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|--|------------------------------|
| University of Alaska Anchorage | Section EHS/RMS |
| ADMINISTRATIVE SERVICES MANUAL | Statement 3 |
| Policies and Procedures | Page 1 of 6 |
| Title <i>LABORATORY SAFETY MANUAL</i> | Effective Date 05/11/2012 |

*Safety
Responsibilities*

It is the responsibility of all UAA departments that operate laboratories as defined in this section, including but not limited to Arts, Engineering, Biology, Chemistry, Geology, Physics, and CTC Metallurgy, to follow this Laboratory Safety Manual as well as UAA's Chemical Hygiene Plan (as appropriate) . The Environmental Health and Safety Department is available for consultation.

Scope

This document applies to all departments that use laboratory chemicals on a laboratory scale. However, it will not apply where the only laboratory use of a hazardous chemical provides very limited potential for employee exposure (medical and dental labs using prepackaged test kits and dip-sticks and biology labs that occasionally use reagents). However, the [Bloodborne Pathogens Standard](#) may apply and [Hazard Communication Standard](#) will be applied for those areas not covered under the Laboratory Safety Manual. Please consult with EHS if you need clarification of the applications.

Prudent laboratory practices ensure the presence of a qualified individual onsite during academic or research activities in laboratories. This includes direct supervision of new and inexperienced employees or students.

In most instances, the laboratory manual will support existing substance specific standards (i.e., formaldehyde, benzene, ethylene oxide, lead, etc).

Definitions

The following terms are critical to understanding the scope and applicability of the standard.

Laboratory is a facility where the "laboratory use of hazardous chemicals" occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.

Laboratory Scale is work with substances in which containers used for reactions, transfers and other handling of substances are designed to be

| | |
|--|------------------------------|
| University of Alaska Anchorage | Section EHS/RMS |
| ADMINISTRATIVE SERVICES MANUAL | Statement 3 |
| Policies and Procedures | Page 2 of 6 |
| Title <i>LABORATORY SAFETY MANUAL</i> | Effective Date 05/11/2012 |

easily and safely manipulated by one person. This excludes workplaces whose function is to produce commercial quantities of materials.

*General
Laboratory
Safety*

One of the most serious problems in laboratory safety is the lack of information about hazards and causes of accidents in laboratories. Laboratory workers are exposed to an impressive list of potential hazards: broken glass, high voltage electronic gadgetry, pathogenic organisms, uncooperative research animals, radiation, and an endless variety of substances that are flammable, explosive, corrosive, and carcinogenic.

Safety is an intrinsic part of each laboratory operation and work should be planned to reduce exposure to hazards. Following established safety procedures will reduce the likelihood of injury. Recommended practices and procedures include the following:

1. There is no eating or drinking in laboratories. Laboratory facilities shall not be used for food preparation or storage.
2. Good housekeeping is a key component in promoting laboratory safety. Aisle-ways shall be kept clear of clutter including chairs, stools, boxes, etc so that access is provided for emergency equipment and egress as needed.
3. Learn about the location and use of fire extinguishers, fire blanket, water hose, fire alarms, safety showers, and eyewash stations. Maintain emergency equipment.
4. **Some form of eye protection shall be worn, such as goggles, safety glasses, and/or face shields, at all times in laboratories based upon the hazard present.** Eyewash stations shall be present in all laboratories where any chemicals are used. Face shields should never be used by themselves in place of splash proof goggles; they must only be used when splash proof goggles are used under the face shield. The face shield is for full face and

| | |
|--|------------------------------|
| University of Alaska Anchorage | Section EHS/RMS |
| ADMINISTRATIVE SERVICES MANUAL | Statement 3 |
| Policies and Procedures | Page 3 of 6 |
| Title <i>LABORATORY SAFETY MANUAL</i> | Effective Date 05/11/2012 |

neck throat protection from flying projectiles or splashing chemicals.

5. Use fume hoods to prevent incidental inhalation of toxic vapor and gases.
6. Keep hood clear and clean. Materials shall only be stored in the fume hood if part of an ongoing experiment. Only one person will work in a single fume hood at one time.
7. Pay attention to existing hazards or controls when setting up experiments (i.e. water, gas or electricity).
8. Guard against casual handling of glassware. To safely cut glass tubing, scratch it with a triangular file or glass knife. Wrap a towel around the tubing or wear heavy gloves. **Wear eye protection.** Place thumbnails against tubing directly opposite scratch and press while pulling hands apart. Always fire polish tubing with an outside diameter of a centimeter or more. Use a cutting wheel or hot wire cutter.
9. When picking up broken glassware, use a brush and dustpan. Pick up pieces using fine wet cotton held with tongs. Discard all shipped and broken glassware into a separate specially marked container (wear eye protection).
10. All chemical containers shall be labeled. To that end, learn the regulations for proper labeling of containers with contents, concentration, manufacturer, handling precautions, and date (in case of unstable compounds).
11. Remember that acids are poured into water; not vice versa.
12. Contact Supervisor/Lab Support for assistance in cleaning up spills or handling injuries or incidents.

| | |
|--|------------------------------|
| University of Alaska Anchorage | Section EHS/RMS |
| ADMINISTRATIVE SERVICES MANUAL | Statement 3 |
| Policies and Procedures | Page 4 of 6 |
| Title <i>LABORATORY SAFETY MANUAL</i> | Effective Date 05/11/2012 |

*Biohazard
Safety*

University facilities using biologically hazardous materials in research or other operations must consult the Biosafety Committee and EHS/RMS. Clinicians, emergency responders, and other medical personnel must follow the Bloodborne Pathogens Standard to minimize exposure to the body fluids and other medical contaminants. Personnel must also follow proper disinfection and disposal procedures involving biohazards.

*Laboratory
Ventilation*

Laboratory ventilation program is monitored by EHS/RMS and Facilities Maintenance Services to ensure a safe and healthy environment for students, faculty, employees, and visitors. The program includes technical standards for design and operation and regularly scheduled inspections. The requirements apply to all fume hoods and other ventilation systems used for emission control and operator/visitor protection.

Use of exhaust fume hoods is the preferred control method for operations involving radioactive materials and chemicals that can become airborne. Department heads and principal investigators must ensure the responsible use of ventilation equipment and immediately report all malfunctions to EHS/RMS (<http://www.uaa.alaska.edu/EHSRMS/ehspersonnel.cfm>) or Facilities Maintenance Services (786-6980).

*Chemical
Hygiene
Plan*

UAA has established a comprehensive written Chemical Hygiene Plan. This is the principle compliance document for UAA and serves to protect employees from health hazards associated with hazardous chemicals in the laboratory. It also keeps chemical exposures below regulatory limits. In addition, a [Chemical Standard Operating Procedure \(SOP\) Form](#) has been developed. That form needs to be completed for each chemical and or process covered under the Chemical Hygiene Plan. Departments and Colleges are required to use the plan and form as written UAA's Chemical Hygiene Officer is available for consultation in the implementation of the CHP and use of these forms.

| | |
|--|------------------------------|
| University of Alaska Anchorage | Section EHS/RMS |
| ADMINISTRATIVE SERVICES MANUAL | Statement 3 |
| Policies and Procedures | Page 5 of 6 |
| Title <i>LABORATORY SAFETY MANUAL</i> | Effective Date 05/11/2012 |

*Employee
Training and
Information*

All employees and volunteers must be trained and informed about the chemical hazards in the work area. This must be provided upon initial assignment to a work area and prior to any new potential exposure situations. Training and information will include the following:

1. Content of the lab safety manual and its policies and procedures.
2. Content, location, and availability of the Chemical Hygiene Plan as appropriate.
3. Permissible or recommended exposure limits for OSHA regulated substances or other toxic non-regulated substances.
4. Symptoms associated with exposure to chemicals in their work area.
5. Location and availability of reference materials on the hazards, safe handling, storage, and use of hazardous chemicals used in their work area.
6. Methods and observations that may be used to detect the presence or release of hazardous chemicals.
7. Physical and health hazards of chemicals in the work area.
8. Measures employees can take to protect themselves from chemical hazards.

*Medical
Consultation
and Examination*

Employees who work with hazardous chemicals must be given the opportunity to receive [medical attention and follow-up examinations](#) by or under the direct supervision of a licensed healthcare provider. Contact EHS/RMS (<http://www.uaa.alaska.edu/EHSRMS/ehspersonnel.cfm>) for

| | |
|--|------------------------------|
| University of Alaska Anchorage | Section EHS/RMS |
| ADMINISTRATIVE SERVICES MANUAL | Statement 3 |
| Policies and Procedures | Page 6 of 6 |
| Title <i>LABORATORY SAFETY MANUAL</i> | Effective Date 05/11/2012 |

additional information. These exams must be provided without cost to the employee under the following circumstances:

1. Whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the lab.
2. Where monitoring reveals an exposure level routinely above the action level or 50% above the permissible exposure limit for an OSHA or DOL regulated substance.
3. Whenever an event such as a spill, leak, or explosion takes place in the workplace and results in the likelihood of a hazardous exposure.