

Last updated: December 21, 2020

[INTRODUCTION](#)

[CONTACT INFORMATION](#)

[INDIVIDUAL CHEMICAL HYGIENE RESPONSIBILITIES](#)

[Instructor \(PI\)](#)

[Teaching Assistants](#)

[Students](#)

[Laboratory Supervisor](#)

[Lab Manager](#)

[Office Manager](#)

[CNSM Dean and Biology and Wildlife Department Chair](#)

[Vice Chancellor for Research and Provost](#)

[INFORMATION AND TRAINING](#)

[Information](#)

[Training](#)

[CIRCUMSTANCES REQUIRING PRIOR APPROVAL](#)

[LABORATORY-SPECIFIC STANDARD OPERATING PROCEDURES \(SOPs\)](#)

[ENGINEERING CONTROLS AND LABORATORY VENTILATION](#)

[Fume hoods](#)

[Snorkel hoods](#)

[Respirators](#)

[PERSONAL PROTECTIVE EQUIPMENT \(PPE\) AND APPAREL](#)

[Eye Protection](#)

[Gloves](#)

[Clothing](#)

[UV Protective Face Shields](#)

[Care and maintenance of PPE](#)

[LABORATORY SAFETY RULES AND REGULATIONS](#)

[General rules for laboratory work with chemicals](#)

[Housekeeping](#)

[General rules for laboratory work with biological agents](#)

[EMERGENCY EQUIPMENT](#)

[Emergency eyewashes and showers](#)

[Fire Extinguishers](#)

Propane Gas Shut-Off Valves

Emergency Fire Blankets

Emergency Telephones

CHEMICAL MANAGEMENT

Chemical Procurement

Chemical Storage

Chemical Handling

Chemical Inventory

Chemical Transport

Chemical Transfer

Chemical Shipping

COMPRE

[Appendix 14: UAF SAFETY POLICY](#)

[LABORATORY-SPECIFIC STANDARD OPERATING PROCEDURES](#)

[Autoclaving](#)

[Bunsen Burners](#)

[Catechol](#)

[Cryocooler Circulating Ultra-Low Temperature Bath with 95% Ethanol Coolant](#)

[Dissections – Non-Preserved Specimens and Specimens Preserved in Carolina’s Perfect Solution®](#)

[Electrophoresis with Agarose Gels and TAE/TBE Buffer](#)

[Ethidium Bromide](#)

[Phenylthiourea, N-Phenylthiourea](#)

[Polyacrylamide Gels](#)

[UV Light](#)

Biology and Wildlife Chemistry

INDIVIDUAL CHEMICAL HYGIENE RESPONSIBILITIES

The responsibility for maintaining a safe laboratory environment lies with the Principal Investigator (PI) for the lab. In Biology and Wildlife teaching laboratories, the instructor of record for the course is the PI. Every individual in the lab is expected to conduct all operations and procedures in a safe and prudent manner.

Instructor (PI)

The instructor has responsibility for implementation of the CHP and the ensuring of safe conditions in the laboratory. The instructor shall:

1. complete all required safety training, including those related to lab safety.
2. ensure that their TAs have completed all required training prior to the start of lab work, including training on the contents of this CHP document. Work with the B&W Laboratory Supervisor and Department Chair to address any deficiencies in a timely fashion.

Ag ensure that students are always appropriately supervised while performing lab work, including work done outside of regular lab hours.

4. identify hazards and risks associated with each lab exercise and involves performing the 29CFR1910.132(d) required hazard determination and maintaining required documentation as well as carrying out the Department's safety program.

Lab Manager

The Lab Manager shall:

1. complete all required training.
2. carry out weekly testing of emergency showers and eyewashes.
3. carry out weekly inspections of all B&W labs and prep areas, including inspection of PPE. Correct any problems, including re-stocking and replacement of PPE as needed.
4. provide additional PPE when it is identified as necessary and make sure that the users understand how to properly use it.
5. provide appropriate waste containers for chemical and biological wastes upon request.
6. arrange for disposal of chemical waste and biological waste that cannot be autoclaved once notified of the waste by TAs or instructors.
7. place orders for courses, with approval of all chemical purchases or purchases over a specified dollar amount requiring approval from the Laboratory Supervisor. Keep all necessary documentation.
8. inspect equipment at time of issue to a lab and upon return. At time of supply pick-up, make sure keep the user is familiar with all hazards and procedures for mitigating risk. Involve Lab Supervisor as necessary to provide training to users.
9. keep the Lab Supervisor informed of equipment and chemicals requested by courses so that

CNSM Dean and Biology and Wildlife Department Chair

The Dean and Department Chair shall:

1. complete all required training.
2. promote instructor and TA awareness of their responsibility for the safety aspects of course instruction.
3. ensure that TA contracts (1) include time on contract for completion of required training prior to the start of classes and lab prep activities, and (2) specify the need to complete all training requirements, the timing requirements for completion, and the consequences for non-compliance.
4. apprise the Laboratory Supervisor and Lab Manager of incoming TAs each semester or designate a responsible person to perform this task so that the Laboratory Supervisor can contact individuals in a timely fashion about training requirements.
5. assist in ensuring faculty and graduate student compliance with training requirements as needed, including involving University Administrators as needed.
6. assist in resolving disagreements upon request of the CHO.
7. assist in the enforcement of policies and contracts as needed.
8. bring to the attention of the CHO any items that could improve Biology and Wildlife's CHP and lab safety program.
9. help promote the program.



INFORMATION AND TRAINING

Information

The Laboratory Supervisor and Lab Manager shall ensure that information needed to complete required training is provided at the time of a TA's or instructor's initial hire. People who are teaching in B&W lab spaces but are not hired by B&W (e.g. CTC, SSL) are expected to be provided with this information by their supervisor: the Laboratory Supervisor will confirm that training information and been provided and notify individuals and programs of any training needs or deficiencies prior to the start of lab usage. The Laboratory Supervisor shall ensure that instructors are notified of any training needs or deficiencies prior to each semester in which they teach, including need for refresher training and updates on prior training information. The Lab Manager shall ensure that TAs are notified of training every fall.

Training
Employees (Including TA

LABORATORY-SPECIFIC STANDARD OPERATING PROCEDURES (SOPs)

Instructors must include their own laboratory specific SOPs in this CHP. Instructors may ask the Laboratory Supervisor to write SOPs for them, but must provide all information necessary for the preparation of the SOP to the Laboratory Supervisor in a timely fashion as requested.

Examples of procedures for which SOPs are needed include, but are not limited to:

1. operation of laboratory equipment that could pose a hazard, including but not limited to
 - electrophoresis equipment
 - lasers
 - cryocooling equipment
 - atomic absorption spectrometers
 - Bunsen burners
 - muffle furnaces
 - compressed gas cylinders
 - freeze-dryers
2. operations or materials posing a special hazard, including but not limited to
 - perchloric acid
 - pyrophorics
 - distillations and/or extractions
 - handling infectious agents
 - working with microbiological cultures
 - ethidium bromide
3. operations that use a chemical listed as requiring an SOP in the chemical inventory
4. neutralize compressed g

ENGINEERING CONTROLS AND LABORATORY VENTILATION

General laboratory ventilation is norm

8. Fume exhaust hoods do not provide adequate protection for all operations involving toxic materials. A higher level of containment should be used for procedures where exposure to even small amounts of the chemical can be serious. If you are in doubt about the level of containment needed for your operation, ask the Laboratory Supervisor well in advance of beginning work.
9. Fume hoods do NOT provide an appropriate location for work with microbiological organisms. Microbiological hoods do not properly contain them, and may cause their accidental release. Fume hoods also draw air in over cultures and increase the likelihood of contamination. Do NOT work with microbiological cultures in a fume hood. If you need help working safely with microbiological cultures, contact the Laboratory Supervisor.

Fume hoods shall be evaluated annually by EHSRM to verify that adequate airflow is maintained through the hood face, there are no leaks in the ductwork, the sash cable integrity is maintained, and the stack height and exhaust velocity are sufficient. Check for a current sticker on the side of the fume hood or other local exhaust equipment.^{9 41}

1. The date should not be over a year old. If it is, contact the Laboratory Manager so that a face velocity test can be scheduled with EHSRM.
2. Face velocity test c

Respirators

1. Because of the difficulty and expense associated with respirators, procedures that would require the use of a respirator should be replaced with a safer, less hazardous alternative in Biology and Wildlife teaching labs if at all possible.
2. Instructors wishing to carry out a procedure that would require the use of respirators by students and TAs must ob

4. Autoclave gloves protect against heat. They are used for loading and unloading the autoclave and handling hot materials that have been autoclaved.
5. Insulated neoprene gloves protect against hot or cold liquids. They are used for working with the cryocooler, which reaches extremely cold temperatures, and can also be used for handling autoclaved media, which is at high temperatures.

Clothing

Clothing should provide protection from laboratory hazards and avoid creating additional hazards.

1. A full body-length rubber, plastic or neoprene apron appropriate for the material being handled should be worn if there is risk of splash or spill when working with large volumes of hazardous chemicals. Hazards of this type must be pre-approved.
2. Low-heeled shoes with fully covered uppers shall be worn at all times in the laboratory. Shoes or sandals with open toes or shoes with mesh covered uppers shall not be worn.
3. Long pants and long sleeves should be worn when working with or around chemicals.
4. Long hair should be held in place behind the head.
5. Loose clothing, especially loose trouser legs and sleeves, should not be worn in the laboratory.
6. A lab coat that is resistant to the hazard being worked with shall be worn (e.g. a chemical resistant lab coat when working with chemicals, a fire-resistant lab coat when working around fire hazards, etc.)
7. Clothing made of synthetic materials is strongly discouraged, and prohibited if specified in the SOP for a procedure.

UV Protective Face Shields

1. UV Protective face shields should be used when working with gels on a UV light box if the protective cover for the light box must be removed to excise bands or carry out other work with the gel.
2. When the situation warrants UV face shielding, skin should be protected from UV by wearing a long-sleeved lab coat and appropriate gloves.

Care and maintenance of PPE

1. Personal protective clothing and equipment shall be used and maintained in a sanitary and reliable condition and shall be cleaned regularly to avoid spreading contamination.
 - Laboratory coats shall never be washed at home.
 - Non-contaminated laboratory coats can be washed in 215 Murie. Contact the Laboratory Manager if you have lab coats that require washing.
 - Consult with the Laboratory Manager regarding treatment of lab coats contaminated with chemicals or biological materials.
2. Remove laboratory coats before you leave the laboratory to prevent spreading contamination to other areas. Laboratories with lab coats have a designated area to hang them. Laboratory coats shall never be hung on the hooks in the front of the room; these are reserved for students' personal belongings and must remain uncontaminated.
3. Do not wear gloves outside the laboratory. If you must carry a hazardous substance from one room to another and need to wear a glove to hold the container, the other hand should be ungloved. The ungloved hand should be used when door handles must be touched.
4. Do not wear contaminated or potentially contaminated shoes outside the laboratory.
5. Regular clothing that is suspected of being contaminated shall be evaluated by chemical hygiene staff (B&W Laboratory Support IIaIW) before wearing.

The ANSI standard Z358.1 recommends that

1. The safety shower and eyewash be within 10 seconds of the work area.
2. The equipment must be installed on the same level as the hazard (i.e. access should not require going up or down stairs or ramps).
3. The path of travel from the hazard to the equipment should be free of obstructions and as straight as possible.
4. Eyewash stations and showers will be tested annually (by Facility Services) to determine pressure and flow rates.
5. Equipment is tested weekly (by the Laboratory Manager in Biology and Wildlife) to ensure the delivery of clear, tepid, debris-free water. These weekly tests are documented in a written log. In Biology and Wildlife, these logs are kept on a clipboard with the SDS in each lab.
6. Visible signage is provided indicating the location of all emergency equipment.

Shower and Eyewash Signage Murie Building labs are equipped with an Alarm system that notifies UAF Emergency Dispatch of their activation. TAs and/or instructors SHALL NOT demonstrate the use of the shower and/or eyewash without first arranging to have the alarm-out function off.

Figure 2. Propane gas shut-off valve

Figure 3. Removal of Plexiglass plate covering valve

Figure 4. Valve handle in "off" position

Emergency Fire Blankets

1. Each teaching lab (202, 203, 206, 211, 302, 303, 306 and 309 Murie) is equipped with a fire blanket that is hung on the wall in a protective bag.
2. Fire blankets may be used to smother a small fire.

CHEMICAL MANAGEMENT

Chemical Procurement

1

4. All containers used to hold chemicals must be labeled with chemical name, chemical concentration, hazard warnings, and date received or mixed.
5. Hazardous liquids should be stored in secondary con

COMPRESSED GAS SAFETY

Compressed gases present a number of chemical, physical and health hazards. Improper handling and use can cause structural damage, severe injury and possibly death. Compressed gas safety training, if available from EHSRM, is required for TAs and instructors

11. Avoid breathing vapors of the spill

Appendix 1: HAZARD CLASSIFICATIONS

HEALTH HAZARDS

Criteria for determining whether a chemical is classified as a health hazard are detailed in [Appendix A to 29 CFR 1910.1200](#). Always read the SDS for any chemical you use to familiarize yourself with its hazards and proper handling.

Acute Toxicity

Refers to those adverse effects occurring following oral or dermal administration of a single dose or multiple doses given within 24 hours, or an inhalation exposure of 4 hours.

Skin Corrosion / Irritation

1. Corrosion is irreversible damage to the skin.
2. Irritation is reversible damage to the skin.

Serious Eye Damage / Irritation

1. Eye damage refers to tissue damage of the eye or serious decay of vision.
2. Eye irritation refers to changes to the eye that are reversible within 21 days of the exposure.

Respiratory or Skin Sensitization

1. Respiratory sensitization refers to a chemical that will lead to hypersensitivity of the airways following inhalation.
2. Skin sensitization refers to a chemical that will lead to an allergic response following skin contact.

Germ Cell Mutagenicity

Defined as a permanent change in the amount or structure of the genetic material in a cell.

Carcinogenicity

A substance or mixture which will induce cancer or increase its incidence. There are three categories for carcinogens:

- 1A: substances which are known to have carcinogenic potential for humans
- 1B: substances which are presumed to have carcinogenic potential for humans
- 1C: substances which are suspected human carcinogens

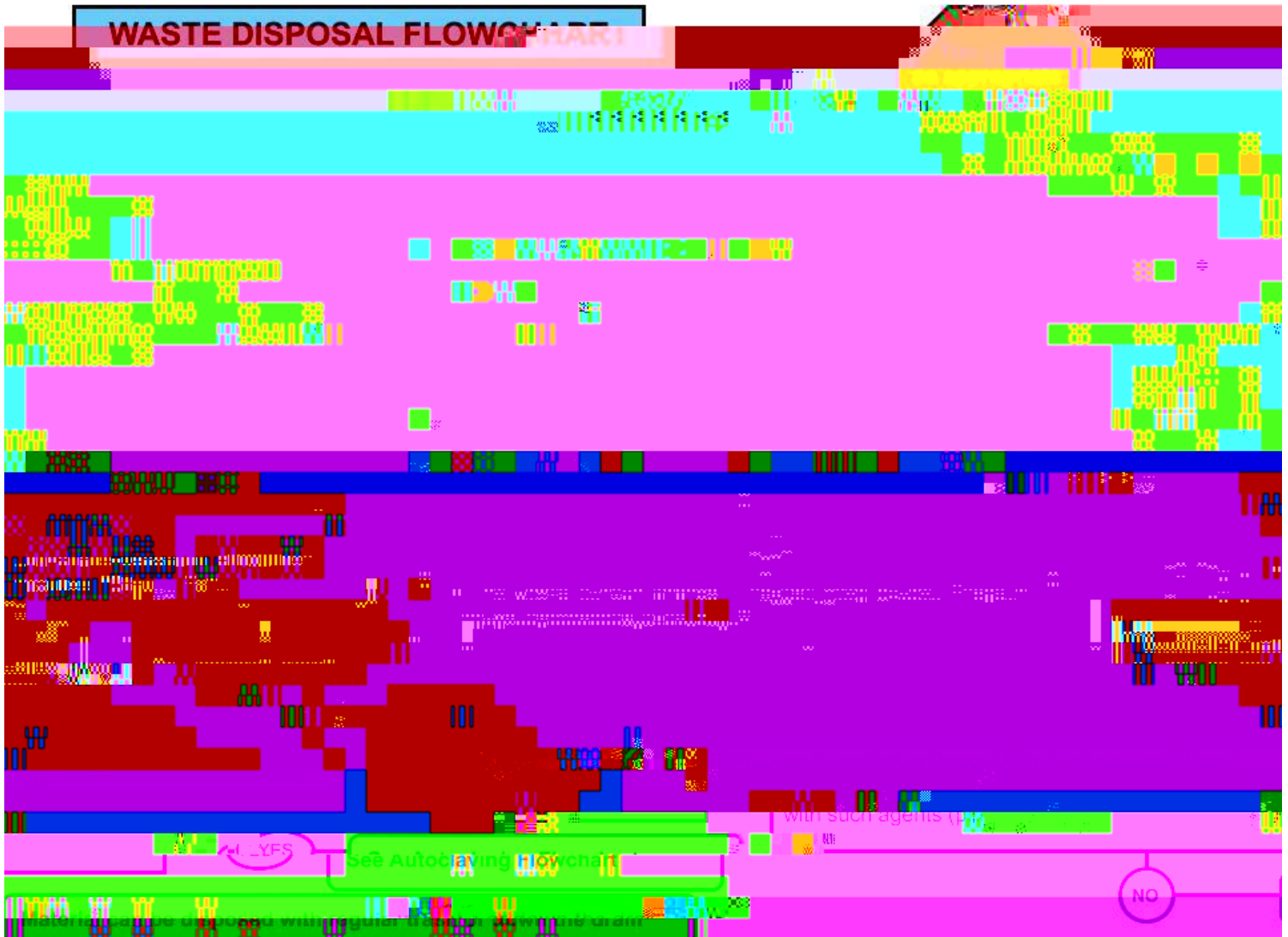
A list of chemicals that are classified as carcinogens by the National Toxicity Program is given in Appendix 10, as are the thirteen chemicals listed by OSHA as carcinogens.

Self-Heating Chemicals

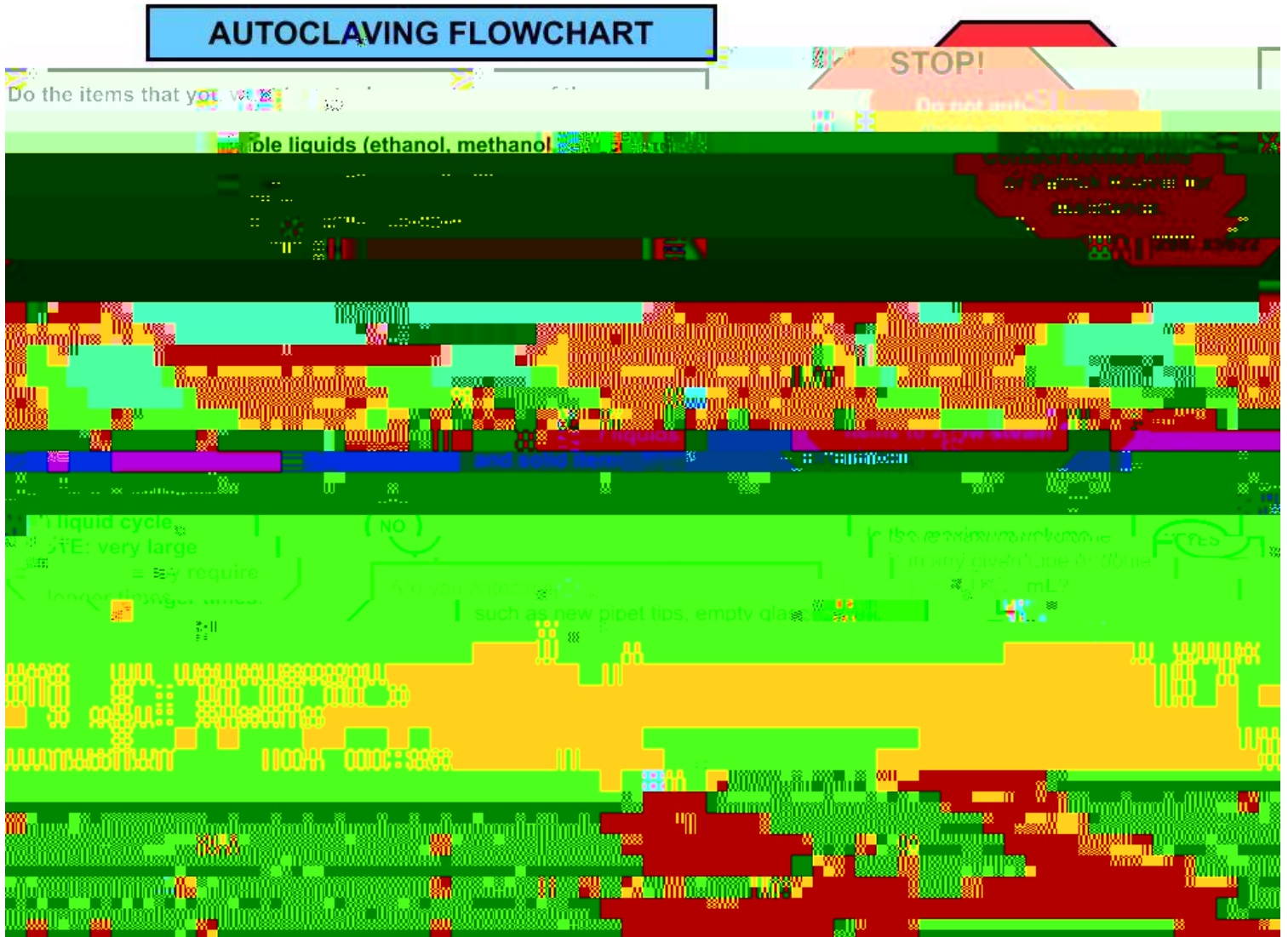
R

Required Training for UAF Employees Working with Student Records:

Appendix 3: WASTE HANDLING FLOW CHART



Appendix 4: AUTOCLAVE FLOWCHART



Appendix 5: HAZARDOUS MATERIALS PICKUP AND DISPOSAL PROCEDURES

Hazardous materials are defined as those materials that are flammable, corrosive, air or water reactive or toxic (see Definitions of Hazardous Materials below). The EHSRM Hazardous Materials Section is responsible for removing all hazardous materials, used and unused, from UAF facilities. Materials picked up by EHSRM are recycled, made available to others on campus, or disposed of at an EPA-approved facility. The complete disposal procedure is found in UAF Policy 601, Hazardous Materials Management Procedure.

INDIVIDUAL RESPONSIBILITIES

Instructor(s)

Communicate the materials that will be used or produced to the Laboratory Supervisor and Laboratory Manager far enough in advance of the lab to allow them to identify and obtain appropriate PPE and waste management supplies. If there is insufficient time to obtain necessary waste management supplies and/or necessary PPE, the lab shall not be conducted.

Read the Safety Data Sheet for each chemical to be used.

Ensure that TAs are properly trained on all aspects of the procedure, including preparation of materials, use of PPE, student oversight, waste handling and spill and emergency responses. This includes requesting additional training as necessary; additional training may be arranged through the Laboratory Supervisor.

Encourage TAs to ask questions to make sure that they understand the procedures fully.

Ensure that students are appropriately trained by the TA.

Ensure that necessary supplies are available and are utilized properly during the lab. This may be delegated to the TAs so long as they are properly trained to oversee this.

Ensure that all waste containers are clearly and appropriately labeled as instructed on the following page.

Teaching Assistants (TAs)

Follow all training and procedures as given.

Monitor student activity and ensure that students follow all training and procedures, including the use of PPE.

Ensure that all waste containers are properly labeled and that there is proper segregation of incompatible wastes.

Keep waste chemicals and unused chemicals separate.

Ensure that all containers remain appropriately labeled.

Notify the Laboratory Manager when waste is ready for pick-up.

Make sure that appropriate PPE and waste management supplies and containers are available throughout the lab activity including prep and clean-up. Notify the Laboratory Manager if additional supplies (e.g. waste containers, PPE) will be needed.

Ensure that all waste containers are properly labeled and that there is proper segregation of incompatible wastes.

Laboratory Supervisor

Assist the Laboratory Manager in identifying appropriate PPE and waste management supplies.

Contact EHSRM with any questions.

Á~: ~aceAeOye

Arrange additional training as needed, or direct the Laboratory Manager to do so.

Answer questions from TAs and assist if there are questions or problems associated with the lab.

Students

Follow all procedures as instructed, including the use of PPE and management of waste.

Use common sense and ask questions whenever something is unclear or unknown.

Clean up work space after lab following specified procedures.

TO COLLECT H! T

All containers of liquids must have leak-proof lids that remain leak-proof when the container is inverted. Corks, stoppers, cotton plugs, tape or parafilm are unacceptable lids for containers of hazardous materials.

All containers of liquids must be placed in compatible secondary containment that would be sufficient to hold the volume of liquid in the event that the primary container ruptured.

When possible, use the original container for disposal of the used material. Be sure that the container is clearly labeled as waste so that it is not mixed up with unused material and reused.

Metal cans are only acceptable for accumulating waste oil; they may not be used for any other type of hazardous waste.

Loose solid materials must be placed in a sealed container or in a cardboard box that is lined with two polyethylene bags.

Containers storing hazardous materials must be kept closed except when adding or removing contents.

DEFINITIONS OF HAZARDOUS MATERIALS

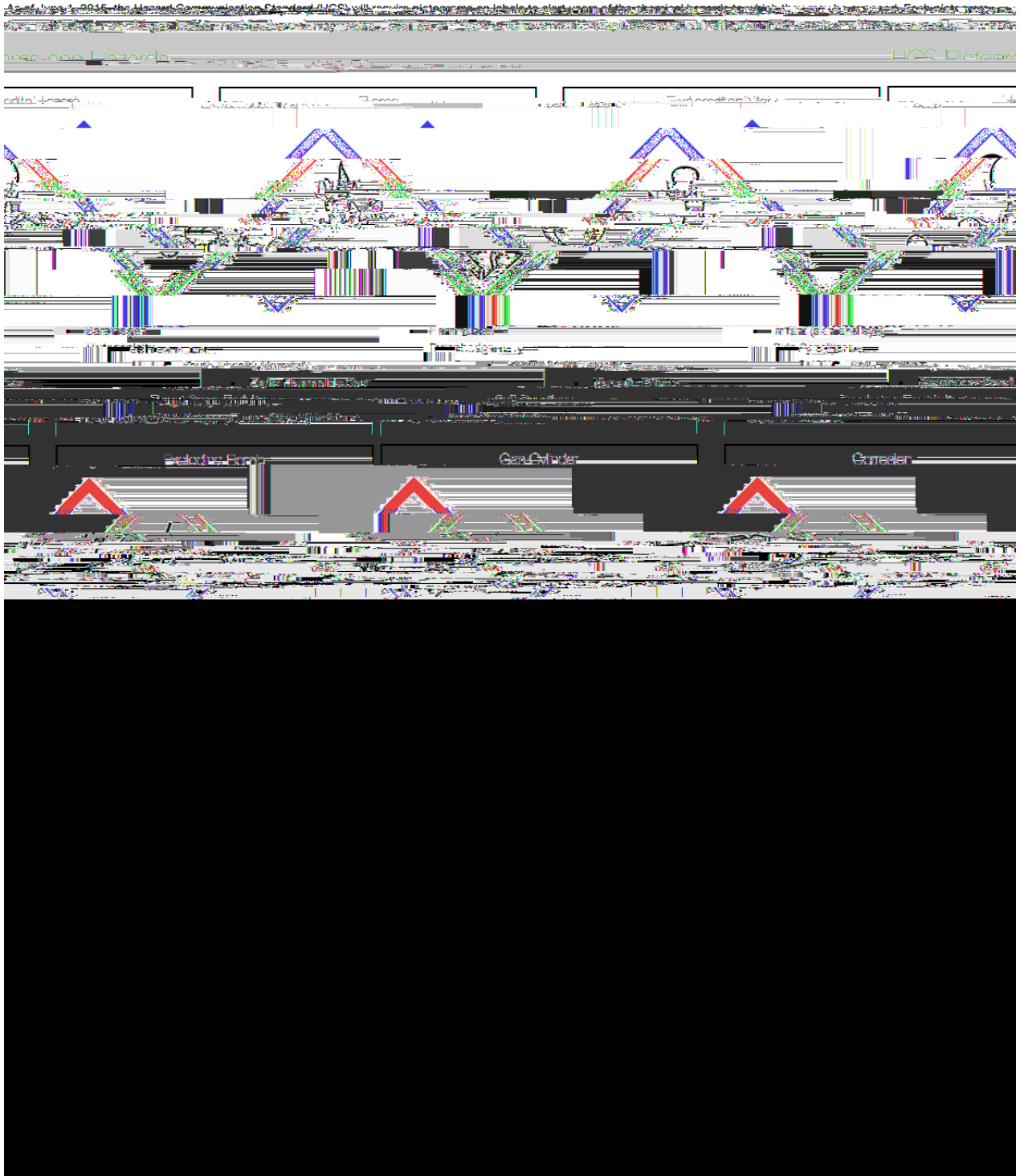
Hazardous materials are those that "could cause injury or death; or damage or pollute land, air, or water."

Hazardous wastes are defined as a substance that are ignitable (flammable), corrosive, toxic, explosive, or reactive, (react with air, water, acids or bases). Specific definitions are found in [40 CFR part 261](#). These are summarized below.

Ignitable: This category contains materials that are easily combustible or flammable. This includes liquids that have a Sur

cacodylic

Appendix 6: GLOBALLY HARMONIZED SYSTEM (GHS) LABELING

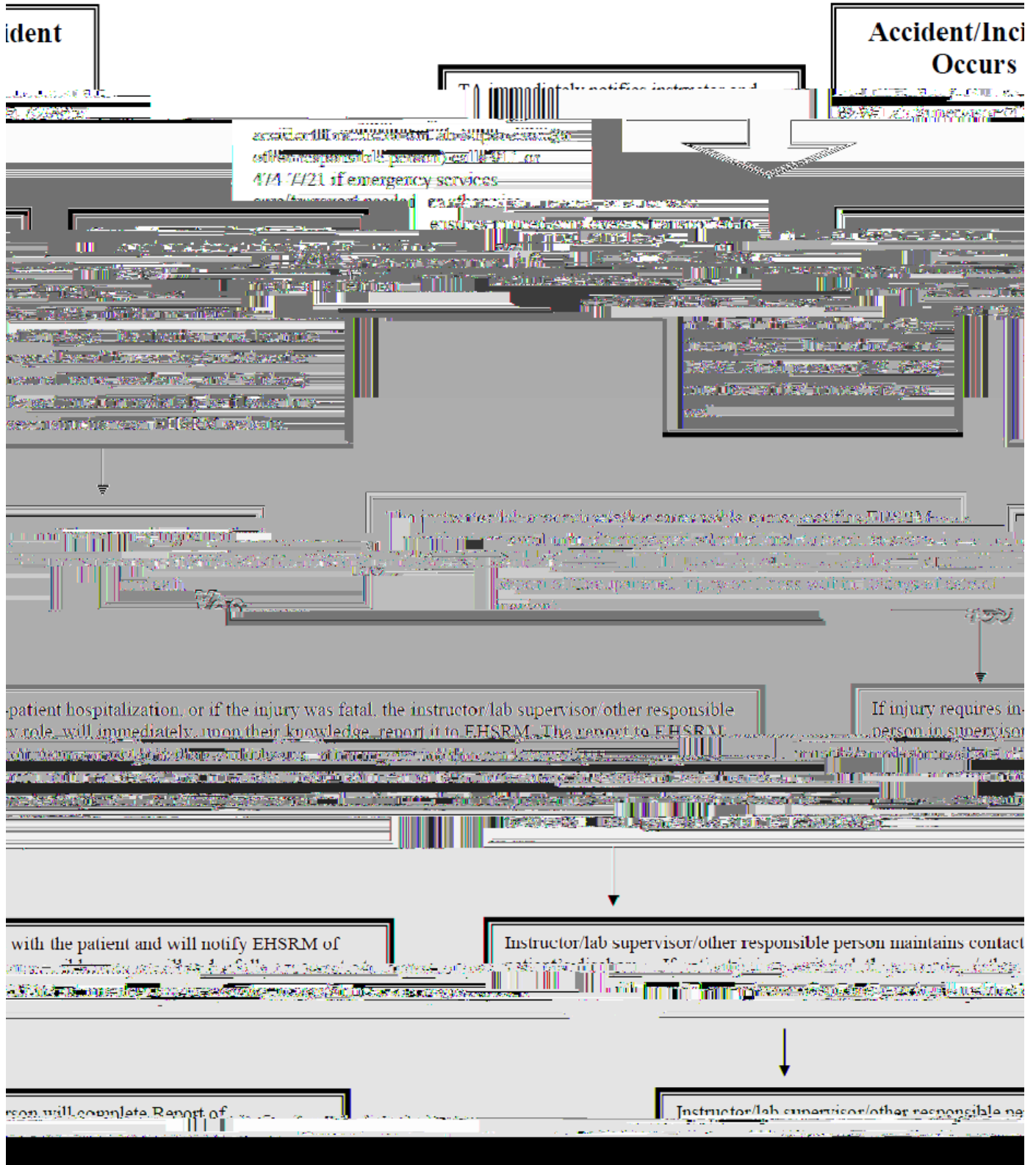


Taken from [OSHA](#)

Appendix 7: NFPA LABELING AND STORAGE CODE COLOR INTERPRETATION

The NFPA diamond (example shown in Fig. 5) is used to indicate the health, flammability, instability and other tr y

8B: Employee Emergencies



Appendix 9. LABORA9

Appendix 10: SELECT CARCINOGENS AND PARTICULARLY HAZARDOUS SUBSTANCES (PHSs)

SELECT CARCINOGENS (Tables 1 and 2)

The following standards apply to substances that are classified as carcinogens or potential carcinogens by the National Toxicity Program (NTP) and listed in OSHA's "13 Carcinogens" ([29 CFR 1910.1003](#)). The applicable OSHA standard for the substance is listed next to the substance name.

Table 2. Select Carcinogens

Ch

Chromium hexavalent compounds

1333-82-0

IARC 1; NTPKHC

Chemical Name

CAS Number

Category*

Cisplat

2-(2-Formylhydrazino)-4-(5-nitro-2-furyl)thiazole	3570-75-0	IARC 2B
Chemical Name	CAS Number	Category*
Glycidylaldehyde	765-34-4	IARC 2B
Hexachlorobenzene	118-74-1	IARC 2B; NTPRAHC
Hexamet		

*Notes on catago

Appendix 11: INTERNATIONAL BUILDING AND FIRE CODE FOR STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS

Table 4. Flammable and Combustible Liquid Classes

CLASS	IA	IB	IC	II	IIIA
FLASH POINT	<73 F	<73 F	73 - 100 F	100 - 140 F	140 - 200 F
BOILING POINT	<100 F	>100 F			
FLAMMABILITY POTENTIAL	Extremely High	Very High	High	Moderate	Moderate
EXAMPLES OF COMMONLY USED MATERIALS	acetaldehyde ethyl ether pentane	acetone ethanol butylamine gasoline methanol isopropanol	amyl acetate RA t		

Appendix 12: INSTRUMENTS FOR COMPLETING CHEMICAL INVENTORIES

Title 29 of the Code of Federal Regulations, Part 1910.1450 (29 CFR 1910.1450), Occupational Exposure to Hazardous Chemicals in Laboratories

As part of this code, up-to-date chemical inventories are included in the Chemical Hygiene Plan (CHP). A CHP is required for each lab using hazardous chemicals.

EHSRM uses the web-based program Environmental Health & Safety Assistant (On Site Systems, Inc., St. Louis) to maintain chemical inventories on campus.

The program is accessible using any web browser. If you are on a UAF campus or at a UAF facility, all you need is access to the internet.

Accessing from off-campus locations requires the installation of the Global Protect VPN software: <https://www.alaska.edu/oit/servicecatalog/#id=162>.

In Biology and Wildlife, the current chemical inventory for a lab is printed and available at the front of the MSDS/SDS binder in the front of the room.

Updates to the chemical inventory occur as follows:

- Any chemical received is entered into the online and printed inventories by the Laboratory Supervisor or Laboratory Manager, whichever received it.

- Any chemical that is used up is removed from the online inventory by the Laboratory Manager.

Appendix 13: TEACHING LABORATORY SELF-AUDIT CHECKLIST*

Department Name: _____ Area Inspected: _____ Course(s): _____

Inspected by: _____ Date of Inspection: ___/___/___ Faculty: _____

A. Training

Required training: Employee Safety, Hazard Communication, Slips, Trips, and Falls, Behavior Based Safety, Workplace Harassment, Title IX, FERPA, Protection of Minors (Shine A Light, unless working directly with minors), Lab Safety, Chemical Hygiene, Hazardous Waste Management. TAs are required to have B&W Chemical Hygiene Plan and TA Orientation trainings. Other trainings may be required, depending on lab operations (e.g., Blood Borne Pathogens, Driver Safety, Autodave).

(*) Denotes trainings that must be renewed annually.

B. Administrative

- Yes No N/A Are SDS available in the lab?
- Yes No N/A Is there a current Chemical Hygiene Plan in the lab?
- Yes No N/A Are SDS and the CHP readily accessible and obviously used?
- Yes No N/A Are SOPs included in the CHP?
- Yes No N/A Is the chemical inventory current (updated within 12 months)?

C. General Safety Concerns

- Yes No N/A Are rooms, cabinets, designated areas containing such materials as regulated hazardous substances, radioactive materials, and biohazardous materials, posted with the appropriate warning signs?
- Yes No N/A Are all exits and aisles to the outside free from any obstructions?

D. Seismic Safety/Fire Safety

- Yes No N/A Is overhead storage minimized and restrained?
- Yes No N/A Is overhead storage kept 24" below ceiling?

E. Personal Protective Equipment

- Yes No N/A Is the appropriate personal protective equipment required for the lab available?
____ Safety Glasses ____ Goggles ____ Face Shields ____ Gloves ____ Lab Coats/aprons
- Yes No N/A If the lab is considered a high-hazard fire area, is an appropriate extinguisher available?
- Yes No N/A In high-hazard fire areas, are lab personnel current on fire extinguisher training?

F. Laboratory Equipment

- Yes No N/A Is the eyewash free from any obstructions?
- Yes No N/A Is the eyewash operated weekly?
- Yes No N/A Is the emergency shower free from any obstructions?
- Yes No N/A Is the emergency shower operated weekly?
- Yes No N/A Has the fumehood been tested within the last year?
- Yes No N/A Is storage with the fumehood minimized?
- Yes No N/A Are the biological safety cabinets certified annually?
- Yes No N/A Is non-ionizing radiation equipment such as lasers, microwaves, and ultravty cabinets

I. Hazardous Materials/Wastes

- Yes No N/A Are all chemical and waste containers properly labeled with the chemical name(s) and hazard of the material(s)?
- Yes No N/A Are the proper containers obtained and used for storing hazardous waste?
- Yes No N/A Are all chemicals color-coded to identify proper storage location?
- Yes No N/A Are all chemicals and wastes stored according to hazard classification and compatibility?
- Yes No N/A Are all containers of potential peroxide-forming chemicals dated upon receipt and utilized or disposed of within one year?
- Yes No N/A Are flammable liquids stored in flammable liquid storage cabinets or in closed metal safety cans whenever possible?
- Yes No N/A Are flammable cabinets free of corrosion, spills, and damage?
- Yes No N/A Are corrosive cabinets free of corrosion, spills, and damage?
- Yes No N/A Is storage of corrosive chemicals above eye level avoided?
- Yes No N/A Are all containers kept tightly closed except when adding or removing waste?
- Yes No N/A Are liquid waste containers kept in secondary containment tubs?
- Yes No N/A Are all "sharps" collected in puncture and leak resistant containers?
- Yes No N/A Is broken glass collected in puncture resistant containers, marked with the words "Broken Glass"?

Additional comments:

OBSERVATIONS OF LABORATORY OPERATIONS

Date: _____ Per _____

structures, facilities and the content of University activities, buildings, grounds, and other University facilities.

and contract workers and their health and safety hazards. In addition, UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

2.3. Complying with regulatory health and safety training

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

UAF will provide notification to the general public regarding any potential health and safety hazards. UAF will provide notification to the general public regarding any potential health and safety hazards.

and comply with all applicable laws and regulations. Report all vehicle accidents immediately. The driver is responsible for completing the appropriate vehicle incident report.

3.3. Complete

Basic Safety Training Requirements as determined by EHSBM <http://www.uaf.edu/safety/>

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

Supervisor Safety Training, if the individual is a supervisor

Department Title IX Sexual Harassment Policy <http://www.uaf.edu/safety/>

- Title IX Training
- Substance Abuse Policy
- Protection of Minors Policy

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

All state and federal required safety training

All state and federal required safety training

3.4 Inform a supervisor or instructor of any safety or health hazards in the workplace, University buildings, field sites, campuses, or University locations away from campuses such as research facilities, field sites, etc. Reporting

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

3.5 Report to EHSBM any incident resulting in a lost workday, injury, or illness. Report

Department Emergency Action Plan (EAP) <http://www.uaf.edu/safety/>

3.9. Comply with rules for the use of flammable materials, microwaves, refrigerators, small appliances, heaters, and other fire hazards in the workplace. www.osha-slc.gov

3.10. Properly manage hazardous materials in accordance with University, state and federal requirements.

Individuals or offices have responsibilities in addition to those applying to all. The following job descriptions are included for informational purposes:

3.11 UAF Chancellor

3.11.1. Establish, oversee, and authorize health and safety program and a system for continuous improvement of the health and safety program. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University.

3.11.2. Reinforce the importance of health and safety in all units. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University.

3.11.3. Implement the Health and Safety Policy and procedures. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University.

3.11.4. Implement the Health and Safety Policy and procedures. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University.

3.11.5. Directly supervise and manage all full-time and part-time regular, part-time and temporary employees, visiting professors, and students. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University.

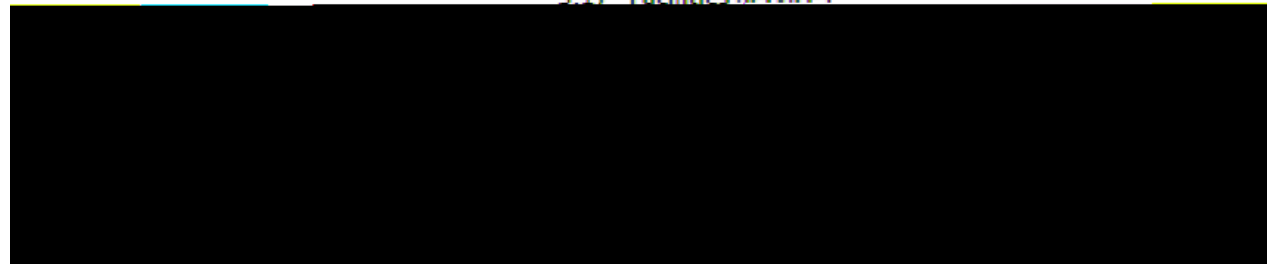
3.11.6. Directly supervise and manage all full-time and part-time regular, part-time and temporary employees, visiting professors, and students. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University.

3.11.7. Determine whether safety needs for units/departments exist and, if so, coordinate with the appropriate units/departments to address these needs. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University.

3.11.8. Determine whether safety needs for units/departments exist and, if so, coordinate with the appropriate units/departments to address these needs. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University. The Chancellor is responsible for the overall health and safety program of the University.

Policy.	
State and federal agencies responsible for the following: a. In the field of occupational safety and health, including the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH); b. In the field of environmental health, including the Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention (CDC); c. In the field of fire safety, including the National Fire Protection Association (NFPA) and the International Fire Marshals Association (IFMA); d. In the field of hazardous materials, including the Department of Energy (DOE) and the Department of Transportation (DOT); e. In the field of radiation safety, including the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA); f. In the field of chemical safety, including the American Chemical Society (ACS) and the National Institute for Environmental Health Safety (NIEHS); g. In the field of biological safety, including the American Society for Microbiology (ASM) and the National Institute for Health Safety and Health Protection (NIH); h. In the field of electrical safety, including the National Electrical Contractors Association (NECA) and the International Brotherhood of Electrical Workers (IBEW); i. In the field of mechanical safety, including the American Society of Mechanical Engineers (ASME) and the National Fire Protection Association (NFPA); j. In the field of safety management, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); k. In the field of safety training, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); l. In the field of safety research, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); m. In the field of safety education, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); n. In the field of safety consulting, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); o. In the field of safety auditing, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); p. In the field of safety investigation, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); q. In the field of safety improvement, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); r. In the field of safety compliance, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); s. In the field of safety culture, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); t. In the field of safety leadership, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); u. In the field of safety innovation, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); v. In the field of safety excellence, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); w. In the field of safety sustainability, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); x. In the field of safety resilience, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); y. In the field of safety recovery, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC); z. In the field of safety transformation, including the American Society of Safety Engineers (ASSE) and the National Safety Council (NSC);	
and assistance in identifying, evaluating and correcting safety and health hazards.	3.14.5
ions and analyses of occupational incidents, injuries and illnesses.	3.14.6
7. Identify noncompliant situations and recommend improvements to those who are responsible for departments, laboratories, units and work areas.	3.14.7
8. Provide guidance for proper management of hazardous materials.	3.14.8
the SCCC or the Chancellor.	3.14.9
Review contractor safety plans for project site managers.	3.15
University Police Department	3.15.1
University Fire Department	3.15.2
University Fire Department	3.15.3
University Fire Department	3.15.4
University Fire Department	3.15.5
University Fire Department	3.15.6
University Fire Department	3.15.7
University Fire Department	3.15.8
University Fire Department	3.15.9
University Fire Department	3.15.10
University Fire Department	3.15.11
University Fire Department	3.15.12
University Fire Department	3.15.13
University Fire Department	3.15.14
University Fire Department	3.15.15
University Fire Department	3.15.16
University Fire Department	3.15.17
University Fire Department	3.15.18
University Fire Department	3.15.19
University Fire Department	3.15.20
University Fire Department	3.15.21
University Fire Department	3.15.22
University Fire Department	3.15.23
University Fire Department	3.15.24
University Fire Department	3.15.25
University Fire Department	3.15.26
University Fire Department	3.15.27
University Fire Department	3.15.28
University Fire Department	3.15.29
University Fire Department	3.15.30
University Fire Department	3.15.31
University Fire Department	3.15.32
University Fire Department	3.15.33
University Fire Department	3.15.34
University Fire Department	3.15.35
University Fire Department	3.15.36
University Fire Department	3.15.37
University Fire Department	3.15.38
University Fire Department	3.15.39
University Fire Department	3.15.40
University Fire Department	3.15.41
University Fire Department	3.15.42
University Fire Department	3.15.43
University Fire Department	3.15.44
University Fire Department	3.15.45
University Fire Department	3.15.46
University Fire Department	3.15.47
University Fire Department	3.15.48
University Fire Department	3.15.49
University Fire Department	3.15.50
University Fire Department	3.15.51
University Fire Department	3.15.52
University Fire Department	3.15.53
University Fire Department	3.15.54
University Fire Department	3.15.55
University Fire Department	3.15.56
University Fire Department	3.15.57
University Fire Department	3.15.58
University Fire Department	3.15.59
University Fire Department	3.15.60
University Fire Department	3.15.61
University Fire Department	3.15.62
University Fire Department	3.15.63
University Fire Department	3.15.64
University Fire Department	3.15.65
University Fire Department	3.15.66
University Fire Department	3.15.67
University Fire Department	3.15.68
University Fire Department	3.15.69
University Fire Department	3.15.70
University Fire Department	3.15.71
University Fire Department	3.15.72
University Fire Department	3.15.73
University Fire Department	3.15.74
University Fire Department	3.15.75
University Fire Department	3.15.76
University Fire Department	3.15.77
University Fire Department	3.15.78
University Fire Department	3.15.79
University Fire Department	3.15.80
University Fire Department	3.15.81
University Fire Department	3.15.82
University Fire Department	3.15.83
University Fire Department	3.15.84
University Fire Department	3.15.85
University Fire Department	3.15.86
University Fire Department	3.15.87
University Fire Department	3.15.88
University Fire Department	3.15.89
University Fire Department	3.15.90
University Fire Department	3.15.91
University Fire Department	3.15.92
University Fire Department	3.15.93
University Fire Department	3.15.94
University Fire Department	3.15.95
University Fire Department	3.15.96
University Fire Department	3.15.97
University Fire Department	3.15.98
University Fire Department	3.15.99
University Fire Department	3.15.100

3.17. Facilities Services



3.18 SCCC (Safety and Compliance Coordinating Committee)

The SCCC oversees University compliance with the Health and Safety Program and is responsible for making recommendations to the Board that further university efforts by providing professional

current and future programs and coordinate safety and compliance related issues associated with a safe, healthy, and thriving place to projects. The core purpose of the committee is to ensure UAF is a safe, healthy, and thriving place to learn, live, work, and play.

3.19 Oversight Committee

The Oversight Committee (OSCC) is a University-wide body that oversees the University's animal care and use programs, students, and volunteers, and visitors accessing the UAF animal facilities.

The SCCC oversees the University's laboratory activities that involve genetic engineering, research and teaching involving the use of recombinant nucleic acid transfer, infectious agents, and biologically derived toxins.

The SCCC oversees the University's research activities involving the use of recombinant nucleic acid transfer, infectious agents, and biologically derived toxins.

3.20 Contractors

Contractors are individuals or organizations that provide services or goods to the University. Contractors are required to comply with the University's Health and Safety Program and are responsible for ensuring that their work complies with all applicable laws and regulations.

Contractors are required to provide a copy of their Safety Data Sheet (SDS) for all hazardous materials used on site. Contractors are also required to provide a copy of their Safety Plan for all work activities.

Contractors are required to provide a copy of their Safety Plan for all work activities. Contractors are also required to provide a copy of their Safety Data Sheet (SDS) for all hazardous materials used on site.

Contractors are required to provide a copy of their Safety Data Sheet (SDS) for all hazardous materials used on site. Contractors are also required to provide a copy of their Safety Plan for all work activities.

COMPLIANCE

NON-COMPLIANCE

Non-compliance with OSHA and other regulatory agency requirements may result in citations and fines. Non-compliance may also result in the suspension of work activities.

2. Non-compliance with OSHA and other regulatory agency requirements may result in citations and fines.

Non-compliance with OSHA and other regulatory agency requirements may result in citations and fines. Non-compliance may also result in the suspension of work activities.

Non-compliance with OSHA and other regulatory agency requirements may result in citations and fines. Non-compliance may also result in the suspension of work activities.

LABORATORY-SPECIFIC STANDARD OPERATING PROCEDURES

SOPs for procedures carried out in B&W labs will be inserted after this page.

Biological Sciences Department
Biology and Wildlife
STANDARD OPERATING PROCEDURE
Autoclaving

Location(s): Murie 215

Chemical(s): None

Specific Hazards:

- o steam – improper use of autoclave can expose user to dangerous steam burns
- o extremely hot materials – materials that have been autoclaved are very hot; liquids can be superheated and boil violently if jostled when removed from the autoclave

Contact Information:

Laboratory Supervisor: Denise Kind dmkind@alaska.edu 474-6298

Laboratory Manager: Patrick Knavel pdknavel@alaska.edu 474-5622

1. Purchasing:

Any autoclave bags, ties, tape, trays will be ordered by the Laboratory Manager. If supplies are running low, it is the responsibility of the users to notify the Laboratory Manager in a timely fashion.

2. Storage:

Autoclave trays and gloves are stored in 215 in the cabinet nearest the autoclave and on the counter so that they are readily visible.

Autoclave tape and bags are stored in 215 in the cabinet and drawers nearest the autoclave.

Paper and ink ribbons for the autoclave are handled by the Laboratory Manager. If the autoclave printer is not working, users shall notify the Laboratory Manager.

3. Authorized personnel:

All authorized personnel must have completed all required employee laboratory safety training.

The Instructor is authorized to train their TAs on the proper use of the autoclave for the materials to be autoclaved. The instructor may delegate training to the Biological Sciences Department Autoclave Operator.

7. Spill equipment:

In the event of an autoclave malfunction or leak, the user may activate the emergency autoclave shut-off if it is safe to do so. If there is any question of safety in the room, the user shall notify the Laboratory Manager and Laboratory Supervisor immediately. If they cannot be reached, Facilities Services shall be contacted directly at 474-7000 and the malfunction reported. After hours, 474-7000 redirects to University Dispatch. An autoclave malfunction may require that they contact the Facilities on-call person to handle the problem immediately, as a malfunctioning autoclave can pose significant risk to people and the building.

8. Procedure:

Instructors shall provide TAs and students with detailed, written lab procedures to follow. Instructors shall train TAs on each procedure before TAs instruct students in the procedure.

Materials needed:

- autoclave bags & bag ties (for processing waste)
- autoclave-safe glassware (Type I borosilicate glass) or autoclave-safe plastic containers, loosely capped with autoclave-safe caps, aluminum foil, or other suitable tops
- autoclave tape (or heat-sensitive strip on bag)
- autoclave tray
- heat-protective gloves
- nitrile gloves for loading waste into autoclave bags

Procedure Notes:

PPE must be used appropriately throughout the procedures. Only TAs or instructors should run the autoclave.

Procedure Steps:

1. Wear nitrile gloves while handling items contaminated with microbes (e.g. Petri dishes that are to be disposed of). Nitrile gloves are not otherwise needed, as hazardous chemicals should not be autoclaved.
2. Place material to be autoclaved in autoclave tray. Be sure it is an autoclave tray! Other trays melt and ruin the autoclave. A tray must ALWAYS be used as secondary containment for the items being autoclaved.

For autoclave bags, add 100-200 mL water to the bag, then loosely close it. This will help
place a wet paper inside the bag, which will greatly aid in destroying microorganisms.
Don't fill bottles or tubes more than 2/3 full to prevent boil-overs and loss of media.
Keep lids and caps loosely closed. Tighten

4. Determine the cycle required. Consult the manual for the autoclave you are using. Remember that when autoclaving liquids, the exhaust rate must be carefully controlled in order to keep the liquids from boiling over. Don't waste your media by bypassing the slow exhaust.
 5. Wearing heat-resistant autoclave gloves, place the tray in the autoclave. Even though the tray you are loading may be cool, the inside surfaces of the autoclave chamber may be hot enough to cause a burn.
 6. Close the autoclave door securely.
 - 7. Enter the correct cycle. Fill out the autoclave log immediately.**
 8. Wait 10 minutes after the cycle ends before unloading. The autoclave should tell you when it is safe to be unloaded. Waiting will help keep liquids from violently boiling over when moved.
 9. Before unloading the autoclave, don heat-resistant autoclave gloves. Exercise care when removing hot items from the autoclave. Hot liquids can be superheated and can boil over if jostled.
 10. Place the tray on a heat-proof surface (such as a heat-proof cart or laboratory bench).
11. Bag autoclaved waste separately.

for the heated materials in an autoclave. If chemicals are being autoclaved, the relevant Safety Data Sheets for these chemicals must also be consulted to determine the appropriate response to an exposure.

General advice

Consult a physician. Move out of dangerous area.

Eye contact

Flush eyes with water. Consult a physician.

Skin contact

Skin contact with autoclaved materials can cause burns. If the skin is intact, cool the burn with cool water. Do NOT scrub or apply any soaps or lotions. If the skin is broken, blistered, blackened, or charred (2nd or 3rd degree burns) or if any burn (1st, 2nd or 3rd degree) covers a

14. Other important information:

Users must also follow the specified procedures for the materials they are autoclaving.

NEVER autoclave corrosive chemicals (e.g. strong acids or bases), solvents, volatile compounds, chlorinated compounds (e.g. bleach), flammable substances, or highly reactive compounds.

Follow the Waste Handling Flowchart (Appendix 3) and

Training Record

I, the undersigned, have read and understand the above SOP. I have been trained to carry out this procedurn

This page intentionally left blank.

Biology and Wildlife
STANDARD OPERATING PROCEDURE
Bunsen Burners

Location(s): Murie 202, 203, 204, 206, 209, 211, 302, 303, 304, 306, 307, 309
Chemical(s): Propane (CAS# 496-007-0, Molecular Weight 44.10)

Gloves may be required based on

notify the Laboratory Supervisor and Laboratory Manager immediately. If you cannot contact them, call Facilities Services at 474-7000 to report the problem.

If you notice a propane gas odor when you walk into a room:

do NOT turn on any

talking to you; this will help you make sure s/he isn't going into shock and can give the victim something to focus on besides going f;

13. Phone numbers

BHSM and Wildlife Laboratory Supervisor
Biology and Wildlife Laboratory Manager
EHSRM Hazardous Materials R

474-6298

474-5622

3. Authorized personnel:

All authorized personnel must have completed all required employee and laboratory safety training. The Instructor is authorized to train their TAs on the proper preparation, handling, storage and disposal of this material. The instructor may delegate training to the B&W Laboratory Supervisor by making arrangements at least two (2) weeks in advance.

TAs, once trained, are authorized to prepare solutions and to train and supervise their students. Students must be trained in the use of this material in accordance with this SOP before conducting lab. Students are only permitted to use dilute solutions of this compound; they should not handle concentrated or solid catechol.

4. Training requirements:

The user must demonstrate competency and familiarity regarding the safe handling and use of these materials prior to using them. Training shall include the following:

- Review of this SOP and chemical Safety Data Sheet

5. Use location:

Murie B&W teaching labs, rooms 209 and 211

On tables or lab benches isolated from sinks.

This material shall NOT be used near a sink. In the event of a leak or spill, this material must be contained and may not enter the drain.

for by h

waste collection container, appropriately labeled, securely sealing, in secondary containment
Procedure Notes:

PPE must be used appropriately throughout the procedures. Only TAs or instructors may handle solid or concentrated catechol.

Procedure Steps, Working with Dilute Catechol:

Don appropriate PPE. TA or instructor shall prepare working solution(s) for students prior to lab (see Procedure Steps, Preparing Catechol Solutions below); students may not handle solid or concentrated catechol.

2. For lab, TA or instructor will set out solutions for student use.
3. Prior to lab, students must be trained on the proper use of PPE and proper handling and disposal of catechol solutions.
4. Students must don appropriate PPE before beginning work.
5. Catechol can be measured into test tubes or cuvettes using disposable transfer pipettes.

11. Clean up and put materials away. Clean glassware and scoop by washing with warm, soapy water and rinsing three times with RO water. Allow to air dry before putting away.

9. Waste disposal and clean up:

Catechol containing solutions must be collected and disposed of as hazardous waste.

Waste containers must be clearly labeled with "Catechol Waste," the approximate concentration of catechol in the waste, the class, the instructor's name, and the date waste collection began.

When the waste is ready for disposal, label the container "for disposal" and contact the Laboratory Manager.

10. Decontamination:

No decontamination is necessary following the use of dilute catechol solutions. Normal cleaning procedures for glassware and lab surfaces should be followed after solutions have been

13. Phone numbers:

Biology and Wildlife Laboratory Supervisor	474-6298
Biology and Wildlife Laboratory Manager	474-5622
EHSRM Hazardous Materials (if B&W Lab Supervisor not available, assistance with a spill)	474-5617
EHSRM Industrial Hygiene (if Hazardous Materials not available; assistance with exposures)	474-6771
EHSRM office (if Hazardous Materials or Industrial Hygiene not available)	474-5413
University of Alaska Fairbanks Emergency Response (serious accidents, fire)	911

14. Other important information:

This material must not enter the standard solid or liquid waste streams (i.e. regular trash or sink drains). All contaminated materials must be collected and disposed of as hazardous waste.

This page intentionally left blank.

Biology and Wildlife
STANDARD OPERATING PROCEDURE
Cryocooler Circulating Ultra-Low Temperature Bath with 95-L

There is a brick in to bottom of the cooler. Keep this in the cooler.

Samples should be placed in plastic centrifuge tubes and put in a beaker. The beaker should sit on the brick. You may need to add additional weight to keep the beaker with your samples from floa

This is now an Excel compatible file in the data file. Open up my computer to find the files. You might have to play with the display setting on My Computer to see them.

Programming Bath Temperatures

Open the NESCom program. There may not be a desktop icon, so you'll have to search "NesLab" in programs.

Select *File*

- o *New-> Control -> RTE/EX Digital (NC)*

First aid

If the cooled liquid is splashed into the eye, injury from the cold may occur.

First aid:

Rinse

cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing. If eye irritation persists, get medical advice / attention.

If the liquid was chilled, seek attention from an appropriate eye care specialist or physician immediately.

Skin contact for any or all chemicals used in these procedures

Symptoms: Irritation on the water solution

No significant symptoms for the chemicals.

First aid:

Rinse skin with water.

Ingestion for any or all chemicals used in these procedures

Symptoms:

In sufficient quantities, causes central nervous system depression and narcosis.

First aid:

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician.

Training Record

This page intentionally left blank

Biology and Wildlife
STANDARD OPERATING PROCEDURE

Dissections – Non-Preserved Specimens and Specimens Preserved in Carolina's Perfect Solution®

Location(s): Murie 203, 211, 303, 309

Chemical(s): Consult the Safety Data Sheets for your preserved sq Safety D

3. Authorized personnel:

TAs and instructors must have completed all required employee and laboratory safety training. Instructors are authorized to train their TAs, but may request that the Laboratory Supervisor provide training. Training should be requested at least two weeks in advance. Once trained, TAs are authorized to train students on dissection procedures.

4. Training requirements:

The user must demonstrate competency and familiarity regarding the safe handling and use of these materials prior to using them. Training shall include the following:

- Review of this SOP
- In-person review of procedures
- Sharps training through EHSRM's website.

5. Use location:

On lab benches, under snorkel hoods where available.

6. Personal protective equipment (PPE):

- gloves
- safety glasses
- dissection aprons

7. Spill equipment:

Non-preserved specimens

- 10% bleach in spray bottles, freshly mixed
- paper towels

Preserved specimens

- paper towels

8. Procedures:

Non-preserved specimens

Materials needed:

- absorbent bench paper or pads
- cutting boards or dissection trays
- dissection tools
- 10% bleach in spray bottles
- biohazard bags in biohazard buckets
- ties to close bags

Procedure notes:

- sharp implements are used for dissection and must be handled with care
- broken scalpel blades should be disposed of as sharps; new blades can be put on the handles

Procedure steps:

1. Instruct students in the use of PPE, handling of sharps, and handling of dissection specimens prior to beginning the lab exercise.

Preserved specimens

Materials needed:

- dissection trays
- dissection tools
- plastic bags or buckets large enough to hold specimens
- zip ties for bags

Procedure notes:

- sharp implements are used for dissection and must be handled with care
- broken scalpel blades should be disposed of as sharps; new blades can be put on the handles

Procedure steps:

1. Instruct students in the use of PPE, handling of sharps, and handling of dissection specimens prior to beginning the lab exercise.
2. Move tables under snorkel hoods if not already positioned there.

2. Move tables under snorkel hoods if not already positioned there.
 3. Place absorbent bench paper or pads under cutting board or tray. Paper/pad must be absorbent side up, plastic side down.
 4. Place dissection tools at each station.
 5. Ensure that waste container for used specimens is ready and additional bags are on hand.
 6. Ensure that a waste container is available to collect liquids and is properly labeled and in secondary containment.
 7. Turn on snorkel hood ventilation. In 203 and 211, there are silver toggle switches on the back pillar that turn on the snorkel hoods.
 8. Don PPE.
 9. Get out specimens.
 10. Monitor students throughout lab to ensure compliance with SOP and well-being.
3. Place dissection trays at each station.
 4. Place dissection tools at each station.
 5. Ensure that specimen bags are on hand.
 6. Ensure that a waste container is available to collect liquid from the specimens. This must be properly labeled.
 7. Turn on snorkel hood ventilation. In 203 and 211, there are silver toggle switches on the back pillar that turn on the snorkel hoods.
 8. Don PPE.
 9. Get out specimens.
 10. Monitor students throughout lab to ensure compliance with SOP and well-being.

9. Waste disposal and clean-up:

Non-preserved specimens

Collect used specimens for disposal in biohazard bags. Place closed biohazard bags in clear, heavy-duty bags and close these. Label bags with contents, course, instructor name, date of collection and the words "For Disposal."

Place bags in freezer pending pick-up for disposal.

Clean dissection tools and trays or cutting boards. This may NOT be done at the soil sinks (the sinks with wheeled buckets underneath them) as it contaminates the soil sink trap. To clean: sanitize tools and trays or cutting boards by soaking in 10% bleach for 10 minutes or by spraying thoroughly with 10% bleach and allowing to stand for 10 minutes. Wash with soap and water, then rinse thoroughly.

Metal implements must be dried with paper towel rather than allowed to air-dry to prevent rusting.

Spray work area with 10% bleach and allow to stand, wet, for 10 minutes before wiping up. If bleach begins to dry within the 10 minute period, spray more on the surface so that it remains wet for the full 10 minute period.

Preserved specimens

Place specimens that will be re-used back in bags or buckets and close securely (bags must have the end folded over; the folded over end must be secured with a zip tie). These should be placed in the appropriate storage location. Specimens that will not be reused may be placed in a heavy-duty bucket. They may also be bagged, the bags securely closed, and the bags placed in cardboard boxes. The buckets or boxes must be clearly labeled with the contents, course, instructor name, date of collection and the words "For Disposal."

Clean dissection tools and trays by washing

Collect gloves and any bloody paper towels in biohazard bag. Paper towels used to wipe up bleach should be placed in regular trash. Inform the Laboratory Manager that specimens are ready for disposal, where they are, what type of container they are in, and how many containers there are.

Preserved specimens are NOT to be disposed of in biohazard bags or bins, as they are not biohazards and should not be incinerated. When specimens are ready for disposal, they must be boxed and labeled as described above. Inform the Laboratory Manager of the location of the specimens, type of container

13. Phone numbers

Biology and Wildlife Laboratory Supervisor

474-6298

Biology and Wildlife Laboratory Manager

474-5622

EHSRM Hazardous Materials (if B&W Lab Supervisor or a B7

Training Record

I, the undersigned, have read and understand the above SOP. I have been trained to carry out this procedure and will follow the above SOP. I agree to contact my Supervisor and the Biology and Wildlife Laboratory Supervisor if I want to modify this procedure and obtain permission for any modifications before

This page intentionally left blank.

Biology and Wildlife
STANDARD OPERATING PROCEDURE
Electrophoresis with Agarose Gels and TAE/TBE Buffer

Location(s): Murie 204, 206, 211, 306

Chemical(s): varies depending on procedure; consult your procedure and the appropriate Safety Data Sheets (SDS). If using other hazards, follow any additional SOPs as appropriate.

Specific Hazards:

Electrophoresis equipment can be an electrical hazard. Typical equipment operating at 100 volts can cause a lethal shock.

If ethidium bromide is used in the gel or buffer, the SOP for ethidium bromide use must be followed. Ethidium bromide use in B&W teaching labs is strongly discouraged because safer, equally effective alternatives are available.

If UV light will be used for visualizing bands, the SOP for UV light sources must be followed.

If other hazardous materials are used, the appropriate procedures must be followed.

1. Purchasing:

If materials are needed, the Laboratory Supervisor and Laboratory Manager should be contacted well in advance of the date materials are needed. Both must be contacted so that the purchase and the relevant safety concerns can be addressed.

Gels are typically prepared following instructions in the lab protocol, but are sometimes ordered. Liquefied agarose poses a thermal hazard and must be handled with caution.

2. Storage:

Electrophoresis equipment is stored in labs and in shared equipment areas. Equipment must be inspected prior to and after every use.

3. Authorized personnel:

Instructors are authorized to train TAs on the use of electrophoresis equipment. Instructors may request training be done by the Laboratory Supervisor if they do not feel capable of providing training.

TAs are authorized to train and supervise students on the use of electrophoresis equipment once the TAs have been trained.

4. Training requirements:

The user must demonstrate competency and familiarity regarding the safe handling and use of these materials prior to using them. Training shall include the following:

Review of this SOP

Review of other SOPs relevant to the specific materials to be used.

In-person training on the set-up and use of the equipment.

5. Use location:

Electrophoresis can be done in any of the teaching labs or prep rooms, on any of the tables or benches. If multiple electrophoresis power supplies are being used in a particular lab, or electrophoresis rigs and other equipment that requires power, they should be dispersed among tables to avoid overloading circuits.

EI

8. Connect leads to power supply; red to red, black to black. The power supply should NOT be plugged in at this time. Wear dry gloves and connect only one lead at a time ves

13. Phone numbers:

Biology and Wildlife Laboratory Supervisor	474-6298
EHSRM Hazardous Materials (if B&W Lab Supervisor not available, assistance with a spill)	474-5617
EHSRM Industrial Hygiene (if Hazardous Materials not available; assistance with exposures)	474-6771
EHSRM office (if Hazardous Materials or Industrial Hygiene not available)	474-5413
University of Alaska Fairbanks Emergency Response (serious accidents, fire)	911

14. Other important information:

N/A

Training Record

I, the undersigned, have read and understand v

Biology and Wildlife

STANDARD OPERATING PROCEDURE
Ethidium Bromide

This SOP add

- pipet and pipet tip (use an ethidium bromide designated pipet as it is difficult to fully decontaminate pipets)
- absorbent bench paper
- masking tape
- waste container for collecting liquid waste
- waste container for collecting solid waste (including gels)

Procedure Notes:

PPE must be used appropriately throughout the procedures.

Procedure Steps:

1. Don appropriate PPE. Mark off and set up work area.
2. The TA will add ethidium bromide to the gel and/or buffer following the laboratory protocol provided by the instructor. Ethidium bromide should be handled in the fume hood. Use concentrated solutions to prepare gels and running buffers, which can be used on an appropriately protected laboratory bench. Absorbent bench paper should be placed in the fume hood to absorb any spills.
3. During lab, work will be done in a designated ethidium bromide workspace on a benchtop or counter in the lab that is protected with absorbent bench paper. This workspace shall be clearly labeled "Danger: Ethidium Bromide Area. Appropriate PPE and training required." All contaminated equipment shall remain in this area and on the absorbent bench paper. All wastes produced shall be collected appropriately for disposal as directed.

Label the waste container with "Waste (**specify type of buffer**) contaminated with ethidium bromide," the course, the instructor name, and the date that collection of waste began.

Used, contaminated gels, pipet tips, gloves, etc. shall be collected in an appropriate waste container labeled with the gel type (e.g. 1% agarose), Ethidium Bromide Contaminated, the course, the instructor name, and the date collected.

The Laboratory Manager shall be notified in advance of the expected completion date of the lab. When waste is ready for pick-up, the Laboratory Manager shall be contacted by the instructor or TA running the lab to confirm that the waste is ready for pick-up, and equipment is ready for de' r

- o If the spill occurred outside the designated area, paper towels should be placed on the spilled liquid to absorb it. These paper towels must be collected and disposed of as hazardous waste. The area of the spill should be taped off and warning signs clearly posted to indicate the contaminated area and identify the hazard and contaminant. The Laboratory Manager and Laboratory Supervisor must be notified immediately so that decontamination can take place. If the spill occurs near an electrophoresis unit, shut off and unplug the power unit if it is safe to do so. Shut off and unplug any other electrical equipment and

This page intentionally left blank.

Biology and Wildlife
STANDARD OPERATING PR

2. Storage:

JT Baker storage code is blue; stored in locked cabinet in 209 in secondary container designated for health hazards.

3. Authorized personnel:

All authorized personnel must have completed all required employee and laboratory safety training.

The Instructor is authorized to train their TAs on the proper preparation

In the event of a spill, follow the directions in section 12, below.

8. Procedure:

Instructors shall provide TAs and students with detailed, written lab procedures to follow. Instructors shall train TAs on each procedure before TAs instruct students in the procedure.

Materials needed:

Phenylthiourea solid (PTU)

water

balance and weigh boat

labeled container, securely sealing

secondary containment sufficient to hold entire volume of solution to be prepared

waste collection container, appropriately labeled, securely sealing, in secondary

containment

Procedure Notes:

PPE must be used appropriately through

9. Waste disposal and clean up:

The authorized person(s) using this material is (are) responsible for the safe collection, preparation and proper disposal of waste unless otherwise stated below. Waste shall be disposed of as soon as possible and in accordance with all laboratory and University procedures.

Students and TAs shall dispose of used materials properly.

Phenylthiourea containing solutions must be collected and disposed of as hazardous waste.

Waste containers must be clearly labeled with "Phenylthiourea Waste," the approximate concentration of phenylthiourea in the waste, the class, the instructor's name, and the date waste collection began. If catechol is also present in the solution, its presence and approximate concentration in the waste must also be indicated.

When the waste is ready for disposal, label the container "for disposal" and contact the Laboratory Manager.

10. Decontamination:

No decontamination is necessary following the use of dilute phenylthiourea solutions. Normal cleaning procedures for glassware and lab surfaces should be followed after solutions have been collected as waste.

11. Exposures: Emergency procedures to be followed (from SDS):

The most important known symptoms and effects are as stated in the "Specific Hazards" statement at the beginning of this document.

General advice

Consult a physician. Show the safety data sheet to the doctor in attendance. Move out of dangerous area.

Eye contact with phenylthiourea solutions

Flush eyes with water as a precaution.

Skin contact with phenylthiourea, solid or solutions

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

Ingestion of phenylthiourea solutions

Never give anything by mouth to an unconscious person. Rinse mouth with water. Immediately consult a physician.

Inhalation

If breathed in, move person into fresh air. Immediately consult a physician. If not breathing, give artificial respiration and call 911.

12. Spills:

If a spill occurs, personal safety should come first.

Alert everyone in the area where the spill occurred so that they can avoid contact with spilled material.

Soak up the spilled liquid with paper towels. Place them in a separate waste container for solid wastes rather than in the container with liquid waste.

Clean the area where the spill occurred with a standard laboratory cleaner and water.

Do not allow any material to enter drains.

TA or instructor who spills solid phenylthiourea: avoid dust formation. Avoid breathing vapors, mist or gas. Sweep up using paper towels. Dispose of spilled material and contaminated paper towels in a suitable, closed waste container for disposal. Waste container must be clearly labeled with contents, date produced, class and instructor name.

13. Phone numbers:

Biology and Wildlife Laboratory Supervisor

474-6298

Biology and Wildlife Laboratory Manager

474-5622

EHSRM Hazardous Materials (if B&W Lab Supervisor not available, assistance wit

Training Record

I, the undersigned, have read and understand the above SOP. I have been trained to carry out this procedure and will follow the above SOP. I agree to contact my Supervisor and the Biology and Wildlife Laboratory Supervisor if I want to modify this procedure and obtain the

This page intentionally left blank.

Biology and Wildlife
STANDARD OPERATING PROCEDURE
Polyacrylamide Gels

This SOP addresses only this type of gel. Users must also follow the electrophoresis SOP and any other SOPs relevant to their particular procedure (e.g. UV light box use, ethidium bromide, etc.).

Location(s): Murie 204, 206, 306

Chemical(s): varies; consult the SDS for the manufacturer

Specific Hazards:

Solutions containing acrylamide monomers are used to make polyacrylamide gels (made of acrylamide polymers). The polymerized form of acrylamide is not considered toxic, but fresh gels can contain some unpolymerized monomers. Acrylamide (monomer) is a neurotoxin, and may also be mutagenic, carcinogenic, and cause damage to fertility and/or fetuses. Acrylamide is also an [EPA Hazardous Air Pollutant](#) specified in the Clean Air Act of 1963.

Generally speaking, most pre-cast gels are labeled as below known thresholds to be labeled as hazardous material. In this case, gels that are not contaminated with other hazardous materials (e.g. ethidium bromide) can be disposed of as regular trash.

Because of the variability in contents and hazards of these types of gels, instructors and TAs must carefully read the SDS for the gels to be used and follow any specific instructions contained in the SDS. Instructors and TAs may also consult with the Labo-yste, he ost y als als alsjh

Training Record
I, the undersigned

Q

This page intentionally left blank.

Biology and Wildlife
STANDARD OPERATING PROCEDURE
UV Light

Location(s): Murie 204, 206, 209, 211, 304, 306

Chemical(s): Gels, buffers, and stains vary. Consult the Safety Data Sheet(s) and SOP(s) relevant to the materials you are using. This SOP deals only with UV light.

Specific Hazards:

UV light can cause skin and eye damage without proper protection.

UV light exposure can contribute to the development of cancer, particularly skin cancer.

Contact Information:

Laboratory Supervisor: Denise Kind dmkind@alaska.edu 474-6298

Laboratory Manager: Patrick Knavel pdknavel@alaska.edu 474-5622

1. Purchasing:

All chemical orders are placed by the Laboratory Manager once approved by the Laboratory Supervisor. The department has UV light boxes and a Bio-Rad UV gel visualizer.

2. Storage:

UV light boxes are stored in locked cabinets in 204, 206, 306 and 211 Murie.

3. Authorized personnel:

All authorized personnel must have completed all required employee and laboratory safety training.

The Instructor is authorized to train their TAs on the proper preparation, handling, storage and disposal of this material. The instructor may delegate training to the B&W Laboratory Supervisor by making arrangements at least two (2) weeks in advance.

TAs, once trained, are authorized to train and supervise their students.

Students must be trained in the use of UV light imagers in acc

5. Use location:

Murie B&W teaching labs, rooms 204, 206, 209, 211, 304, 306
On tables or lab benches.

6. Personal protective equipment (PPE):

When working with the Bio-Rad gel imaging system or a light box that has a UV shield attached, the shield provides protection from UV light. The light should only be turned on once the shield is in place, and should be turned off before the shield is removed. In this case, the following PPE is recommended as a precaution for accidental exposure should the shield be lifted while the box is on.

Nitrile gloves
UV resistant safety glasses
Long sleeved shirt or lab coat to cover exposed skin

If the procedure requires removal of the UV shield to carry out the work (e.g. excising bands from a gel), precautions must be taken to protect the eyes and skin from UV exposure. In this case, the following PPE is required:

Nitrile gloves
UV resistant face shield
Long sleeved shirt or lab coat to cover exposed skin

PPE must be inspected prior to use and replaced if damaged.

If ethidium bromide is being used as the stain, the SOP for its use must be followed and the required additional precautions taken.

7. Spill equipment:

UV light cannot be spilled and does not require clean-up. Follow appropriate spill procedures for the materials you are working with.

8. Procedure:

Materials needed:
stained gel
UV light box or UV flashlight or UV penlight
PPE listed in section 6

Procedure Notes:

PPE must be used appropriately when needed.

Procedure Steps, Bio-Rad Imager

1. If using ethidium bromide, set up work area as instructed in the ethidium bromide SOP.
2. Set up imager and computer. Open program.
3. Don appropriate PPE. Transfer the gel to the appropriate imaging tray.
4. Remove gloves before working on computer to avoid contamination of computer.
5. Don new gloves before handling gel.
6. Follow the directions provided by Bio-Rad. They are not reproduced here.

Procedure Steps, UV Light Box

1. If using ethidium bromide, set up work area as instructed in the ethidium bromide SOP.

2. Don appropriate PPE.
3. Set up UV light box
4. Transfer gel to light box. Secure UV shield over gel.
5. Turn on UV light and observe gel. Do not spend more time than necessary observing the gel, even with the shield and PPE on. To spend more time examining the gel, it should be photographed so that the photograph can be studied.
6. When photographing the gel, it is appropriate to remove gloves to handle the camera so that camera does not become contaminated. Put gloves back on after taking photographs and bepprove

12 Spills:

If it is def

Training Record

I, the undersigned, have read and understand the above SOP. I have been trained~ b

This page intentionally left blank.