UNIVERSITY of ALASKA ANCHORAGE

2020

Controlled-Space Access Plan

PREPARED BY THE CHEMICAL SAFETY COMMITTEE

REVISED FEBRUARY 2021

Table of Contents

1. LETTER OF PROMULGATION 4
2. INTRODUCTION 5
3. RELATED POLICIES 6
4. USERS 7
4.1 Employee 7
4.2 Student 7
4.3 Non-employee/ Non-student 7
5. USER TRAINING AND LAB ACCESS 7
6. SAFETY TRAINING 8
6.1 Employees 8
6.2 Students 8
6.3 Non-employee/ Non-students 8
6.4 Guests and Passive Observers 8
7. JOB HAZARD (SAFETY) ANALYSIS and STANDARD OPERATING PROCEDURES 9
7.1 Job Hazard Analysis (JHA) 9
7.2 Standard Operating Procedure (SOP) 11
8. PROTOCOL AND EQUIPMENT PROFICIENCY 14
9. GENERAL STIPULATIONS 14
10. LAB WORK AND PROTOCOL HAZARD LEVEL 15
10.1 Low Hazard and Negligible Hazard Protocols 15
10.2 Moderate Hazard Protocols 15
10.3 Significant Hazard Protocols 16
10.4 Extreme Hazard Protocols 16
11. PROCEDURE 17
11.1 Authority or Designee 17
11.2 Users 17
12. SERVICE ANIMAL ACCESS 17
13. SUPPORT PERSONNEL ACCESS 18
13.1 Routine Operations 18
13.2 Non-Routine and Emergency Operations 18
14. DEFINITIONS 19
15. LIST OF ABBREVIATIONS 27
16. Appendix A – Risk Assessment 28

16.1 Hazard Type Matrix to Determine Row for People Column in Consequences Matrix 28
16.2 Consequences Matrix to Determine Severity Level Total Value 29
16.3 Severity Level vs. Probability Matrix 30
17. Appendix B – The Buddy System 31
17.1 The Buddy System Hazard Matrix 32

1. LETTER OF PROMULGATION

The Controlled-Space Access Plan (CSAP) provides the University with a written program and procedures for faculty, staff, students, and visitors to outline their responsibilities and requirements for accessing laboratories and other hands-on learning spaces, during open and extended hours, and after hours.

The Chemical Safety Committee has the delegated responsibility of developing the university Controlled-Space Access Plan and to promote the adoption of a Safety-First Approach (SFA). This committee has the added responsibility of periodically reviewing the effectiveness of the CSAP and making changes as appropriate.

This Letter of Promulgation recognizes that the Controlled-Space Access Plan is a working document and is subject to updates and revisions based on changes in governing body standards and organizational changes. This plan will be actionable regardless of the status of the Controlled-Space Access Plan.

_____ _____

Bruce Schultz, PhD — Date
Interim Chancellor, University of Alaska Anchorage

_____ _____

Denise Runge, PhD — Date
Provost, University of Alaska Anchorage

_____ _____

Bill Jacobs — Date
Interim Vice Chancellor, University of Alaska Anchorage

2. INTRODUCTION

The University of Alaska Anchorage (UAA) and its community campuses operate spaces that may be referred to as:

- 'laboratories'
- 'maker-spaces'
- 'shops'
- 'studios'

These spaces are *locations of hands-on learning experiences* and/ or research, and are herein collectively referred to as:

- 'labs'
- 'laboratory'
- 'laboratories'
- 'laboratory facilities'
- 'controlled-access facilities'

Access to these spaces are usually restricted to enrolled students and university employees. These controlled-access facilities may contain specialized equipment, instruments, materials, and/ or chemicals that pose physical and/ or health hazards to anyone entering the spaces or using the materials. Spaces on community campuses serving similar purposes are also included and are considered as laboratories for the purposes of this document. Some specific examples of these spaces on the Anchorage campus include:

- Anthropology and Biology labs in the Beatrice McDonald Hall
- Biology, Chemistry, and Geology labs in the ConocoPhillips Integrated Science Building
- Biology, Physics, and Psychology labs in the Natural Science Building
- Ceramics, Drawing, Photography, Sculpture, and Theater studios in the Fine Arts Building
- Environmental Degradation lab, Prototyping and 3D Printing, Student Machine shop and Student Wood shop in the Engineering & Computation Building
- Asset Integrity and Corrosion, Fluid Mechanics, and Materials Testing labs in the Engineering & Industry Building
- Automotive and Diesel Power Technology labs in the Auto Diesel Technology Building
- Aviation Mechanics at the Aviation Complex at Merrill Field
- Ceramics studio and Nondestructive Testing Technology and Welding shops in the Gordon Hartlieb Hall
- Medical Laboratory Technology and Gross Anatomy labs in the Health Science Building
- Dental and Radiologic Technology labs in the Allied Health Sciences Building
- Research labs in the Ecosystem-Biomedical Health Laboratory
- Native Arts Building

It is the objective of UAA to promote safety for all individuals in our laboratories. As such, this Controlled-Space Access Plan shall be strictly enforced by the Chancellor, Provost, their designees, and the University Police Department (UPD).

It should be understood that every person who enters the laboratory facilities at UAA agrees not only to following this plan, but also to following all applicable federal, state, municipal, and university policies, procedures, ordinances, and laws. Examples are the federal Occupational Safety and Health Administration (OSHA) and Alaska Occupational Safety and Health (AKOSH) regulations regarding the safety and required training of employees

using certain equipment, performing certain tasks, and using hazardous chemicals. In addition to UAA sanctions and disciplinary actions, failure to comply may result in criminal and/ or civil penalties. Repercussions for violation of this plan shall be issued by the Chancellor, Provost, and/ or their designees.

Directors of community campuses should amend the Anchorage specific verbiage to more appropriate language for their location. For example, where this document states to notify UPD, directors should change that to notifying the appropriate department/ agency/ individual for their campus.

The authority referred to throughout this document, is the subject matter expert on their research, instruction, and/ or other activities. As the subject matter expert, they can choose someone as their designee to perform specific tasks. The designee will have a similar level of responsibility as *the authority*. The authority is and the designee may be responsible for:

- themselves and all others that use and/ or enter their labs;
- ensuring that faculty, students, staff, volunteers, and visitors have completed all appropriate safety training;
- the required safety training records, liability waivers, and other documents for the above specified individuals to be filed with Environmental Health & Safety, Risk Management Support (EHSRMS) or designee *before entry of those specified individuals into their laboratory facilities shall be permitted*;
- appropriate hazard and risk analysis, procedure creation, and training;
- enforcing this plan.

The UAA Incident Management Team (IMT), University Police Department (UPD) or UAA Facilities may declare a Building Closure for one or more individual buildings, or Campus Closure affecting all buildings. Refer to the Administrative Services: Building Access and Hours policy for more details.

Closures due to emergencies, weather, or other unexpected events, and closures declared by UAA officials as referenced above, may prevent building and/ or lab access. In these situations, specific access restrictions will be announced by officials (UAA, municipal, state, or federal) and shall be observed. Buildings and/ or labs shall not be entered until the appropriate official has lifted the restriction. Once access to the building is granted, *the authority* or designee should visually inspect their equipment for damage before anyone else enters the lab. Repairs and recalibration may be necessary before equipment is usable after seismic or other damaging events, including significant aftershocks.

EHSRMS shall serve as a resource for evaluation of compliance with this plan. Questions about the content in this document should be directed at the Chairperson of the Chemical Safety Committee or EHSRMS.

3. RELATED POLICIES

Refer to the following policies for additional information and guidance:

- Administrative Services: Building Access and Hours Policy
- Accommodating Students with Service Animals in Teaching Laboratories
- Chemical Hygiene Plan (CHP)
- Emergency Operation Plan (EOP)

The CSAP and Building Access and Hours Policy are intended to work together, with the Building Access and Hours Policy providing the overarching campus policy, and the CSAP providing procedures for exceptions in controlled spaces.

4. USERS

UAA is an AA/ EO employer and educational institution and prohibits illegal discrimination against any individual: https://www.alaska.edu/nondiscrimination. Any student or employee who feels they may need a reasonable accommodation to participate in laboratory activities based on the impact of a disability may contact Disability Support Services in the case of students, or the Office of Equity & Compliance in the case of employees. Students and employees are encouraged to speak with *the authority* or designee that oversees their laboratory to arrange accommodations.

For this document, the following users are identified:

4.1 *Employee*

Any person receiving a paycheck directly from UA.

4.2 *Student*

Any person enrolled in a course, regardless of age. This includes graduate, undergraduate, and Alaska Middle College School enrollees.

4.3 *Non-employee/ Non-student*

Everyone else that does not fall under 4.1 or 4.2. This includes collaborating or visiting faculty/ researchers, visitors, volunteers, minors (under 18 years old and not enrolled as a student), guest lecturers, special users, passive observers, tour groups, etc.

5. USER TRAINING AND LAB ACCESS

When a lab is to be used for non-lab activities, including but not limited to lectures, presentations, thesis defenses, etc., a verbal safety moment (see section 6.4, Guests and Passive Observers) should be given.

When labs are used as intended for hands-on activities, after the appropriate safety training (see section 6, Safety Training) is completed and documented, laboratory access shall be granted to lab users with the provision that the stipulations from the appropriate sections below also be followed.

The authority or designee is responsible for ensuring a standard operating procedure (SOP) and/ or job hazard analysis (JHA) is available for the activities, materials, and/or equipment employed in the lab space they oversee. *The authority* or designee can contact EHSRMS as a resource for SOP/ JHA templates and assistance in assigning risk levels. As part of each document, a hazard and risk assessment shall be performed. See section 7, Job Hazard (Safety) Analysis and Standard Operating Procedures, and section 10, Lab Work and Protocol Hazard Levels for further details.

After the procedure is established and an individual's training on the SOP/ JHA completed, a protocol and equipment proficiency (or equivalent) evaluation shall be performed, and documentation kept in a readily accessible format. This must be done for each individual that is expected to work without direct supervision. See section 8, Protocol and Equipment Proficiency for further details.

Upon completion of appropriate training and demonstration of proficiency, an Access Request form needs to be submitted for each individual needing access. The form is signed by the authority or designee, indicating their approval for the individual to work unsupervised, and submitted for Wolfcard coding.

In addition, everyone should be aware of and follow the general stipulations outlined in section 9, General Stipulations.

A summary of the above-mentioned requirements is provided in section 11, Procedure, for *the authority* and lab users.

6. SAFETY TRAINING

Training records for all listed trainees should be kept for at least 1 year in a readily accessible manner, with the current and previous dates of training retained. OSHA-required training on specific equipment may have different recordkeeping timelines. Refer to the applicable OSHA standard for requirements.

6.1 *Employees*

Upon hire and at least annually the following employees shall participate in OSHA-mandated training and Laboratory-Specific training:

- Personnel who intend to engage in hands-on instructional learning activities (such as faculty and other instructors)
- Personnel who intend to do hands-on research (such as PIs and other researchers)
- Personnel who provide support for lab facilities (such as lab technicians and open lab monitors)

OSHA-mandated training includes but is not limited to the OSHA Laboratory Standard, OSHA Hazard Communications Standard, and Respiratory Protection. In accordance with federal regulations, EHSRMS specifies which trainings are required and can be contacted for the names of trainers of specific topics if assistance is needed.

Laboratory-Specific training requirements are outlined in section 14, Definitions. Training shall be conducted by *the authority* or their designee. EHSRMS can be contacted for the names of trainers of specific topics if assistance is needed.

Safety training records of employees shall be kept by EHSRMS or designee. A person's safety record includes their safety training records as well as observations of their actions in a lab setting (following prudent practices, consistent use of personal protective equipment (PPE) of the correct type and material for the activity, materials used, etc.). For *the authority* and designee, written SOPs/ JHAs are also considered a part of this record.

6.2 *Students*

Enrolled students shall receive Laboratory-Specific training for each course and/ or learning experience in which they engage. Training shall be conducted by *the authority*, such as faculty of record, or their designee. Readily accessible training records shall be kept by individual departments.

6.3 *Non-employee/ Non-students*

Non-employee/ non-students shall at least receive Laboratory-Specific training annually or before engaging in new hands-on activities. Depending on the role of the non-employee/ non-student, OSHA-mandated training may also be required. Training shall be performed by *the authority* or their designee. Readily accessible training records shall be kept by individual departments.

6.4 *Guests and Passive Observers*

Guests and passive observers should receive a verbal safety moment, describing any specific hazards to be aware of, location of the emergency exit, etc., when they are brought into a controlled-access space. If the risks of the

lab warrant, a digital Liability Waiver may be used. Consider keeping a logbook or some record of the guests/ passive observers.

7. JOB HAZARD (SAFETY) ANALYSIS and STANDARD OPERATING PROCEDURES

Standard operating procedures (SOPs) and job hazard analyses (JHAs) are similar in that both break down a task into its component steps, assess the hazards present, and describe ways to mitigate the risk associated with those hazards. They are also a way to give directions to an individual to perform the task. The details of both documents are described below.

A JHA assesses the hazards of a task and determines ways to mitigate the associated risks. These are most commonly written for tools, equipment, or conditions such as working under water.

An SOP is a set of written instructions that describe, in detail, how to perform a laboratory experiment safely and effectively, work with hazardous materials, or perform hazardous operations.

Regardless of which document may be needed, *a determination of which tasks should have a written document needs to be done*. Tasks that use non-hazardous materials or hand powered tools, such as those found in the Hazard Type Matrix in Appendix A, levels A and B, are examples where written SOPs or JHAs are not required. As the hazards associated with the materials, equipment, or conditions increase, so does the need for written hazard assessments. Tasks utilizing materials or conditions in levels D and E of the Hazard Type Matrix *must* have an SOP or JHA, and those in level C *should* have one.

While a JHA and/ or SOP for every task is the ideal, in practical terms they will need to be prioritized with the most critical analyses performed first. Tasks/ experiments/ protocols rated lower on the priority list can be addressed later, with progress towards having a JHA and/ or SOP for all relevant tasks being made.

Completed JHAs and SOPs shall be submitted to EHSRMS for review and, unless requested to remain proprietary, uploaded to the appropriate EHSRMS Intranet folder to create a library for use by UAA employees and students.

7.1 *Job Hazard Analysis (JHA)*

The purpose of a JHA is to assess the hazards of a task and determine ways to mitigate the associated risks. These are most commonly written for tools, equipment, or conditions such as working under water. A starting point for procedures involving tools, equipment, kits, or instrumentation is the manufacturer's documentation. On many occasions the hazards and mitigation are included in the documents provided with the tool, equipment, kit, or instrument. Electronic copies can be downloaded from the EHSRMS Intranet JHA folder and they can be incorporated as part of other procedures.

A JHA can be broken down into four steps.

1. Choose a task to analyze

   To decide where to begin, tasks with the following factors should be given priority:

   - Incident frequency or severity – tasks which have historically had frequent incidents, or incidents that resulted in severe injury or illness
   - Newly established tasks – new activities present more risks due to unanticipated hazards from an unfamiliar process

- Potential for severe illness or injury – tasks using hazardous chemicals, biological materials, radiation sources, or tasks performed in dangerous conditions such as from heights, or using powered tools
- Infrequently performed tasks – activities performed infrequently may be as unfamiliar as a new task, presenting greater risks from unanticipated hazards

2. Break the task into specific steps/ procedure

   To account for all the hazards of the job, break it down into each individual steps. This also provides a written procedure for workers to follow.

   For example, operating a scientific instrument or piece of machinery can be broken down into:

   a. Preparation – gathering equipment and supplies
   b. Powering on the machine
   c. Performing the task with the machine. This is, in turn, broken down into the steps needed to use the machine for the task.
   d. Powering down the machine
   e. Clean up

3. Determine the hazards and risk level present in each step – see Appendix A, Hazard Type Matrix

   For each step determined above, identify any hazards that may be present. *A hazard is anything in the environment that has the potential to cause harm to people, including ill health, injury or death, or cause damage to equipment, property, or the environment*. Hazards are an intrinsic property of a material or condition.

   For each hazard identified, a level can be determined from the Hazard Type Matrix in Appendix A. Record the level.

4. Identify preventive controls and the residual risk level

   Finally, identify the controls that can be used to mitigate the risks. *Risks are the actions taken in relationship to hazards, and a combination of the likelihood of the harm occurring (probability) and the severity level of the consequences of the hazard present.* Risks, unlike hazards, can be controlled or eliminated through the hierarchy of controls:

   a. Elimination – eliminate the source of the hazard
   b. Substitution – use a less hazardous material
   c. Engineering controls – place barriers between the hazard and the worker
   d. Administrative controls – use training and scheduling of the worker to reduce exposure to the hazard
   e. Personal Protective Equipment – have the worker don protective equipment as the last line of defense against the hazard

   Once these have been identified and added to each step, the residual risk can be evaluated. This is the amount of risk remaining after introducing as many of the above listed controls as feasible into the task and uses the same matrices in Appendix A to calculate. Residual risk is expected to be lower than the original risk of the hazard.

Once this is done, the overall Protocol Hazard Level can be determined using the matrices in Appendix A. This level is then listed on the JHA.

7.2 *Standard Operating Procedure (SOP)*

A standard operating procedure or SOP is a set of written instructions that describe, in detail, how to perform a laboratory experiment safely and effectively, work with hazardous materials, or perform hazardous operations. Hazardous materials include chemicals, biological materials, and radiation sources. Hazardous operations may include, but are not limited to, working with cryogens, heat, and non-atmospheric pressures. In some cases, a JHA will need to be created as a supplement to an SOP. An example of an SOP that requires additional JHAs includes using centrifuges and/ or autoclaves as part of an experimental protocol.

Safety Data Sheets (SDS) can provide information regarding the necessity of a written risk evaluation when chemicals are involved. Section 2 of the SDS lists any hazards of the material. If section 2 contains a statement to the effect that the substance is not classified as hazardous per GHS, the material does not need a written risk evaluation. If there are H-statements, P-statements, or pictograms, carefully evaluate the material for the need of a written risk evaluation.

Hazard classification per GHS is the rating of chemicals and mixtures according to hazards classes and categories. The hazard classes are: Health Hazards, Physical Hazards, and Environmental Hazards. The hazards listed with each class are further ranked in categories, which are listed in Section 2 of an SDS. The numerical ratings indicate the severity of the hazard, with lower numbers indicating more severe hazards.

Hazardous materials with hazard classification numbers of 1 or 2 must have a written SOP. Hazard classifications of 3 or higher need to be evaluated for the need of a written SOP.

The following H-statements present on an SDS ***require*** a written risk evaluation for the material:

H220 – Extremely flammable gas
H221 – Flammable gas
H222 – Extremely flammable aerosol
H223 – Flammable aerosol
H224 – Extremely flammable liquid and vapor
H225 – Highly flammable liquid and vapor
H226 – Flammable liquid and vapor
H228 – Flammable solid
H229 – Pressurized container; may burst if heated
H230 – May react explosively even in the absence of air
H231 – May react explosively even in the absence of air at elevated pressure and/ or temperature
H232 – May ignite spontaneously if exposed to air
H240 – Heating may cause an explosion
H241 – Heating may cause a fire or explosion
H242 – Heating may cause a fire
H250 – Catches fire spontaneously if exposed to air
H251 – Self-heating; may catch fire
H252 – Self-heating in large quantities; may catch fire
H260 – In contact with water releases flammable gases which may ignite spontaneously
H261 – In contact with water releases flammable gas
H270 – May cause of intensify fire; oxidizer
H271 – May cause fire or explosion; strong oxidizer
H272 – May intensify fire; oxidizer
H280 – Contains gas under pressure; may explode if heated
H281 – Contains refrigerated gas; may cause cryogenic burns or injury

H290 – May be corrosive to metals
H300 – Fatal if swallowed
H301 – Toxic if swallowed
H304 – May be fatal if swallowed and enters airways
H310 – Fatal in contact with skin
H311 – Toxic in contact with skin
H314 – Causes severe skin burns and eye damage
H315 – Causes skin irritation
H317 – May cause an allergic skin reaction
H318 – Causes serious eye damage
H319 – Causes serious eye irritation
H320 – Causes eye irritation
H330 – Fatal if inhaled
H331 – Toxic if inhaled
H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled
H340 – May cause genetic defects
H341 – Suspected of causing genetic defects
H350 – May cause cancer
H351 – Suspected of causing cancer
H360 – May damage fertility or the unborn child
H361 – Suspected of damaging fertility or the unborn child
H362 – May cause harm to breast-fed children
H370 – Causes damage to organs
H371 – May cause damage to organs
H372 – Causes damage to organs through prolonged or repeated exposure

SOPs may focus on any of the following:

- Process (distillation, Western blot, RNA extraction, etc.)
- Specific chemical (Hydrofluoric acid (HF), Carbon monoxide (CO), Perchloric acid ($HClO_4$), etc.)
- Class of hazardous chemicals (mineral acids, organic solvents, etc.)
- The specific use of a hazardous material, class of materials, or piece of laboratory equipment such as in a specific laboratory procedure
- The generic use of a specific hazardous material, class of materials, or piece of laboratory equipment
- A generic procedure that covers several hazardous materials or types of laboratory equipment
- How to calibrate, operate, and maintain a specific piece of laboratory equipment
- How to prepare the reagents and samples, perform an analysis, and quality control
- Any procedure performed in the laboratory

While there are no specific legal requirements regarding the content of an SOP, it does need to address the safety and health considerations to be followed when using hazardous chemicals. SOPs can be written as a single complete document, as a compilation of several documents, as a flow chart, a step-by-step list, or in whatever way makes sense for the people using it. It needs to contain sufficient detail to ensure the safety of persons following the procedure. Templates are available on the EHSRMS website to suggest a format and guide the process. Electronic copies can be downloaded from the EHSRMS Intranet SOP folder and they can be incorporated as part of other procedures.

Regardless of the format chosen for an SOP, the following sections or areas of information shall be included:

- Title page – include title of the process/ procedure, lab or course the SOP applies to, name(s) of those who prepared the SOP, approved date, and revised date(s).
- Approvals required – list the circumstances under which a particular operation, procedure, or activity requires prior approval from *the authority*, their designee, or other personnel. Examples of circumstances that may require prior approval include unattended or overnight operations, the use of extremely reactive materials such as pyrophoric or water reactive materials, the use of highly toxic gas in any amount, the use of large quantities of toxic or corrosive materials, or the use of carcinogens.
- Hazardous chemicals used – list the specific hazardous chemicals or class of chemicals (flammable organic solvents), including any hazardous reaction products or by-products.
- Potential hazards – describe the potential dangers for each hazardous chemical or each element of the hazardous process or procedure. Include physical, health, and environmental hazards.
- PPE – list the personal protective equipment (PPE) required for each activity or chemical. PPE includes gloves, lab coats, safety glasses, goggles, face shields, hearing protection, and respirators. If applicable, indicate the type of PPE required for each phase or a specific phase of a process, e.g. nitrile vs. cryo gloves.
- Designated area – establish a designated area for this operation within the lab. Designated areas could be the entire lab, a fume hood, a portion of a lab bench. Particularly Hazardous Substances require a designated area to minimize contamination of the entire lab. See the CHP for details about Particularly Hazardous Substances.
- Special handling procedures and storage requirements – describe special handling procedures or storage requirements including, but not limited to, ventilation requirements, specific techniques, temperature controls, chemical incompatibilities, special containment devices, and access restrictions.
- Engineering/ Ventilation controls – list any engineering controls used, which are generally defined as equipment or physical infrastructure that reduces or removes hazards from the lab. Common engineering controls include fume hoods, biosafety cabinets, glove boxes, and laser interlocks.
- Process – the type of process involving hazardous chemicals, e.g. Gas Chromatography for Fatty Acid Analysis.
- Process steps – useful for particularly complex or multi-step processes. List each step chronologically on one side of the page, and directly across from it list precautionary safety measures to be taken, including the use of specific techniques and PPE. If possible, describe indicators which show whether the process is proceeding safely or that a hazardous situation may be developing.
- Spill and accident procedures – describe procedures for handling potential emergencies related to the hazardous chemical(s) or process(es) such as accidental material releases to the sanitary sewer, material spills, fires, chemical burns to the skin or eyes, shattered glassware, etc. Describe any special procedures beyond rinsing under a safety shower or eye wash for 15 minutes for dealing with personal exposures, such as the use of calcium gluconate gel for HF exposures.
- Waste Disposal – describe any unique waste disposal procedures for any chemicals. This is also a place to describe how the chemicals used in the procedure can be transformed in the lab to less hazardous products before waste pick up.
- Decontamination – discuss any appropriate decontamination procedures for equipment, glassware, and clothing, including designated areas, after use of particularly hazardous substances and biological materials.

8. PROTOCOL AND EQUIPMENT PROFICIENCY

It is up to the discretion of the dean of each College or their designee and community campus Directors to determine if students and non-employee/ non-student individuals may have access to the labs used in their College/ Department outside of class times, scheduled meetings, other supervised experience times, or after hours.

In addition to ensuring that subordinates have the appropriate safety training, *the authority* or designee for lab activities must ensure all individuals using the facility, including other employees, students, and staff, are proficient with their protocols and using related equipment. Once proficiency is demonstrated to *the authority's* or their designee's satisfaction and in accordance with existing College policy, they may give permission for individuals to work without their direct supervision.

- *The authority* or designee must determine if the individual may work with limited supervision. Factors to consider include:
    a. The individual is up to date with OSHA-mandated, Lab-Specific, and any additional required safety training.
    b. The individual's proficiency with the protocol and associated equipment.
    c. The individual's ability to respond adequately in an emergency situation, such as a chemical spill or equipment malfunction.
    d. The individual has a history of demonstrating prudent safety practices.
- If the above conditions are met, *the authority* or designee completes a Protocol and Equipment Proficiency form (samples are located on the EHSRMS website, other methods can be used), acknowledging the proficiency of specific protocols and equipment used by the individual. Documentation shall be kept in a readily accessible format.

The authority or designee must perform a risk assessment and assign a hazard level to the activity (see section 10, Lab Work and Protocol Hazard Levels). The hazard level determines which tier of the Buddy System (see Appendix B) must be followed for engaging in activities outside of class times, scheduled meetings, or other supervised experience times. EHSRMS can assist in risk assessments.

9. GENERAL STIPULATIONS

The following stipulations apply to ALL persons engaged in laboratory activities.

At all times:

a. Per Prudent Practices and EHSRMS recommendation, nobody should ever work alone in a laboratory.
b. All lab occupants shall periodically make themselves generally aware of protocols being conducted in their proximity and take precautions as appropriate.
c. The Buddy System Hazard matrix should be used to determine the requirements that must be followed. When engaging in more than one protocol, or using multiple instruments or tools, the requirements of the most hazardous activity or protocol shall be followed.

After Hours:

a. Community campus directors and staff should decide how to address after hours notifications for their campus.

b. Anyone entering or present in a UAA building after hours must notify UPD of their presence and location (building and room number), in whatever manner is required by UPD.

10. LAB WORK AND PROTOCOL HAZARD LEVEL

A breakdown of different protocol hazard levels is provided below, to help with risk assessments and protocol hazard level calculations performed as part of JHA/ SOP development and in establishing requirements for work outside supervised experience times.

It is recommended that all protocols be performed while the building is open when more employees are on-site and emergency assistance is more readily available in case it is needed. Where this is not possible or practical, the Buddy System Hazard Matrix (Appendix B) should be consulted for approved exceptions, requirements, and examples.

10.1 *Low Hazard and Negligible Hazard Protocols*

These are techniques and skills that are needed for progressively advancing work and are acquired using low and negligible hazard substances/ equipment, to reduce the risks as much as possible while manual skills are learned and practiced. Written procedures and hazard analyses are not required, but may be provided in the form of lab manuals, manufacturer user manuals, set of instructions, etc.

To perform Low Hazard or Negligible Hazard Protocols outside of class, scheduled meetings, or other supervised experience times, the following conditions must be met:

- The individual must be authorized to perform the protocol unsupervised as indicated on their Protocol and Equipment Proficiency documentation.
- During **Open and Extended Hours,** a Safety Contact is **recommended**. A predetermined communication schedule should be followed. The contact should be familiar with the proper procedure for contacting UPD in case contact is lost with the individual.
- **After Hours,** a Safety Contact is **required**. A predetermined communication schedule should be followed. The contact should be familiar with the proper procedure for contacting UPD in case contact is lost with the individual.

10.2 *Moderate Hazard Protocols*

Many activities are Moderate Hazard Protocols and include working with combustible liquids, dilute acids and bases, irritants, biological substances that can cause human disease that is rarely serious, sealed radio-isotope sources, and working with equipment such as portable hand tools. A written SOP/ JHA should be provided.

To perform Moderate Hazard Protocols outside of class, scheduled meetings, or other supervised experience times, the following conditions must be met:

- The individual must be authorized to perform the protocol unsupervised as indicated on their Protocol and Equipment Proficiency documentation.
- During **Open and Extended Hours**, an on-site Buddy is **recommended**. If one is not available, a Safety Contact should be notified that the individual will be working alone. A predetermined communication schedule should be followed. The contact should be familiar with the proper procedure for contacting UPD in case contact is lost with the individual.
- **After Hours**, an on-site Buddy is **required**, within visual distance.

10.3 *Significant Hazard Protocols*

Significant hazard protocols include working with hazardous chemicals, biological substances that can cause serious human disease with preventive or therapeutic measures available, certain radioisotopes, hot-work operations (e.g. welding), and using industrial equipment. A written SOP/ JHA shall be provided.

To perform Significant Hazard Protocols outside of class, scheduled meetings, or other supervised experience times, the following conditions must be met:

- The individual must be authorized to perform the protocol unsupervised as indicated on their Protocol and Equipment Proficiency documentation.
- During **Open and Extended Hours**, an on-site Buddy is **required** in the same building, but not necessarily in the same lab. A predetermined communication or check-in schedule should be followed. The Buddy should be familiar with the proper procedure for contacting UPD.
- Significant Hazard Protocols should not be performed After Hours. Exceptions to this must be approved by the UAA Risk Manager or designee. A Buddy in the same room is **required**.

10.4 *Extreme Hazard Protocols*

Extreme hazard protocols include, but are not limited to, working with substances that are chemically unstable, pyrophoric, water reactive, or fatal in contact with skin, biological agents that can cause an untreatable or fatal disease, high powered lasers, highly radioactive substances, and physical hazards that are likely to result in severe injury or fatality in the event of an incident or equipment malfunction. A written SOP/ JHA shall be provided by *the authority* or their designee.

For programs that require Extreme Hazard Protocols to be performed during **Open and Extended Hours** only:

- Extreme Hazard Protocols shall not be performed After Hours.
- *The authority* or designee may perform Extreme Hazard Protocols, but only within visual distance of a Designated Responder (DR).
- Only *the authority* and/ or appropriately trained designee may train and/ or supervise students learning to perform Extreme Hazard Protocols. In these cases, the trainer also performs the function of a DR.
- If the DR needs to leave the immediate vicinity, all work must cease.
- The individual shall have all requisite safety training as verified by EHSRMS.
- The individual shall have the requisite education, training, and experience to safely perform the activity.
- The individual shall be following a written SOP/ JHA that includes a hazard and risk assessment that has been reviewed and approved by EHSRMS.
- Anyone who plans to engage in Extreme Hazard Protocols must inform all others present in the same lab or lab wing (for labs with an open floor plan) of the impending procedure. This notification shall be performed by placing a 'Protocol in Progress' sign on all entry doors to the lab or lab wing notifying new entrants of the impending protocol AND a verbal notification and confirmation from current lab occupants shall be carried out.

For programs that require Extreme Hazard Protocols to be performed **unsupervised** and/ or **After Hours**, a specific academic necessity shall first be demonstrated, and pre-approval obtained from Risk Management or designee before the following will apply:

- After Hours and Designated Responder requirements listed above are waived.
- All other requirements listed above shall be met.
- A Safety Contact is required. A predetermined communication schedule shall be followed. The contact must be familiar with the proper procedure for contacting 911/ UPD.

11. PROCEDURE

11.1 *Authority or Designee*

- Receive applicable safety training specified in section 6.
- Develop an SOP/ JHA with hazard/ risk assessment for the activities and/ or equipment used in their lab as specified in section 7 and section 10.
- Provide the written SOP/ JHA to EHSRMS for review and approval.
- Train and evaluate subordinates.
- Complete a Protocol and Equipment Proficiency form (section 8) for each subordinate, or each protocol/ equipment they may be required to perform/ use with limited to no supervision.
- Fill out (for **yourself**) or sign (for students or other users) an Access Request form for your college **and then** submit for approval(s) and Wolfcard access.
- Enforce and follow the general stipulations in section 9.
- Review and understand the Buddy System Hazard Matrix and Designated Responder requirements.

11.2 *Users*

- Receive applicable safety training specified in section 6.
- Gain proficiency in protocols and with equipment to be used.
- Have a Protocol and Equipment Proficiency form listing all protocols/ procedures/ equipment that they may be required to perform/ use with limited to no supervision, signed by *the authority* or their designee for the specific lab.
- Fill out an Access Request form and submit it to *the authority* or designee for approval.
- Follow the general stipulations in section 9.
- Review and understand the Buddy System Hazard Matrix and Designated Responder requirements.

12. SERVICE ANIMAL ACCESS

Under the Americans with Disabilities Act of 1990, service animals shall be allowed in UAA laboratories.

Laboratories may present occasions of exposure to chemicals through skin, eyes, mouth, and lungs. Remnants of broken glassware may be present on the laboratory floor. The handler may contact the authority or designee of a specific lab for additional information regarding potential hazards that may be present.

UAA personnel may ask an individual to remove their animal from the laboratory only if one or more of the following is true:

a. The animal is out of control and the animal's handler does not take effective action to control it.
b. The animal engages in behavior that is undesired or disruptive.
c. The animal is not housebroken.

Pets are prohibited from entering all laboratory facilities. See "Accommodating Students with Service Animals in Teaching Labs" for more information.

13. SUPPORT PERSONNEL ACCESS

For the purpose of this document, support personnel include but are not limited to ITS staff, facilities maintenance and operations staff, custodial staff, contracted services staff, service providers, and emergency personnel.

The supervisors of support personnel, including staff for contracted services, in conjunction with EHSRMS, have the responsibility to ensure that their staff have all appropriate safety training completed and the required training records, liability waivers, and other documents filed with EHSRMS or designee before entry into laboratory facilities shall be permitted.

After appropriate safety training is completed and documented but before lab facilities with posted 'Restricted Access' notifications are accessed, the room advisor and building manager of said room need to be contacted. Room advisors (faculty/ staff in charge of a room) and their phone numbers are listed on a sign outside the door of each laboratory. A room advisor must give verbal permission and, in some cases, additional training to service providers, or may need to be physically present while work is done for insurance/ liability purposes associated with the space.

See additional stipulations below.

13.1 *Routine Operations*

***Open** and **Extended Hours**:*

Whenever possible, arrange scheduled support work around class times to minimize the impact on educational services.

After Hours:

If one of the listed room advisors (see above) cannot be found, UPD can assist in tracking one down.

13.2 *Non-Routine and Emergency Operations*

Unless it is an emergency situation, entry approval is required for all non-routine support personnel. The laboratory should not be entered unless an individual's life is in danger or additional damage to facilities is anticipated. The decision to enter should be weighed against the possible exposure service providers and emergency personnel will have to dangers unknown to them, inherent in the environment that is being entered.

14. DEFINITIONS

Access Request:

The official request for access to buildings and/ or labs, for either unsupervised, tiered, or after-hours access. The process is currently under development.

Authority, The authority:

For the purpose of this document, *the authority* is the employee who is considered the subject matter expert on the research, instruction, and/ or other laboratory activities in which they, their staff, and their students engage.

Buddy:

A trusted, responsible person who meets the following requirements:

- Has taken applicable safety training for the area in which a controlled-space occupant is working.
- Is preferably a UAA student, faculty, or staff member.
- Willingly takes on the responsibility to visually check in with the individual working alone according to a pre-established schedule.
- Willingly takes on the responsibility to be present in the same building or room when required.
- Knows the procedure for contacting 911/ UPD in case of an emergency.

Building Managers:

Building managers act as the primary point of contact for service department concerns that, for the most part, involve the entire building. Building managers generally assist with the following: communications, annual building inspections and meetings, periodic building and safety checks, and assist the emergency management office with annual evacuations and operations emergency plans. See the Building Access and Hours Policy for more information.

Campus Status: as defined in the Administrative Services 'Building Access and Hours Policy'. Exceptions to this policy are outlined elsewhere in this document.

a. **Open** Status: The open status designates the time the building is unlocked and open to visitors. Each building publishes its open hours which are generally *Monday through Friday from 8:00 a.m. to 5:00 p.m.* Additionally, a campus building may be in open status for scheduled events that are open to the public and campus community. Some buildings, for example residential housing, are never in open status.

b. **Tiered Access** or **extended hours**: Tiered access means that campus can be accessed beyond open hours for campus community when there is a business reason. For example, campus community could be granted extended access, but the building would not be open to visitors. Generally, this means the door will be locked and access will be by Wolfcard through the access control system (ACS). In absence of the ACS, as is the case with a limited number of our facilities, users are requested to coordinate opening/locking of the doors with UPD. Generally, the hours for tiered access is *Monday through Friday from 7:00 a.m. to 10:30 p.m.*
   - During open or tiered access status, to schedule an event in University owned buildings, employees and students shall use the University Scheduling Software. The Scheduling Office manages the software.

c. Intersession: Classes are not in session. Employees are expected to report to work. Campus is open to visitors during normal business hours or for events, meetings, or to use the library.

d. **After Hours**/Overnight Campus Closure: Access to campus facilities is restricted between *10:30 p.m. and 7:00 a.m. Sunday to Sunday*. Buildings and facilities are normally closed and locked. Events during after hours are coordinated through the scheduling software and require a risk assessment by EHSRMS or UPD.

e. Weekends and Holidays Limited Campus Access: While most buildings and facilities are locked during the weekends and on holidays, campus access is permitted to use the library, the student union or for scheduled events and meetings. To schedule an event in University owned buildings, employees and students shall use the University Scheduling Software. The Scheduling Office manages the software and UPD is the approval authority. Delegated approvals once obtained are in place until rescinded.

f. Building Closure for Emergency: A building or buildings may be closed or evacuated because of an emergency, health mandate or system failures. During the time of a building closure classes may be relocated or delivered online. Employees may be asked to stay home or work at another location.

g. Campus Closure for Emergency or Evacuation: Classes are cancelled during emergency closure. Employees are not expected to report to work, may be asked to shelter in place, leave work early, or evacuate campus or a specific building as directed. Examples of emergency closures are weather related, earthquakes, or campus incidents involving hazardous materials or an active shooter situation. Only essential personnel are permitted on campus during emergency closure or campus evacuation. Special consideration may be given to students living on-campus who may be unable to relocate.

Check-in:

For this document, a check-in is a visual or auditory confirmation by a Safety Contact/ Buddy to determine that an individual working in a laboratory is uninjured and does not require assistance. Check-ins with off-site Safety Contacts can be performed through texting, e-mailing, or calling by phone, among other ways. The Safety Contact/ Buddy utilized for check-ins should be provided with the name of the building, lab room number, check-in interval time, and UPD's phone number in case contact cannot be established within the agreed-upon time or if an incident has occurred and UPD's assistance is required. The check-in interval time should correspond to risk and likeliness. Check-ins should be more frequent during higher risk protocols.

Chemical Hygiene Officer (CHO):

The Chemical Hygiene Officer is an employee of EHSRMS and in lab and chemical matters acts as an agent of EHSRMS. This position is required per OSHA 29 CFR 1910.1450(e)(3)(vii). Contact the CHO at 907-786-1279.

Chemical Hygiene Plan (CHP):

The University of Alaska Anchorage's Chemical Hygiene Plan is an OSHA-mandated document, as per 29 CFR 1910.1450(e)(3). It outlines the university's Safety-First Approach to chemicals and chemical handling and describes the university's cradle-to-grave policies for chemicals. The CHP is continuously reviewed and updated as needed by the Chemical Safety Committee, which is overseen by the Office of Research Integrity and Compliance. The most recent copy is available through the EHSRMS website.

Designated Responder (DR):

A non-minor employee that has accepted the responsibility and is specifically trained to respond in an emergency to a specific protocol and is required for Extreme Hazard Protocols. If the DR leaves the laboratory, the other lab occupants shall quit working on the protocol. A DR may be used for any hazard level lower than Extreme Hazard but is not required.

Divisional Laboratory Manager:

The divisional laboratory manager falls under laboratory support and is the supervising individual overseeing the management of laboratories. (There is no HR position with this specific title. The title of a person performing this function will be different depending on the School or College and Division.)

Employee:

Employees are individuals who are currently employed by and receive a paycheck from the University of Alaska.

Environmental Health & Safety and Risk Management Support and Emergency Management (EHSRMS):

These employees perform their duties under the authority of Board of Regents Policy 05.09. Among other duties, said employees are mandated to "stop any activity that presents an unreasonable health and safety risk to employees, students, visitors or the environment".

The Chemical Hygiene Officer and Risk Manager fall under EHSRMS.

Extreme Hazard Protocol:

See "Protocol Hazard Level."

Facilities:

UAA campuses and their buildings, classrooms, laboratories, etc.

GHS:

Globally Harmonized System of Classification and Labelling of Chemicals, an internationally agreed-upon standard managed by the United Nations and adopted by OSHA.

Graduate Student:

A student that has been accepted to a graduate program at UAA and is not on deferred status.

Hazard:

Threat. Anything in the environment that has the potential to cause harm to people, including ill health, injury, or death, or cause damage to equipment, property, or the environment. Hazards are an inherent property and cannot be mitigated.

Hazard classification:

Under GHS chemicals and mixtures are classified by class and category, describing the nature and degree of hazard of the product. The hazards classes fall into 3 major categories: health hazards, physical hazards, and environmental hazards. Each hazard within a class is further rated into categories, generally number ranked in terms of severity with lower numbers indicating a greater severity of that hazard class.

Hazardous Materials:

Any material or substance, which, if improperly handled, can be damaging to personal health and the environment. Hazards associated with a material may be determined by reviewing the Safety Data Sheets (SDS), the product label, or the shipping papers. Federal and State regulations determine if a material is hazardous through specific listings and definitions addressed in EPA regulation 40 CFR 261 and CDPHE regulation 6 CCR 1007-3, Part 261. The final tool in determining if a material is hazardous is personal knowledge; an individual may have created the materials or have specific information about the material's ingredients.

IMT:

The UAA Incident Management Team is a small group of University employees that represents a broad knowledge and service capability to meet emergency situations which occur on or near the UAA Anchorage campus that affect the members of the University community. The primary responsibility of the IMT is to provide a comprehensive response to a wide variety of potential events or situations that may adversely affect the safety of the UAA community. The IMT provides the University's immediate response to these events or situations, normally up to 24 to 48 hours. The IMT assessment and service provide support to the Chancellor and the Chancellor's Cabinet.

Laboratory:

Any room where hands-on learning occurs. Includes spaces referred to as shops, studios, makerspaces, or similar.

Laboratory Access:

In this document, the term "laboratory access" refers specifically to keyed or electronic (code or keycard) access given to a specific individual for a specified time of day and day(s) of the week. Laboratory access is evaluated per semester or annually, depending on the position held by the individual. Initial access is contingent on the completion and documentation of specified safety training as determined by *the authority* or their designee with assistance from the Divisional Lab Manager and approval from EHSRMS.

Lab Group:

A lab group is a group of employees and/ or students that work for and are subordinate to *the authority*. The individuals in this group perform most of their duties in a common lab space.

Laboratory Protocol and Equipment Proficiency Form:

All entries made on this form acknowledge proficiency of specific protocols and equipment use. It should be understood that *the authority* is ultimately responsible for ensuring that the individual has received proper training in following these protocols and using indicated equipment, and that the individual knows how to respond to emergencies in case any occur. Examples can be found on the EHSRMS website.

Laboratory-Specific (Lab-specific) Training:

Personnel engaged in any laboratory research or teaching/ prepping must attend an annual laboratory-specific training conducted by *the authority* or designee in which lab-specific safety procedures and protocols are covered. Personnel and teaching assistants are, in turn, responsible for offering a similar safety orientation to the students enrolled in their courses or learning experiences. Topics that shall be included in this training are: the UAA Administrative policies and lab-specific policies that apply to the lab activities, emergency evacuation and general emergency procedures, finding the location of emergency

equipment in and near the room, and the location and use of safety equipment and personal protective equipment required for the activities. Additional topics may be included at the discretion of *the authority*. For employees and volunteers, training shall be repeated annually and when work assignments involve new exposures. For students, training shall be given for each lab course in which they are enrolled.

Low Hazard Protocol:

See "Protocol Hazard Level."

Minor:

A minor is an individual age 17 and under *and* not enrolled as a student at UAA. Minors who wish to utilize UAA laboratory facilities or equipment may need, in addition to approval from a parent or guardian, to complete a Volunteer Qualification Checklist, available from Human Resource Services (HR), and/ or a Liability Waiver, available from EHSRMS. This documentation shall be kept on file by the sponsoring department or Divisional Lab Manager. Access to facilities is contingent upon receipt and approval of this documentation by the appropriate Dean or Director, HR, and EHSRMS.

Moderate Hazard Protocol:

See "Protocol Hazard Level."

OSHA-mandated Training:

Any regulation found in 29 CFR 1910, OHSA's General Industry Regulations, and/ or 29 CFR 1926, OSHA's Construction Regulations that specifically state employees must receive training.

Passive Observer:

A passive observer is an individual who is not affiliated with a lab group, who has gained entry into a lab with all proper permissions, and is simply there to observe. Passive observers are not permitted to participate in the manipulation of any chemicals, lab equipment, specimens, or be in close proximity to an operation, which may put them at physical risk. In instances where there is any chance of passive observers being at risk from an ongoing protocol, appropriate personal protective equipment shall be provided to and worn by the passive observer.

Principal Investigator (PI):

The principal investigator is the lead researcher and, therefore, *the authority* for a particular research project. If the PI has staff and/ or students working for him or her, then he or she is also responsible for the training and safety of his or her subordinates. The PI shall be proficient in all protocols associated with his or her lab and research, and the PI of a lab is responsible for his or her lab facilities.

Protocol Hazard Level:

The *calculated protocol hazard level* of each protocol shall be determined through a risk assessment based on *the authority's* SOP/ JHA. EHSRMS serves as a resource, as needed, for developing a risk assessment. Work through the calculation using the matrices found in Appendix A – Risk Assessment, to determine the overall hazard level of the protocol.

Low Hazard Protocol: Has a calculated Protocol Hazard Value under 20 on the Severity Level vs. Probability Matrix. In general, Low Hazard Protocols have a low or negligible severity level regardless of the probability, or a moderate or significant severity level with an unlikely probability.

Moderate Hazard Protocol: Has a calculated Protocol Hazard Value of 25-45 on the Severity Level vs. Probability Matrix. In general, Moderate Hazard Protocols have moderate or significant severity levels with possible probabilities, or an extreme severity level with a very unlikely probability.

Significant Hazard Protocol: Has a calculated Protocol Hazard Value of 50-70 on the Severity Level vs. Probability Matrix. In general, Significant Hazard Protocols have a moderate or significant severity level and a likely to very likely probability, or an extreme severity level and an unlikely probability.

Extreme Hazard Protocol: Has a calculated Protocol Hazard Value above 70 on the Severity vs. Probability Matrix. In general, an Extreme Hazard Protocol has a significant severity level and a very likely probability, or an extreme severity level and a possible to likely probability.

Risk:

Actions a person takes in relationship to hazards. Also, the combination of the likelihood of the harm occurring and the severity of the harm that may occur. Risk can be mitigated by following the Hierarchy of Controls to lessen the effects of a hazard. The Hierarchy of Controls is a process described by NIOSH as using the most effective and protective means as feasible. The controls from most to least effective and protective are: 1. Elimination – physically remove the hazard, 2. Substitution – replace the hazard with something safer, 3. Engineering Controls – isolate people from the hazard, 4. Administrative Controls – change the way people work, and 5. Personal Protective Equipment – require people wear equipment protective against the hazard.

Risk Assessment:

A risk assessment is performed by *the authority* or their designee with assistance from EHSRMS when requested. A risk assessment involves the identification and evaluation of estimated levels of risk involved in the use of a protocol that may involve environmental, chemical, biological, physical, or radioactive hazards. An estimation of severity of consequences and likelihood of occurrence occurs with the aid of a risk assessment (see Appendix A).

Risk Manager:

The Risk Manager is an employee of EHSRMS and in liability, risk, and insurance matters acts as an agent of EHSRMS. Contact the Risk Manager at 907-786-1335.

Room Advisor:

Controlled-access spaces across campus have signs posted on entry doors stating that authorized personnel only have access. If a service provider needs to enter any of these facilities, they need to first contact a room advisor for permission, and in some instances, additional training or counseling will be provided before entry will be permitted. These room advisors are people who have complete knowledge of the unique hazards and/ or sensitive operations that are ongoing in these facilities. A list of advisors is prioritized on the aforementioned signs. They should be contacted in the stated order until one is reached, and clearance is given before entry is gained.

Safety Contact:

A trusted, responsible person who meets the following requirements:

- Is available and able to communicate (via call, text, radio, or email) during the entire time a controlled-space occupant will be working alone.
- Willingly takes on the responsibility to communicate according to a pre-established schedule.

- Knows the procedure for contacting UPD in case of the loss of contact with the individual working alone.
- Not required to be in the same building or room as the individual working alone.

Safety Data Sheet (SDS):

A detailed informational document prepared by the manufacturer or importer of a chemical. The intent of the SDS is to communicate chemical information to downstream transporters and users of the material. The SDS includes information such as physical properties, health and environmental hazards, protective measures, and precautions for handling, storage, and transportation.

Safety First Approach (SFA):

The attitude of avoiding unnecessary risks and acting to prevent harm to oneself, other persons, property, and the environment. The action of performing a hazard analysis of the procedure, evaluating the potential risks and how they are to be mitigated, and maintaining situational awareness while engaging in laboratory activities. Safety training is needed to become cognizant of the potential hazards inherent in laboratories.

Safety Record:

An individual's safety record is based on incident reviews performed by EHSRMS.

Shall/ Must/ Will:

Indicates a mandatory requirement; something that must be done.

Should/ May/ Could/ Can:

Indicates a recommendation or that which is advised but not required.

Significant Hazard Protocol:

See "Protocol Hazard Level."

Special Users:

Laboratory access shall be granted to special users on a case-by-case basis. Users who do not fall into one of the categories listed throughout this document and who are not affiliated with the university may request the use of UAA laboratory facilities for a fee and upon proof of liability insurance. In some cases, one or both requirements may be waived. Special users should contact the appropriate Divisional Lab Manager and EHSRMS for further details.

Student:

Any person enrolled in a course, regardless of age. This includes graduate, undergraduate, and Alaska Middle School enrollees.

Training/ Safety training:

Includes, but is not limited to, Laboratory-Specific training, OSHA-mandated training, and other safety related instruction provided by the university, through web-based instruction, in-person instruction, or any other means appropriate to provide health and safety information to employees, students, and other personnel.

UAA Facilities:

UAA Facilities and Campus Services including Facilities Planning and Construction (FPC) and Facilities Maintenance and Operations. Personnel are responsible for the upkeep, remodeling, and routine maintenance of the campus buildings, vehicles, and grounds.

Undergraduate Student:

A student that has been accepted to UAA as an undergraduate and who is currently registered in courses.

University of Alaska Anchorage (UAA):

UAA is the "university" in this document and refers to the Anchorage campus only. Community campuses are responsible for either developing their own Controlled-Space Access Plan (CSAP) or adopting the Anchorage campus CSAP as a whole. In cases of adoption, the terms "UAA" and "university" apply to the adopter as well.

University Police Department (UPD):

UAA University Police Department. For all emergencies, call 911. UPDs phone number is 907-786-1120 when dialing from a phone located off-campus or from a cell phone. From an on-campus phone, dial 6-1120. To contact UPD by e-mail, use police@alaska.edu.

Visiting Researcher:

A visiting researcher is a collaborator from private industry, another academic institution, or government facility performing research on the UAA campus.

Visitor:

Any person utilizing the UAA campus who is doing so in a non-employee, non-student, non-volunteer, and non-affiliated capacity.

Volunteer:

Volunteers are typically individuals who are performing duties in research labs without being enrolled in a research course or being paid or otherwise compensated as an employee. All UAA lab volunteers must complete a Volunteer Qualification Checklist and be pre-approved by the appropriate academic department's Dean or Director, Human Resource Services, and EHSRMS.

15. LIST OF ABBREVIATIONS

- AKOSH ..... Alaska Occupational Safety and Health Administration
- CFR ..... Code of Federal Regulations
- CHA ..... Chemical Hazard Assessment
- CHO ..... Chemical Hygiene Officer
- CHP ..... Chemical Hygiene Plan
- EHSRMS..... Environmental Health & Safety, Risk Management
- EPA ..... Environmental Protection Agency
- GHS ..... Globally Harmonized System
- JHA ..... Job Hazard Analysis
- OSHA ..... Occupational Safety and Health Administration
- PI ..... Principal Investigator
- PPE ..... Personal Protective Equipment
- SDS ..... Safety Data Sheet
- SFA ..... Safety First Approach
- SOP ..... Standard Operating Procedure
- UAA ..... University of Alaska Anchorage
- UPD ..... University Police Department

16. Appendix A – Risk Assessment

Training module entitled *Risk Assessment* is available online at myUA.

1) Determine which materials or activities are used in the process. Use the Hazard Type Matrix to determine the level of the hazard to the person performing the activity. See 17.1, Buddy System Requirements for additional examples.
2) Find the same level of hazard in the Consequences Matrix under People. Evaluate the effect of an adverse incident of that severity to a person on the Assets (building, equipment, etc.), Environment (air, water, and/ or ground contamination and clean up), and Institutional Reputation. Add the numbers in the 4 boxes.
3) Find the Severity Level Total Value from the Consequences Matrix in the Severity Level vs. Probability Matrix. Determine how likely the adverse incident is to occur. The box where the Severity Level and Probability intersect is the Protocol Hazard Level.

16.1 *Hazard Type Matrix to Determine Row for People Column in Consequences Matrix*

Level	Chemical	Biological	Radiation	Physical
A	Not working with chemicals	Not working with any biological materials	Not working with any sources of radiation	Not working with any tools
B	Working with chemicals rated NFPA 0 or GHS 5 for any Hazard Category	Working with Biosafety Level 1 materials	Working with interlocked equipment – SEMs, TEMs, lasers	Working with portable hand tools without blades
C	Working with chemicals rated NFPA 1 or GHS 3 or 4 for any Hazard Category	Working with Biosafety Level 2 materials	Working with sealed RAM sources or Class IIIA, low power open beam lasers	Working with powered hand tools or portable tools with blades
D	Working with chemicals rated NFPA 3 or GHS 2 for any Hazard Category	Working with Biosafety Level 3 materials	Working with RIA kits, RAM sources, or areas labeled High Radiation Area	Working with powered hand tools with blades, floor or bench mounted equipment, hot work operations, on catwalks or heights with fall protection
E	Working with chemicals rated NFPA 4 or GHS 1 for any Hazard Category	Working with Biosafety Level 4 materials	Working with open beam Class IIIB or Class IV Lasers, or area labeled Very High Radiation Area	Working from heights above 4 feet without fall protection; flying manned aircraft

16.2 *Consequences Matrix to Determine Severity Level Total Value*

Level	Institutional Reputation (I)	Environment (II)	Assets (III)	People (IV)
A	Zero to Slight impact; Contained within the department **Value = 1**	Zero to Slight effect; Individual or class clean-up efforts **Value = 2**	Zero to Slight damage; Annoyance level impact on services **Value = 3**	Zero to Slight injury **Value = 4**
B	Limited impact; Contained within the department; known by upper administration **Value = 2**	Minor effect; Individual or class clean-up efforts **Value = 4**	Minor damage; Minor impact on service, minor cost **$** **Value = 6**	Minor injury – may need First Aid **Value = 8**
C	Considerable impact; Local public and press interest and coverage **Value = 3**	Local effect; Institution or contracted clean-up – potential State agency involvement **Value = 6**	Local damage; Disruption to service, moderate cost **$$** **Value = 9**	Major injury – needs First Aid; may need Medical treatment **Value = 12**
D	Major National impact; National public and press interest and coverage **Value = 4**	Major effect; May need contracted clean-up – State agency involvement **Value = 8**	Major damage; Serious disruption to services, costly **$$$** **Value = 12**	Serious injury or disability **Value = 16**
E	Major International impact; National publicity for more than 3 days **Value = 5**	Massive effect; Contracted clean-up efforts – potential Federal agency involvement **Value = 10**	Extensive damage; Total failure of services, extremely expensive **$$$$** **Value = 15**	Fatalities **Value = 20**

Institutional Reputation (I) _____
+ Environment (II)_____
+ Assets (III) _____
+ People (IV) _____

Severity Level Total Value _____

16.3 *Severity Level vs. Probability Matrix*

Severity Level	Very unlikely	Unlikely	Possible	Likely	Very likely
Total Value 10-15	Low/ Negligible Hazard Protocol Value = 1	Low/ Negligible Hazard Protocol Value = 2	Low/ Negligible Hazard Protocol Value =3	Low/ Negligible Hazard Protocol Value = 4	Low/ Negligible Hazard Protocol Value = 5
Total Value 15-25	Low/ Negligible Hazard Protocol Value = 5	Low/ Negligible Hazard Protocol Value = 10	Low/ Negligible Hazard Protocol Value = 15	Low/ Negligible Hazard Protocol Value = 20	Moderate Hazard Protocol Value = 25
Total Value 25-35	Low/ Negligible Hazard Protocol Value = 10	Low/ Negligible Hazard Protocol Value = 20	Moderate Hazard Protocol Value = 30	Moderate Hazard Protocol Value = 40	Significant Hazard Protocol Value = 50
Total Value 35-45	Low/ Negligible Hazard Protocol Value =15	Moderate Hazard Protocol Value = 30	Moderate Hazard Protocol Value = 45	Significant Hazard Protocol Value = 60	Extreme Hazard Protocol Value = 75
Total Value 45-50	Moderate Hazard Protocol Value = 25	Significant Hazard Protocol Value = 50	Extreme Hazard Protocol Value = 75	Extreme Hazard Protocol Value = 100	Extreme Hazard Protocol Value = 125

Protocol Hazard Level

Low/ Negligible Hazard Protocol – 1-20

Moderate Hazard Protocol – 25-45

Significant Hazard Protocol – 50-70

Extreme Hazard Protocol – above 70

17. Appendix B – The Buddy System

The Buddy System is designed to ensure the safety of individuals working alone in labs/ shops/ studios, especially when hazardous chemicals or situations are present that may pose a threat to human health or physical safety.

A Safety Contact is someone who meets the following requirements:

- Is available and able to communicate (via call, text, radio, or email) during the entire time the individual will be working alone.
- Willingly takes on the responsibility to communicate according to a pre-established schedule.
- Knows the procedure for contacting UPD in case of the loss of contact with the individual working alone.
- Not required to be in the same building or room as the individual working alone.

A Buddy is someone who meets the following requirements:

- Has taken applicable safety training for the area in which the individual is working.
- Is preferably a UAA student, faculty, or staff member.
- Willingly takes on the responsibility to visually check in with the individual working alone according to a pre-established schedule.
- Willingly takes on the responsibility to be present in the same building or room when required.
- Knows the procedure for contacting 911/ UPD in case of an emergency.

Buddy System Procedure:

1. Identify under which risk category your work falls by checking your Protocol Equipment and Proficiency Form. The requirements of the most hazardous activity or protocol shall be followed.
2. Determine who your Safety Contact/ Buddy will be and notify them of: the building and room number you will be in, the materials/ equipment you will be working with, associated hazards, and the time period during which you will be working.
3. If the Safety Contact/ Buddy is not required to be in the room with you (moderate or significant hazard protocols), set up a communication schedule and check-in with your Safety Contact/ Buddy on a pre-established, periodic basis via call, text, radio, or email.
4. Ensure the Safety Contact/ Buddy has your contact information and the contact information for UPD. Instruct them to contact 911/ UPD (907-786-1120) immediately should a scheduled check-in be missed, and you cannot be reached or should they be witness to an emergency.

NOTES:

These are the minimum requirements for establishing a Buddy System. Specific Colleges/ Departments may be more restrictive with their process.

17.1 *The Buddy System Hazard Matrix*

Buddy System Requirements Based on Hazard

NOTE: Follow the requirements of the highest hazard category of all the elements included in your activity.

Risk Category	Chemical Safety	Biosafety	Radiation Safety	Physical Hazards	DR/ Buddy Requirements
Extreme Hazard Protocol	You will be working directly with a chemical that: ● is an unstable explosive, is explosive (mass explosion hazard, severe projection hazard, or fire, blast or projection hazard), may mass explode in fire; ● is extremely flammable, heating may cause an explosion, catches fire spontaneously if exposed to air, is self-heating (may catch fire); ● when in contact with water releases flammable gases which may ignite spontaneously, may intensify fire (oxidizer), may cause fire or explosion (strong oxidizer); and/or ● is fatal or toxic in contact with skin, causes severe burns and eye damage, causes serious eye damage, or is fatal or toxic if inhaled. **Any chemical on OSHA's Partcularly Hazardous Substances List, rated NFPA 4, or GHS 1 for any Hazard Category, or has an NFPA Specific Hazard Designation.**	You will be working with any agent classified as **Biohazard Level 4**: bioagents likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not ususally available. **UAA does not have BSL 4 capabilities.** **Examples:** Ebola virus, Marburg virus, *Bacillus anthracis* , Hantavirus, HIV	You will be working with **open beam Class IIIB and/or IV Laser(s)** or in an area labeled as a **Very High Radiation Area.**	You will be working at a **height of 4 feet or higher without fall protection, flying manned aircraft.**	**You must have a Designated Responder (DR) in the lab/shop with you**. See the Definitions section for requirements to be a Designated Responder. Must have appropriate training/ experience. Must follow written SOP. Ensure the DR knows the proper procedure for contacting UPD. Exceptions to DR requirement can be made by Risk Management. **After Hours:** Activity is **prohibited,** unless academic necessity is demonstrated and pre-approved by Risk Management. Then at least a Safety Contact is required.
Significant Hazard Protocol	You will be working directly with a chemical that: ● is a fire or projection hazard, flammable or highly flammable, heating may cause fire or explosion, is self-heating in large quantities (may catch fire); ● when in contact with water releases flammable gas, may intensify fire (oxidizer); ● is harmful in contact with skin, causes serious eye irritation, is harmful if inhaled, may cause allergy or asthma symptoms or breathing difficulties if inhaled; and/or ● may cause genetic defects or cancer, or causes damage to organs. **Any chemical rated NFPA 3 or GHS 2 for any Hazard Category**	You will be working with any agent classified as **Biohazard Level 3**: bioagents associated with serious or lethal human diseases for which preventive or therapeutic interventions may be available. **UAA does not have BSL 3 capabilities.** **Examples:** *Yersinia pestis* , HIV, SARS virus.	You will be working in an area labeled as a **High Radiation Area.** You will be working with **RIA kits** or other sources of **radio-isotopes**.	You will be working directly with **industrial equipment, floor or benchtop mounted equipment, hot work operations, on catwalks or other surfaces with fall protection.** **Example:** Table saw, welding, open flames, kiln operation.	**An on-site Buddy is required, but not necessarily in the lab/shop with you**. You must have a predetermined communication or check-in schedule. Ensure your Buddy knows the proper procedure for contacting UPD. **After Hours:** Needs **Risk Manager approval**. **A Buddy in the same room is required** .
Moderate Hazard Protocol	You will be working directly with a chemical that: ● is a combustible liquid, heating may cause fire; ● may be harmful in contact with skin, causes skin irritation or mild skin irritation, may cause an allergic skin reaction, causes eye irritation; ● may be harmful if inhaled, may cause respiratory irritation, may cause drowsiness or dizziness; and/or ● is suspected of causing genetic defects or cancer, or may cause damage to organs. **Any chemical rated NFPA 1 or GHS 3 or 4 for any Hazard Category**	You will be working with any agent classified as **Biohazard Level 2:** bioagents associated with human disease that is rarely serious and for which preventive or therapeutic interventions are often available. **Examples:** Hepatitis A, B, or C, Influenza A, salmonella, pathogenic *Escherichia coli*	You will be working with sealed sources or low power (Class IIIa) open beam lasers.	You will be working directly with **portable tools**. **Example:** Cord and Cordless powered hand tools	**An on-site Buddy is recommended.** If not available, a Safety Contact should be utilized. **After Hours:** An **on-site Buddy** is **required,** within visual distance.
Low to Negligible Hazard Protocol	You will be working with only minimally hazardous chemicals or not working with **any** chemicals. **Any chemical rated NFPA 0 or GHS 5 for any Hazard Category.**	You will **not** be working with **any** biological agents **OR** you will be working with any agent classified as **Biohazard Level 1:** bioagents not associated with disease in healthy adult humans. **Examples:** cell cultures, non-infectious bacteria, bacteria and viruses including *Bacillus subtilis, canine hepatitis,* varicella (chicken pox)	You will not be working with **any** hazardous materials (Ex: Class I and II, IIA Lasers), or you will be working with **interlocked** equipment (interlocked SEMs, TEMs, or lasers).	You will not be working with any power tools. **Example:** Hammer, screwdriver, hand saw	A Safety Contact is recommended. **After Hours: A Safety Contact is required.**

NOTE: The lists of examples are not exhaustive. Not all relevant hazards are mentioned, these are just some common examples. Refer to the Hazard Assessment for the protocol you will be following to determine the hazard level and buddy system requirements to follow.

THIS PAGE INTENTIONALLY LEFT BLANK