Laboratory signage identifies laboratory hazards, PPE requirements and emergency contact information. PIs or their designee update the laboratory signage annually or when hazards change at https://ehs.wsu.edu/laboratory-safety/laboratory-signage-program/.

The laboratory signage program is intended to:

a. Protect human health and safety;
b. Protect research;
c. Identify the PPE and/or other controls necessary to enter the laboratory; and
d. Provide a flexible program that communicates the necessary information for diverse laboratory use that can be updated as hazards change.

F. Operating Procedures for Performing Work and Other Services in Laboratories and Shops

Anyone entering WSU laboratories where chemicals, radioactive materials, biohazard materials and lasers are used for education and research must follow proper safety precautions. All CAHNRS personnel shall be cognizant of laboratory hazards when entering laboratories to perform work. The following information focuses on correct procedures for working safely in laboratories.

a. **Chemicals**: Laboratory chemicals shall be labeled per WAC 296-901 Hazard Communication. CAHNRS personnel entering laboratories must understand label elements including pictograms and hazard statements, and the hazards they represent. CAHNRS employees shall consult SDS or contact their supervisor whenever additional information is necessary.

   Employees should never eat or drink in a laboratory with chemicals. They should always wear gloves when touching any chemical containers or storage areas to avoid potential injury from chemical residue that may be present. If the chemical container appears unsafe to touch (for example peroxides are observed), the container should be left alone, laboratory personnel should be informed not to touch it, and EH&S Environmental Services should be informed immediately.

   CAHNRS personnel working in laboratories shall have a fundamental understanding of chemical hazards including flammability, corrosivity, reactivity and toxicity, and physical hazards such as extreme temperatures and pressures. The minimum PPE identified on laboratory signage shall be worn when entering the laboratory. However, upon entering the following are encountered, leave and contact the Occupational Health and Safety or Environmental Services Program Supervisor or Laboratory Safety Officer for additional instruction:

   - Bulging chemical containers or containers (not actively heated) that are warm/hot to touch;
   - Old isopropyl ether containers or isopropyl ether containers where crystals are observed or peroxide forming chemicals under distillation where crystals have formed e.g. vinyl ether, tetrahydrofuran
   - Concerning odors;
   - Irritation to eyes, skin or mucous membranes;

- Leaking gas cylinders or gas delivery systems;
- Fuming or runaway chemical reactions;
- Malfunctioning equipment e.g. electric arcing, unbalanced centrifuge, leaking glovebox;
- Poor housekeeping where chemical carcinogens are in use; or,
- Other concerning conditions or activities.

See also this APP's Hazard Communication, Spill Response, and Waste Collection chapters.

b. **Radioactive Materials**: Radioactive materials used in laboratories will be clearly marked with the radiation symbol. CAHNRS personnel should not handle chemicals or other materials marked with this symbol unless trained and instructed to do so by their supervisor. Never eat, drink, or chew gum in laboratories using radioactive materials. If you observe what you think may be improperly managed radioactive materials contact the Radiation Safety Office.

c. **Biohazard Materials**: Biohazard materials include organisms that could be harmful to your health. Any biohazard material should be clearly marked with the biohazard symbol. Unless specifically directed by their supervisor, CAHNRS personnel should not handle laboratory materials identified as biohazards. Never eat or drink in a laboratory using biohazardous materials. Do not attempt to enter a Biological Safety Level 3 (BSL-3) laboratory unless explicitly authorized. BSL-3 laboratories have unique entry protocols. If you observe what you think may be improperly managed biohazardous materials, contact the Biosafety Office.

d. **Vivaria**: Vivaria keep and/or raise research animals and often require specialized entry and/or quarantine protocols such as stepping on mats to sterilize your shoes. In some cases you may not enter a vivarium if you have been to another building's vivarium that same day. Contact vivarium personnel (such as the vivarium manager) before entering.

e. **Laser Laboratories**: WSU policy requires laboratories using lasers to be clearly marked both on the laboratory signage and other required signage indicating a laser may be in use, the laser's power and whether it is currently operating. Lasers can cause serious eye or skin damage. Specialized protective eyewear is required to enter a laboratory with an active Class 3B or 4 laser. Access to laboratories with active Class 3B and 4 lasers *should* be restricted by laboratory personnel.

f. **Sharps**: WSU policy requires laboratory users to dispose sharps (syringes, cannulas, razor blades, etc.) in approved puncture resistant containers and not overfill sharps containers.

g. **Glass**: WSU policy requires laboratory users to place glass waste in designated containers apart from regular trash. These containers must be puncture resistant (cardboard or plastic), lined, and clearly marked.

h. **Mechanical Hazards:** Please reference this APP's PPE, Machine and Tool Safety and Lock-Out Tag-Out chapters.

G. **Employee Information and Training**

Employees expected to enter laboratories will receive training on general laboratory safety principles and practices upon initial employment. Training will include Hazardous Chemicals in Laboratories WAC 296-828 and Hazard Communication WAC 296-901. Training will be provided by the Laboratory Safety Program Manager or another person knowledgeable and competent in the topic (supervisor is responsible for determining the competent person for providing this training in their unit). Employee training is to be documented by recording the employee names, the date and content of the training.