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. WAC 296-828 Hazardous Chemicals in Laboratories
f. WAC 296-901 Hazard Communication

B. Scope

A variety of personnel may enter WSU Tri-Cities laboratories to perform research, laboratory surveys, inspections, cleaning, service, and repair. 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

Directors

The chair or director of departments which operate campus laboratories:

- Must ensure that this policy is implemented.
- Is responsible for the safety of all employees, students, and visitors in his or her areas of control.
- Must review the hazard control methods used by supervisors in all laboratories under their control.
- Ensures the department maintains a file of required authorizations to use restricted or regulated hazardous chemicals.
- Reviews incident and inspection reports related to laboratories in their area, and
- Ensures that appropriate corrections are made.

Supervisors

The supervisor:

- Prepares and implements procedures for employees entering research, clinical or teaching laboratories under their direction.
- Trains employees in laboratory safety procedures.
- Corrects improper work practices.
- Develops a positive attitude among employees toward accident prevention.
- Reviews and evaluates the effectiveness of laboratory safety procedures and controls at least annually, and updates as necessary.
- Consults EHS with questions as needed to ensure correct and adequate development of laboratory safety policies and procedures.
- Reports and investigates all accidental injuries and work-related illnesses within 24 hours using the *Incident Report* (see 2.24). Completes *Supervisor's Accident Investigation Reports*, if applicable. See 2.26.

- Initiates corrective action to ensure safety for employees.

Employees
The employee:

- Knows and adheres to safety guidelines and policies required for the task assigned.
- Reports unsafe conditions to the principal investigator, faculty member, and immediate supervisor.
- Reports accidents, injuries, and occupational illnesses to immediate supervisor for evaluation and possible investigation.
- Utilizes fume hoods, laboratory safety devices, and personal protective equipment properly as trained. See also 3.10.
- Performs laboratory safety tasks and assumes responsibilities delegated by their supervisor.

EHS

- Promotes laboratory health and safety programs.
- Assists Principal Investigators and 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

Campus personnel can potentially be exposed to hazards when entering research laboratories and shops. Employees must review laboratory signage posted at laboratory entrances (See Section E) for hazard information and the personal protective equipment (PPE) required to enter the laboratory. At a minimum, personnel shall wear a laboratory coat or other nonflammable clothing including long pants, closed toed shoes and eye protection into laboratories and have nitrile gloves available. Employees are encouraged to engage laboratory personnel as necessary to obtain additional hazard information.

Non-research personnel working in laboratories and shops shall limit contact with laboratory materials when possible. It may be necessary to manipulate some laboratory equipment or materials such as activating an eyewash or moving chemical containers to view labeling or other containers to support their activities. Placing work materials e.g. notepads, clipboards on laboratory surfaces may chemically or otherwise contaminate those items and is to be avoided. See Section E for more information.

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.

The laboratory signage program is intended to:

a. Protect human health and safety;

b. Assist with International Fire Code allowable chemical hazard compliance and communication of hazards to emergency responders;
c. Protect research;
d. Identify the PPE and/or other controls necessary to enter the laboratory; and
e. Provide a flexible program that communicates the necessary information for diverse laboratory use that can be updated as hazards change.

Refer to Chapter 14, Hazard Communication for more information.

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

WSU laboratories may use chemicals, biohazardous materials, or other hazardous materials for education and research. 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. Personnel entering laboratories must understand label elements including pictograms and hazard statements, and the hazards they represent. Employees shall consult SDS or contact their supervisor whenever additional information is necessary.

   Employees must never eat or drink in a laboratory with chemicals or biohazardous materials. They must 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 (e.g. bulging container, heat or other evidence of a reaction or peroxide crystal formation is observed), the container must be isolated, laboratory personnel must be informed not to touch it, and EHS must be informed immediately.

   Personnel entering 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, if hazardous conditions are encountered warranting additional protection, leave and contact the EHS for additional instruction. If hazardous laboratory conditions pose an imminent threat to life or the facility, call 911 or activate the fire pull station. If activating the pull station, evacuate to a safe location but remain available to communicate the hazard to emergency responders upon their arrival. Contact your supervisor as soon as it is safe to do so. Contact EHS for additional instruction upon observing the following conditions:

   - Bulging chemical containers or containers (not actively heated) that are warm/hot to touch;

- Old isopropyl ether containers – particularly those not stabilized with an oxygen scavenger such as butylated hydroxytoluene (BHT), or containers of isopropyl ether 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. Personnel must 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 EHS and the Radiation Safety Office.

c. **Biohazard Materials**: Biohazard materials include organisms or biotoxins that could be harmful to your health. Any biohazard material must be clearly marked with the biohazard symbol. Personnel shall not handle laboratory materials identified as biohazards unless they have received specific instruction and hazard information about the material. Never eat or drink in a laboratory using biohazardous materials. If you observe what you think may be improperly managed biohazardous materials, contact EHS.

d. **Sharps**: WSU policy requires laboratory users to dispose sharps (syringes, cannulas, razor blades, etc.) in approved puncture resistant containers and not overfill sharps containers. Personnel may encounter containers that are overfilled, or sharps managed inappropriately, do not handle sharps without tools and/or cut/puncture resistant PPE.

e. **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. Personnel may encounter containers that are overfilled or damaged. Sharp and/or broken glass items may be found outside glass waste containers. Personnel shall not handle broken glass without tools and/or cut/puncture resistant PPE.

f. **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. EHS provides general safety training, and the department director must ensure that lab- and function-specific training is provided by a person knowledgeable and competent in the topic. Employee training is to be documented by recording the employee names, the date and content of the training.

Refer to Chapter 29, Training for more information.