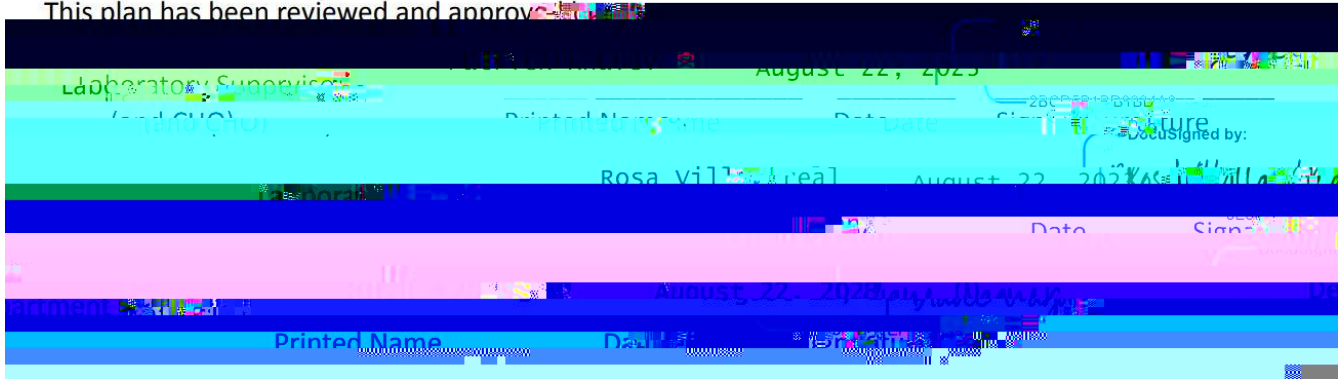




## Biology and Wildlife Chemical Hygiene Plan

This plan has been reviewed and approved by the Laboratory Supervisor and the Department Head on August 22, 2023.



Lab personnel receipt and acknowledgement (this record is kept by the Laboratory Supervisor and is available upon request).

I have read and understand this Chemical Hygiene Plan and agree to abide by the provisions outlined in it.

Name	UA ID	Date	Signature

Last updated: August 22, 2023

## Abbreviations (Acronyms)

AKOSH - Alaska Occupational Safety and Health

B&W - Biology and Wildlife

CFR - Code of Federal Regulations

CGA - Compressed Gas Association

CHO - Chemical Hygiene Officer

CHP - Chemical Hygiene Plan

EHSRM - Environmental Health, Safety, and Risk Management

EPA - Environmental Protection Agency

IAB - Institute of Arctic Biology

JHA - Job Hazard Analysis

LD50 - Lethal Dose 50%

OSHA - Occupational Safety and Health Administration

PEL - Permissible Exposure Limits

PPE - Personal Protective Equipment

SOP - Standard Operating Procedures

INTRODUCTION

CONTACT INFORMATION

INDIVIDUAL CHEMICAL HYGIENE RESPONSIBILITIES

Instructor (PI)

Teaching and Course Assistants

Students

Laboratory Supervisor

Lab Technician

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

LABORATORon



Pyrophoric Solids  
Self-Heating Chemicals  
Chemicals Emitting Flammable Gases when in Contact with Water  
Oxidizing Liquids  
Oxidizing Solids  
Organic Peroxides  
Corrosive to Metals

Appendix 2: TRAINING REQUIREMENTS

Appendix 3: WASTE HANDLING FLOW CHART

Appendix 4: AUTOCLAVE FLOWCHART

Appendix 5: HAZARDOUS MATERIALS PICKUP AND DISPOSAL PROCEDURES

Appendix 6: GLOBALLY HARMONIZED SYSTEM (GHS) LABELING

Appendix 7: NFPA LABELING AND STORAGE CODE COLOR INTERPRETATION

Table 1. UAF (J.T. Baker) Color Codes an

# Biology and Wildlife Chemical Hygiene Plan

The University

The responsibility for maintaining a safe laboratory environment lies with the Principal Investigator (PI) for the lab. In Biology and Wildlife teaching laboratories, . 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 their course. 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.
3. 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. This includes performing the [29CFR1910.132\(d\)](#) required hazard determination and maintaining required documentation as well as carrying out or arranging for Job Hazard Analysis (JHA) –assistance with this may be obtained from the Laboratory Supervisor.
5. obtain prior approval from appropriate parties for laboratory procedures that may require prior approval (see [Circumstances Requiring Prior Approval](#))
6. maintain up-to-date written lab protocols, including measures that must be taken to ensure safety.
7. train TAs on the hazards of the procedures performed during the lab and how to carry out the procedures correctly to minimize risk.
8. identify additional training that needs to be provided to TAs for procedures to be carried out in the lab. Ensure that this training has been provided prior to the occurrence of the relevant laboratory exercise(s).
9. ensure that TAs properly train students and require students to follow the procedures outlined in this document as well as specific procedures for given lab exercises.
10. be familiar with all emergency procedures.

Teaching and Course Assistants  
Teaching and Course assistants shall:

1. complete r



- 10. notify the instructor immediately in the event of an accident, spill, injury, damage to equipment, or properly functioning equipment, or other potential laboratory problem or hazard.
- 11. notify the instructor of any pre-existing health conditions that could be affected by working in the laboratory.

Laboratory Safety  
The Lab Safety Officer (LSO) shall:

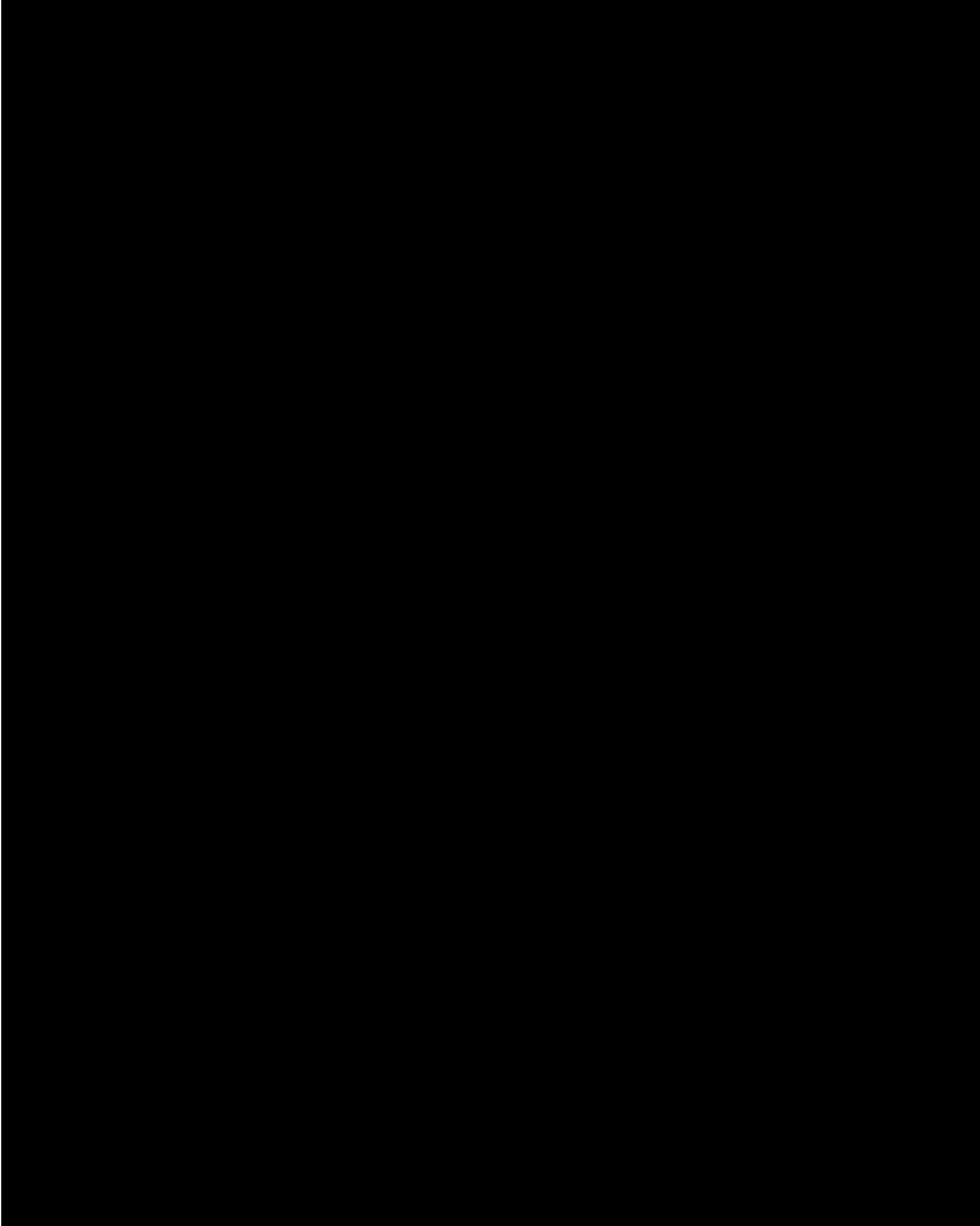
- 1. coordinate all required safety training, including those related to lab safety.
- 2. provide department-specific training (B&W CHP Training, TA Orientation) at the start of each semester.
- 3. approve all technical purchases to be made for courses.
- 4. assist TAs with performing the 29CFR1910.132(d) required hazard determination and required documentation as well as carrying out or arranging for Job Hazard Analysis (JHA).
- 5. assist TAs with development and implementation of SOPs and laboratory practices, including but not limited to identification of appropriate PPE and waste management plans for each lab.
- 6. help TAs and TAs identify when additional training is necessary and help arrange for that training.
- 7. be available to review procedures with and answer questions from instructors and TAs, upon request.
- 8. keep abreast of legal requirements concerning regulated substances and communicate any changes to TAs.
- 9. seek to improve the overall CHP.
- 10. in consultation with the IAB/B&W web manager, maintain the B&W Laboratory Safety website.
- 11. maintain a library of equipment manuals, instruction manuals, protocols, procedures and other documents on Google Drive and provide access for individuals requiring it.
- 12. Once per semester, carry out a thorough internal audit of all laboratory spaces in collaboration with the Laboratory Technician. Laboratory users shall also be given the opportunity to participate in an external audit.
- 13. Once per semester, observe each lab to promote positive interaction with TAs and students.
- 14. Serve as the Chemical Hygiene Officer (CHO) for the department.

4. provide additional PPE when it is identified as necessary and make sure that the users understand how to properly use it.
5. 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

Vice Chancellor for Research and Provost

The Vice Chancellor for Research and the Provost shall

1. maintain laboratory safety as an institutional priority in both research and teaching.





## Training

Employees (Including TAs) shall complete all the general training required of all UAF personnel and renew them as required in accordance with [UAF Policy 04.07.010](#). The Biology and Wildlife Department uses a [Canvas Course](#) to track trainings - See [Appendix 2](#) for more information (\* denotes training requires annual renewal):

Trainings accessed through [MyUA](#):

1. Workplace Harassment Prevention
2. Behavior Based Safety (BBS)

Training currently accessed through Blackboard (see [UAF's Equity and Compliance website](#) for current instructions):

3. \*Title IX

Trainings accessed through [UAF EHSRM](#):

4. Employee Safety Orientation
5. Hazard Communication/GHS
6. Office Safety (general)
7. Slips, Trips and Falls

Trainings accessed elsewhere:

8. Protection of Minors ("[Shine a Light](#)" unless you work directly with minors)
9. \*Departmental Emergency Action Plan ([DEAP](#)) training (all buildings you work in)

In addition, Biology and Wildlife laboratory personnel (instructors and TAs) shall complete the following:

1. \*[FERPA](#) training (required of all who work with student records)
2. \*Biology and Wildlife Chemical Hygiene Plan (this document and Canvas quiz)
3. TAs must also complete TA orientation (in-person)

Trainings accessed through [EHSRM Lab Workers](#) Page:

4. UAF Laboratory Safety
5. UAF Hazardous Waste Management (Initial)
  - a. \*UAF Hazardous Waste Management (annual refresher)
6. UAF Chemical Hygiene
7. UAF Drivers Training

~~Researcher's Handbook~~ [Responsible Conduct in Research](#) (requires renewal every three years)

Additional [basic training](#) modules developed

as

It is th







7. Avoid walking close to a fume hood when someone else is using it.

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 quantities of

contaminants

## Respirators

1. Because of the difficulty and e

If you double-swipe to unlock the room for the lab, you must repeat the double-swipe process to lock the doors when

Clothing

1. A full body-length rubber, plastic or neoprene apron should be worn if there is risk of splash or spill when working with large quantities of hazardous chemicals. Hazards of this type must be pre-appro

2. Low-heeled shoes with fully covered uppers shall be worn. Sandals with open toes or shoes with mesh coverings shall not be worn.

3. Long pants and long sleeves shall be worn. Shorts, skirts, dresses, and sleeveless blouses shall not be worn.

4. Jewelry, including watches, bracelets, necklaces, and earrings shall not be worn.

5. Hair shall be pulled back and secured. Hair should be covered with a hairnet or cap.

brnt



General rules for laboratory work with chemicals

1. Regular work schedules should be followed unless a deviation is authorized by the laboratory supervisor, laboratory Technician or instructor. Employees shall not work alone after hour.  
Tt

17. Maintain situational awareness – be aware and alert of things going on

- !2 3. Non-preserved animal tissue (non-human, including non-human animal blood) must be collected in incineration bags or containers. It shall be labeled with

5. Equipment is tested weekly (by the Laboratory Technician 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.

The showers and eyewashes in the Murie Building



## Emergency Fire Blankets

1. Each teaching lab (202, 203, 206, 211, 302, 303, 306 and 309 Murie) is equipped with a fire blanket  
th

5. Only containers with proper labels identifying the chemical and its hazard should be accepted. Beginning June 1, 2016, all container labels must be compliant with the Globally Harmonized System (GHS). UAF also uses the [J.T. Baker color code](#) storage system. See [Appendix 6](#) and [Appendix 7](#)
6. Shipments with breakage or leakage should be refused or opened in a chemical fume hood using appropriate precautions and PPE.
7. When a shipment containing chemicals is received at the B&W Office, the box shall be placed unopened into the chemical resistant receiving bin. The Laboratory Technician shall be notified immediately. If not available, the Laboratory Supervisor shall be notified immediately.
8. Chemical shipments shall be dated upon receipt. TAs and instructors should use older materials before opening newer ones.
9. Upon receipt of a chemical, the following will be done by the Laboratory Technician or Laboratory Supervisor:
  - A) The box shall be visually inspected and opened in an appropriate location
  - B) the containers holding the chemical shall be inspected
  - C) the container shall be dated and labeled appropriately
  - D) the chemical shall be entered into the inventory

## Chemical Handling

1. A risk assessment should be co

## Chemical Transfer

1. Use adequate ventilation (such as a fume hood) when transferring even a small amount of a particularly hazardous substance ([see Appendix 10](#)).
2. When transferring flammable chemicals from one container to another, make sure that there are no ignition sources in the area. If transferring from large containers (2 gallons or more), appropriate grounding and bonding should be used to disperse static charge. Consult the Laboratory Supervisor or Laboratory Technicians

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 who will work with compressed gases or who work in labs where compressed gas cylinders are housed.

#### Receiving and Storage

1. If compressed gases are needed for a lab, contact the Laboratory Technician and Laboratory Supervisor. They will arqæED an

11. Do not use copper (>65%) connectors or tubing with acetylene. Acetylene can form explosive compounds with copper, silver and mercury.
12. Always leave at least 30psi minimum in "empty" cylinders. Do not leave an empty cylinder

12 W

## 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.

Refers to those adverse effects occurring following oral or dermal administration of a single dose or

O





Refers to any gas which may, usuall

Refers to a liquid which, generally by yielding oxygen, causes or contributes to the combustion of other materials.

Refers to a solid which, generally by yielding oxygen, causes or contributes to the combustion of other materials.

Refers to a liquid or solid that is derivative of hydrogen peroxide.

1. Organic peroxides are thermally unstable chemicals and may undergo exothermic self-accelerating decomposition.
2. They are liable to explosive decomposition, burn rapidly, be sensitive to impact or friction and react dangerously with other substances.

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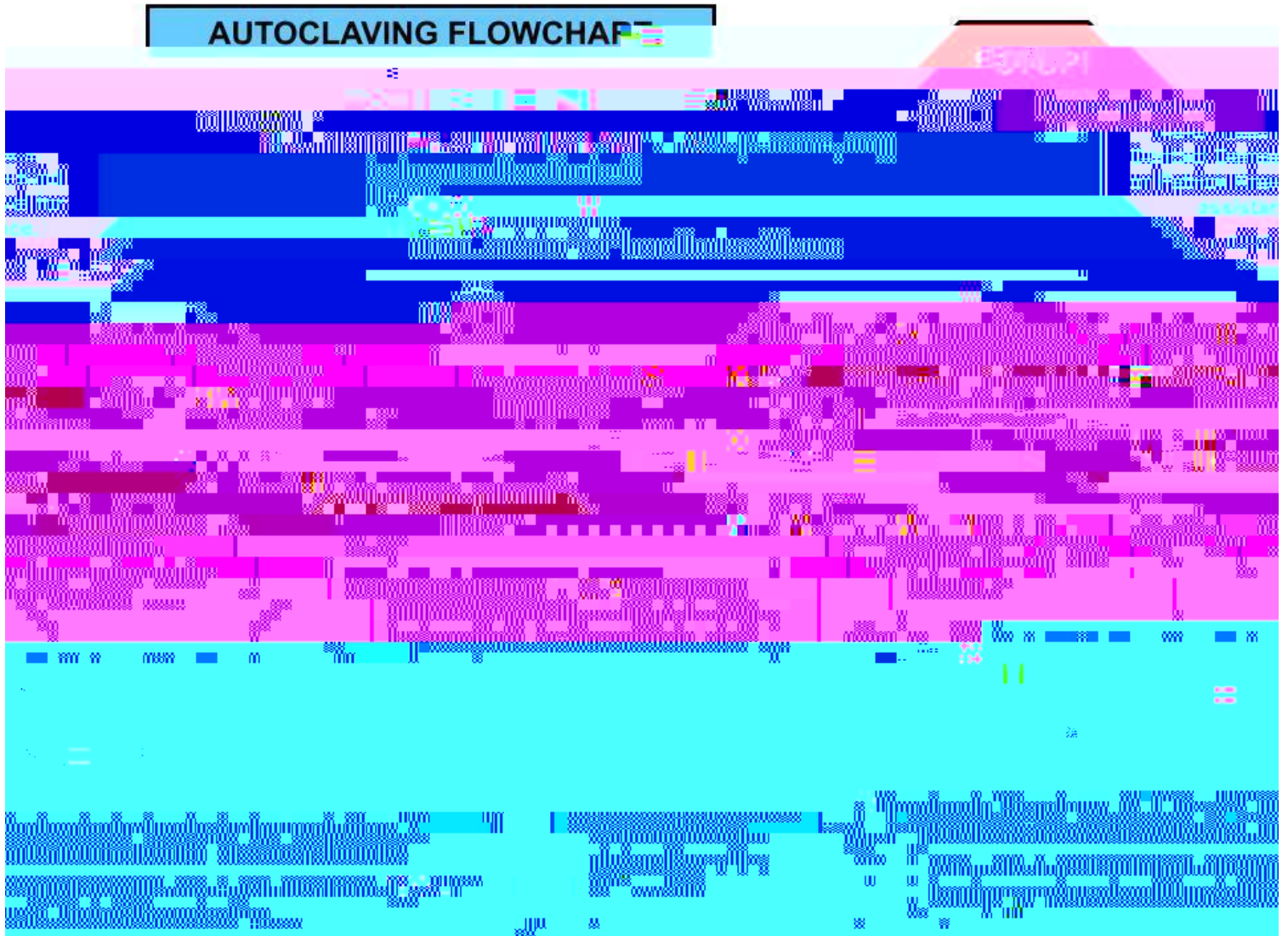
Refers to a chemical that can materially damage, or even destroy, metals.



Require<sub>R</sub><sup>F</sup>



# AUTOCLAVING FLOWCHART



Haz

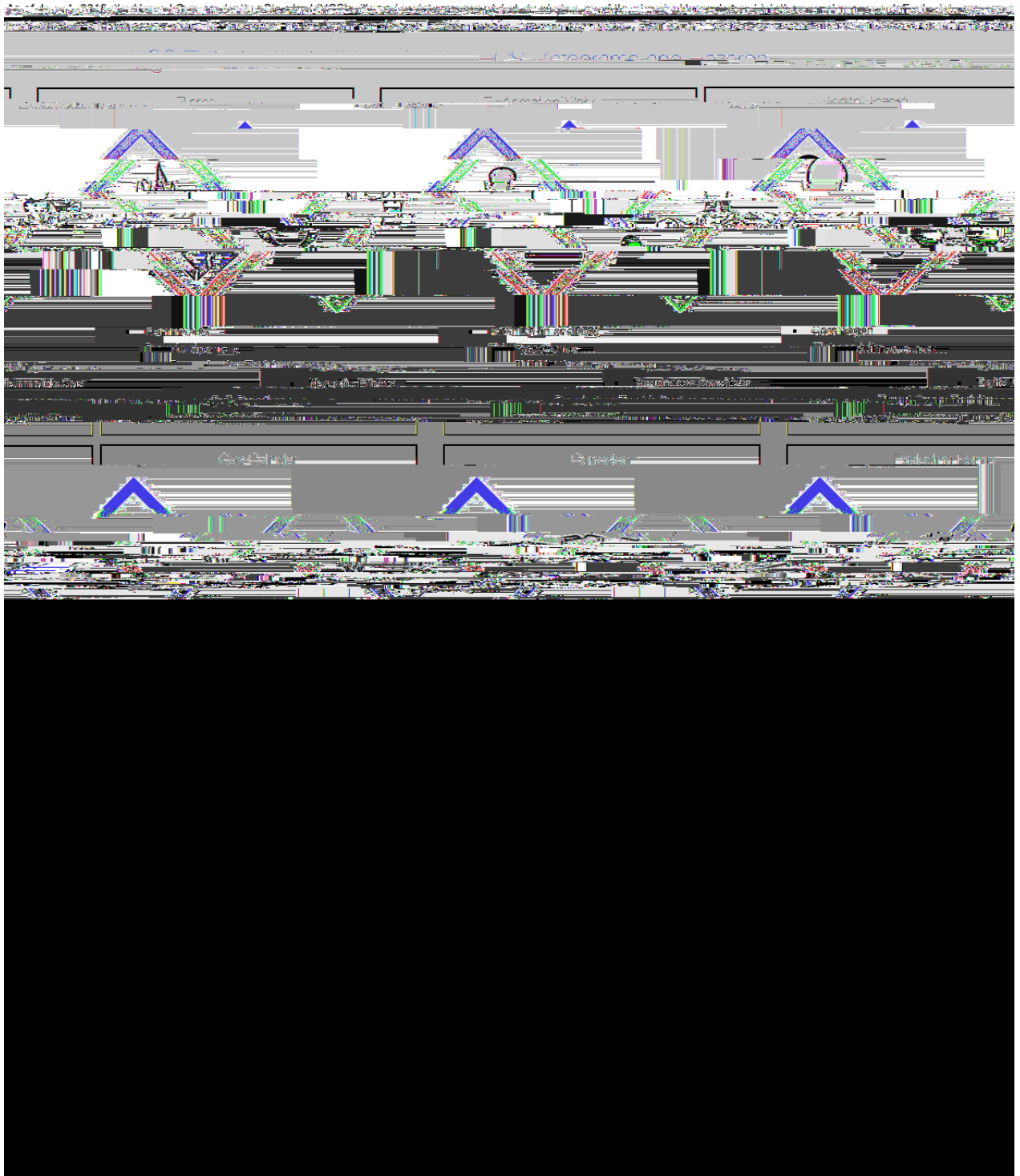




All containers of liquids must be placed in compatible secondary containment that would be sufficient to hold the volume of liquid in the event that the primary container ruptured. When possible, use the original container for disposal of the used material. Be sure that the container is clearly labeled as waste so that it is not mixed up with unused material and re-used. Metal cans are only acceptable for accumulating waste oil; they may not be used for any other type of hazardous waste.

Loose



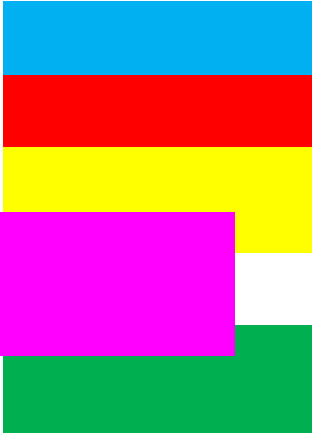


Taken from [OSHA](#)

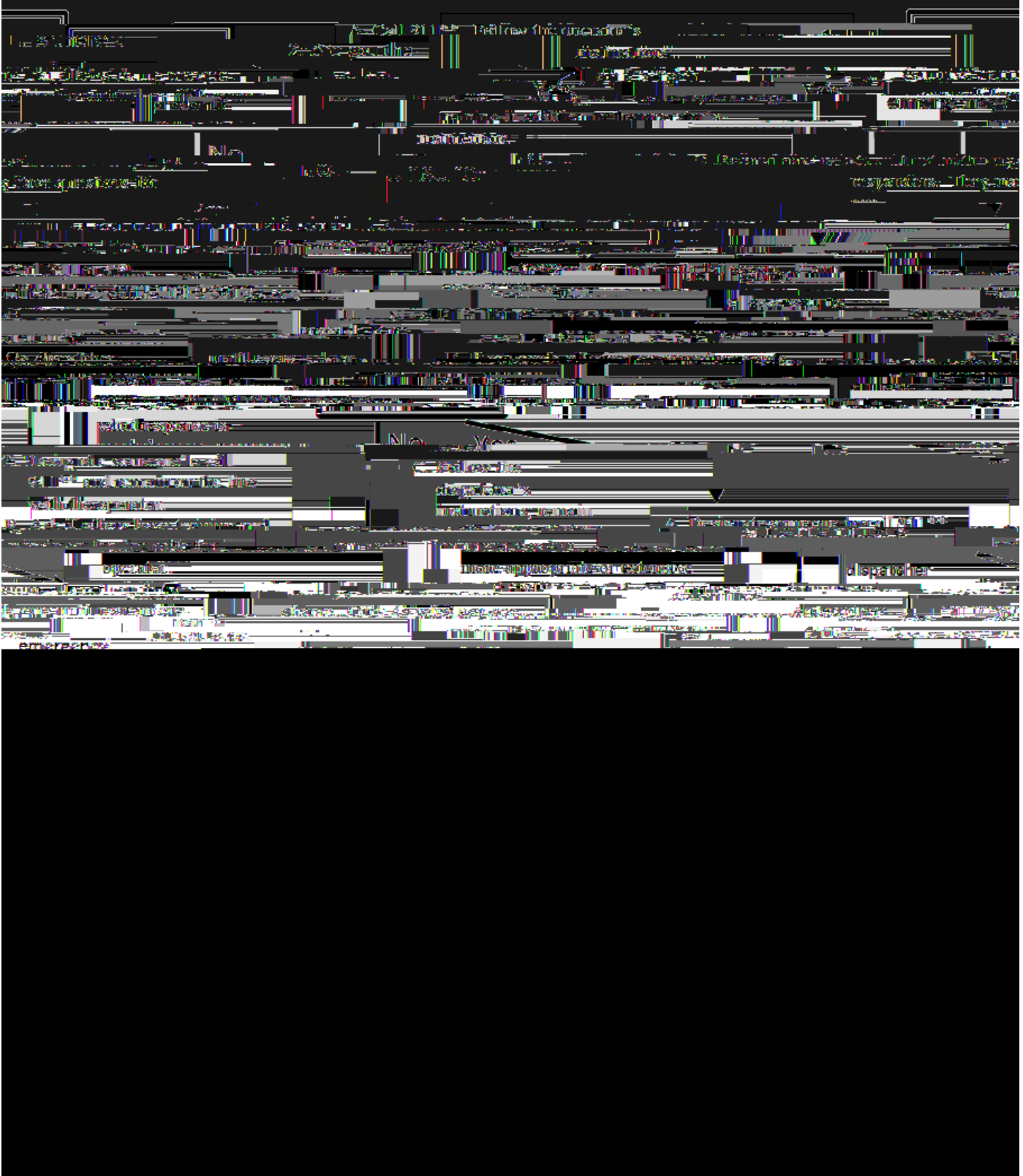


Color Code

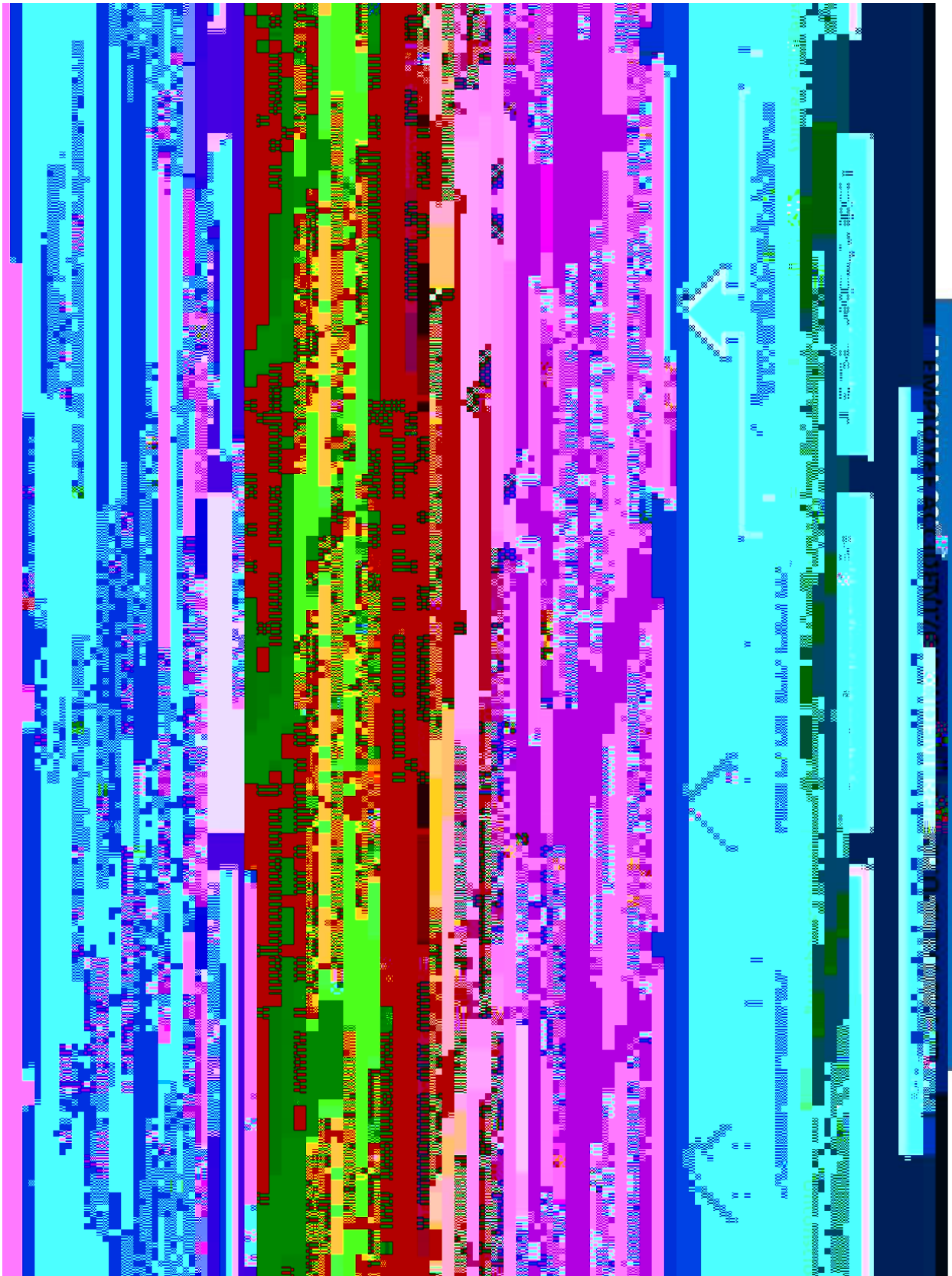
H



## 8A: Student Emergencies



8B: Employee Emergencies





It is important to remember that some equipment cannot be turned off and certain other pieces of equipment do not shut themselves off when there is a power outage. Plan specific procedures for your laboratory while adhering to the following:

Fully close chemical fume hood sashes. No work is allowed in fume hoods during a power outage. Ensure that all chemical containers are secured with caps, parafilm, etc. and returned to their proper storage location.

All non-essential electrical devices should be turned off, especially computers, printers, and other devices with sensitive circuitry (including autoclaves and laminar flow hoods).

Keep the doors of refrigerators and freezers closed.

Ensure that no flammable chemicals are stored in domestic refrigerators and freezers. When power returns to these appliances, a reaction may be ignited by the refrigerator light or other electrical source.

62

Check

eck

## 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.

(See [29 CFR 1910.1003](#))

2-Acetylaminofluorene	29 CFR 1910.1014
Acrylonitrile	29 CFR 1910.1045
4-Aminobiphenyl	29 CFR 1910.1011
Inorganic Arsenic	29 CFR 1910.1018
Asbestos	29 CFR 1910.1001
Benzene	29 CFR 1910.1028
Benzidine	29 CFR 1910.1010
bis-Chloromethyl ether	29 CFR 1910.1008
1,3-Butadiene	29 CFR 1910.1051
Cadmium	29 CFR 1910.1027
Chromium (IV)	29 CFR 1910.1026
Coke oven emissions	29 CFR 1910.1029
1,2-Dibromo-3-chloropropane	29 CFR 1910.1044
3,3'-Dichlorobenzidine (and its salts)	29 CFR 1910.1007
4-Dimethylaminoazobenzene	29 CFR 1910.1015
Ethylene oxide	29 CFR 1910.1047







IARC = International Agency for Research on Cancer

Group 1	The agent (mixture) is carcinogenic to humans. The exposure circumstances entail exposures that are carcinogenic to humans.
Group 2A	The agent (mixture) is probably carcinogenic to humans. The exposure circumstance entails exposures that are probably carcinogenic to humans.
Group 2B	The agent (mixture) is possibly carcinogenic to humans. The exposure circumstance entails exposures that are possibly carcinogenic to humans.
Group 3	The agent (mixture or exposure circumstance) is unclassifiable as to carcinogenicity in humans.
Group 4	The agent (mixture, exposure circumstance) is probably not carcinogenic to humans.

NTP = National Toxicology Program

RAHC	Reasonably Anticipated to be Human Carcinogen
KHC	Known to be Human Carcinogen

OSHA = Occupational Safety and Health Administration

13	OSHA Regulated carcinogens
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PARTICULARLY HAZARDOUS SUBSTANCES

Particularly Hazardous Substances (PHSs) include select carcinogens, reproductive toxins, substances with a high level of acute toxicity, and chemicals that can be absorbed through the skin.

A full list of Particularly Hazardous Substances is near impossible to maintain. To identify a PHS, use the [GHS Lookup Tool](#). UAF's EHSRM also maintains a complete list of all [hazardous chemicals](#) used at UAF



4. Quantities exceeding the above must be stored in an approved flammable storage room meeting the
4. ~~requirements of TR 101~~



[Title 29 of the Code of Federal Regulations 1910.1450](#) (29 CFR 1910.1450), Occupational Exposure to Hazardous Chemicals in Laboratories, covers all workers using hazardous chemicals in laboratories.

As part ↓

On



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?

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 fume hood been tested within the las

- 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:

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Date: \_\_\_\_\_ Person(s) making observations: \_\_\_\_\_ Time: \_\_\_\_\_

Observed use of PPE

---



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Are employees wearing proper attire (closed-toed shoes, long pants, etc.)?

---



---

Date: \_\_\_\_\_ Person(s) making observations: \_\_\_\_\_ Time: \_\_\_\_\_

Observed use of PPE

---



---

Are employees wearing proper attire (closed-toed shoes, long pants, etc.)?

---



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Title	UAF Description
UAF Policy 02.09.01	Safety is the responsibility of everyone.

**POLICY STATEMENT**

UAF Policy 02.09.01	UAF Description
UAF Policy 02.09.01	Safety is the responsibility of everyone.

**DEFINITIONS**

**Advanced UAFMA and Alaska Safety Technical Requirements** refers to the group of certified technicians with job titles of UAFMA and Alaska Safety Technical Requirements. **Employee** is anyone who is employed by the University of Alaska.

**Employee** is anyone who is employed by the University of Alaska. **Technical Requirements** refers to the group of technicians with job titles of UAFMA and Alaska Safety Technical Requirements. **Student** is an individual enrolled in at least one UAF credit or non-credit course.

**Student** is an individual enrolled in at least one UAF credit or non-credit course. **Volunteer** is anyone who is employed by the University of Alaska.

**Volunteer** is anyone who is employed by the University of Alaska. **Contractor** is anyone who is employed by the University of Alaska.

**RESPONSIBILITIES & PROCEDURES**

- 1.1 UAF activities shall be conducted in accordance with applicable health and safety laws, regulations, and codes, such as those established by the State of Alaska, National Fire

Protection Association (NFPA), International Brotherhood of Firefighters (IBFF), American Society of Safety Engineers (ASSE), U.S. Environmental Protection Agency (EPA), U.S. Department of Energy (DOE), U.S. Nuclear Regulatory Commission (NRC), and other applicable agencies.



... and comply with... 3.3 Complete... as determined by EHS... <http://www.uaf.edu/safety>... Safety Training... <http://www.uaf.edu/safety>... Department Emergency Action Plan (EAP)...

... and comply with... 3.3 Complete...

... as determined by EHS... <http://www.uaf.edu/safety>... Safety Training... <http://www.uaf.edu/safety>... Department Emergency Action Plan (EAP)...

- Substance Abuse Policy
- Protection of Minors Policy

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

... 3.4 Inform a supervisor or instructor of any safety or health hazards in the workplace, University campuses, or University locations away from campus.

- All state and federal required safety training

... 3.4 Inform a supervisor or instructor of any safety or health hazards in the workplace, University campuses, or University locations away from campus.

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3.9. Comply with rules for the use of flammable, non-toxic, and non-combustible materials.

fire-hazards in the workplace: [appliances, heaters, and other  
Fire Safety-EMM Rules for UAF Labs](http://www.usf.edu/fire/prevention/)

special storage requirements with flammable, toxic and federal [3.10. Properly use and hazardous or  
transport.](#)

following individuals or offices have responsibilities in addition to those applying to all. The  
[http://www.usf.edu/labs/labsafety/EMM](#)

orize health and safety programs and a system for [3.11.1. Establish, oversee, and auth  
investigate university.](#)

with the [Chemical Safety and Safety Council](#) for all chemical safety work [3.12. After Chemical Safety Council  
continued](#)

specific standards and emergency response of the lab [3.12.1. Reinforced horizontal  
table\(s\)](#) safety in all

a Health and Safety Policy and communicate the requirements for [3.12.2. Implement th  
vehicle and fuel delivery.](#)

for [3.12.3. Under the guidance of EHSRM, designate and empower safety coordinators  
primary and secondary with the title of Safety](#)

to [http://www.usf.edu/labs/labsafety/EMM](#)

to [http://www.usf.edu/labs/labsafety/EMM](#)

learning environment.

Advisors, staff, and students, regular, part-time and temporary employees, visiting prof  
essors, and students, as

to [http://www.usf.edu/labs/labsafety/EMM](#)

to [http://www.usf.edu/labs/labsafety/EMM](#)

corrected.

for units/departments or project/department [3.12.7. Determine whether safety needs  
are met through and describe existing and future requirements](#)

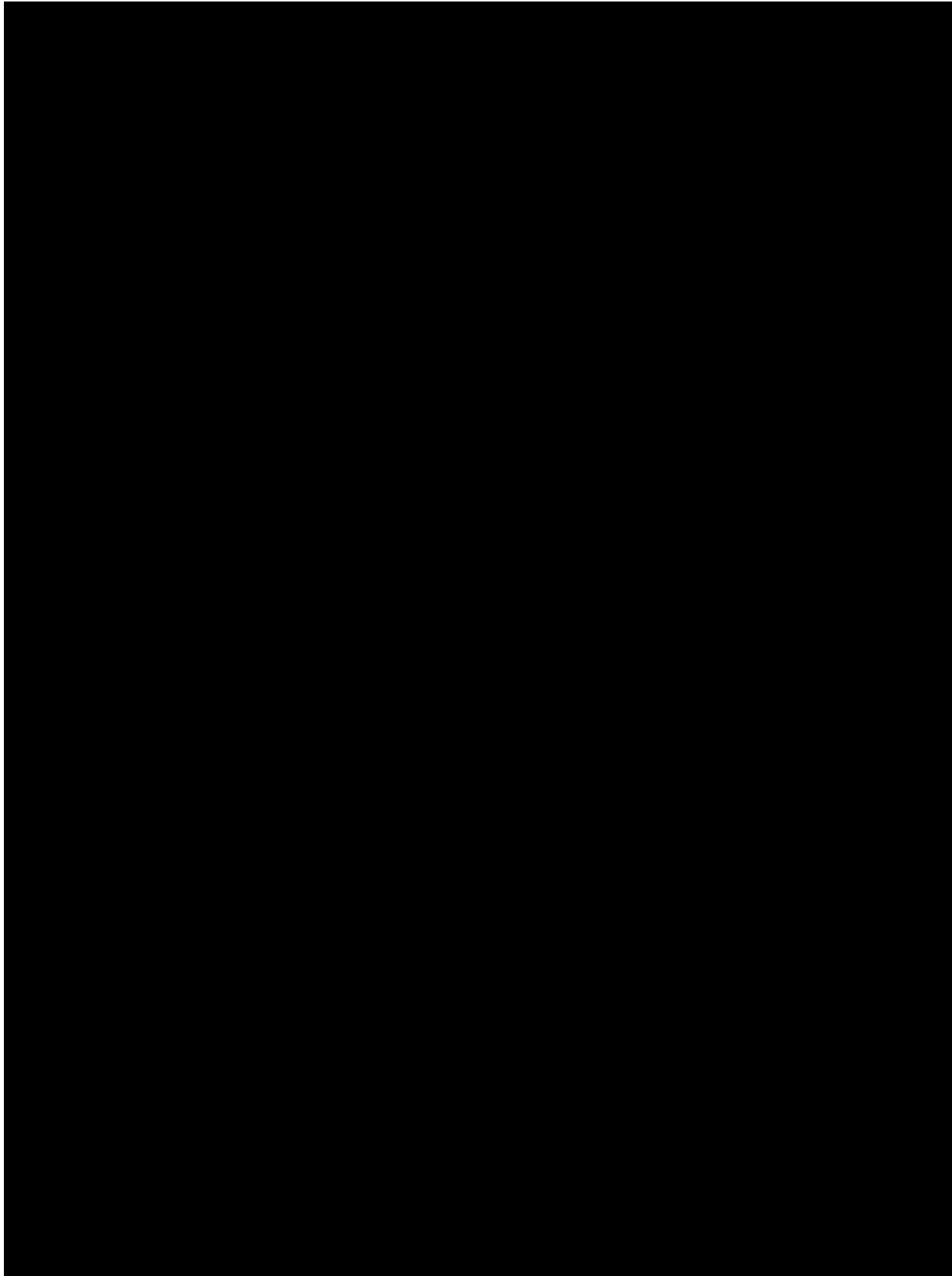
items identified in safety audits).

should be [description and needs of the review, Workplace expectations  
should be](#)

to [http://www.usf.edu/labs/labsafety/EMM](#)

to [http://www.usf.edu/labs/labsafety/EMM](#)

5. UAF Health and Safety Policy



Policy

3.14.5 Provide guidance and assistance in identifying, evaluating and correcting safety and health hazards.

3.14.6 Conduct investigations and analyses of occupational incidents, injuries and illnesses.

3.14.7 Identify noncompliant situations and recommend improvements to those who are responsible for departments, laboratories, units and work areas.

3.14.8 Provide guidance for proper management of hazardous materials.

3.14.9 Enforce the responsibilities assigned in the University of North Carolina System Safety and Health Program established by the Board of Trustees.

until the danger from such conditions is abated or remedial steps have been taken.

3.14.10 Review contracts for safety plans for compliance and provide an approved copy to project site managers.

3.15 University Police Department

3.15.1 Police Services

3.15.2 Security

3.16 University Fire Department

3.16.1 Fire and Emergency Response

3.16.2 Fire Prevention

3.16.3 Fire Investigation

3.16.4 Maintenance and Inspection

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 Chancellor that further university efforts by providing professional

guidance and training to faculty, staff, and students. The SCCC also provides professional guidance to current and future programs and coordinate safety and compliance related issues associated with the purpose of the committee to review all UAF-based physical and living projects. [projects - Home](#)

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UAF's commitment to the health and safety of its employees, students, and volunteers, and visitors and the use of the UAF animal facilities.

University experiments involving the use of recombinant nucleic acids, artificial gene transfer, infectious agents, and biologically derived toxins.

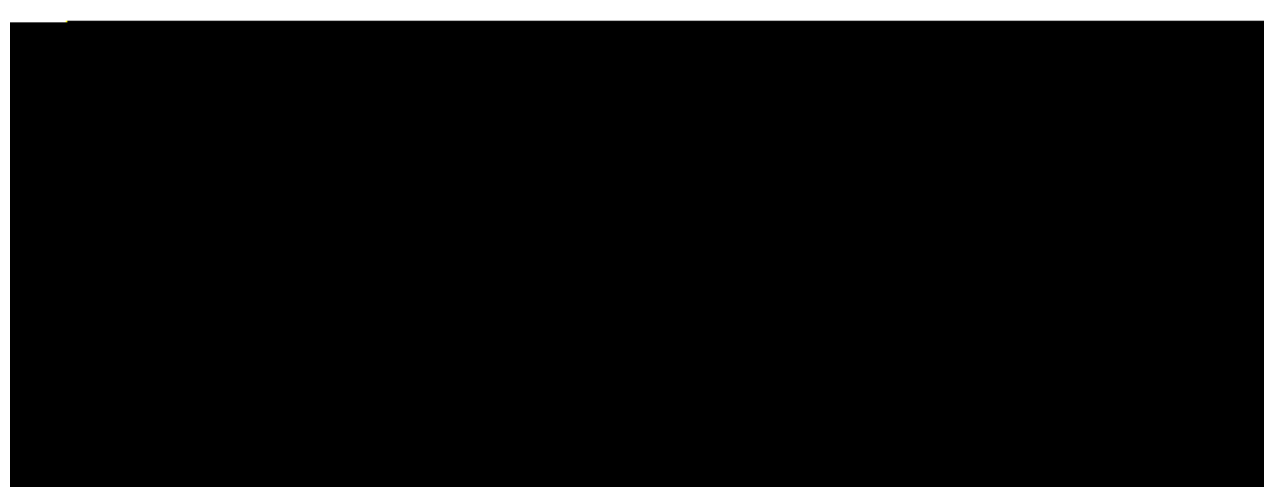
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will provide safety and health information and training to all employees and students in the course of work.

will provide safety and health information and training to all employees and students in the course of work.



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



In the e

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



Consult a physician. Move out of the dangerous area.

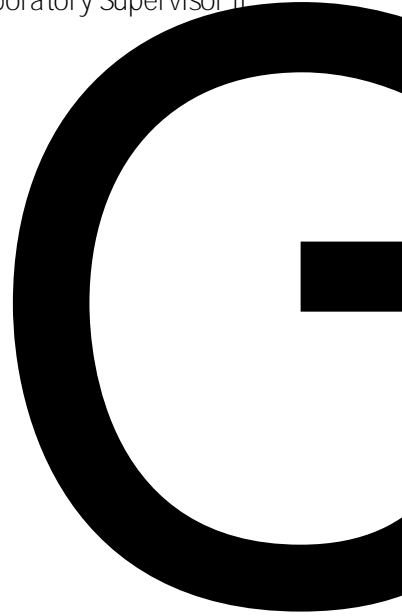
Flush eyes with water. Consult a physician.

Skin contact with

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 Autoclave Flowchart (Appendix 4) in the Biology and Wildlife CHP.

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







## Biology and Wildlife

Gloves may be required based on what is being heated, but are not necessary for the use of a Bunsen burner in and of itself. Consult the Safety Data Sheets for any chemicals being used to determine the need for gloves.

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

do NOT turn on anything, including the lights.

if it is safe to do so, turn off the propane to the room using the emergency shut-off valve.

notify others as appropriate:

- o If the odor is minor and there is no indication of an immediate threat to life and safety, notify those working nearby of the possible hazard. Notify the Laboratory Supervisor and Laboratory Technician immediately. If you cannot contact them, call Facilities Services at 474-7000 for assistance. If you cannot reach anyone at 474-7000, call University Dispatch at 474-7721 to report a possible propane leak. Any potential leak should be taken seriously and reported.
- o If the odor is strong and you have any concerns that an explosion or fire is imminent, evacuate to a safe location and call 911 to request emergency assistance.

USE 911 EMERGENCY

S t c

Do NOT attempt to remove burned clothing from the victim or treat the <sup>6wbf</sup>



Biology and Wildlife Laboratory Supervisor	474-5622
Biology and Wildlife Laboratory Technician	474-7205
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

None

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

will comply with the same. I understand the consequences of not following the procedure.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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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 a lab. Students are only permitted to use dilute solutions of this compound; they should not handle concentrated or solid catechol.

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

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.

All personnel are required to wear the following personal protective equipment (PPE) whenever

conducting this procedure:

o Nitrile gloves, thickness of 0.11mm has an average break time of 480 minutes

o Safety goggles

o Lab coat, long sleeves

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

In addition to wearing appropriate PPE, catechol solutions prepared from solid catechol must be prepared in the fume hood to provide adequate respiratory protection.

PPE must be removed and stored in a designated area away from contaminating surfaces and items in the lab or outside of the lab that should not be contaminated.



Use of gloves and boots and gloves for solid waste.  
Use of gloves and boots and gloves for solid waste.  
Use of gloves and boots and gloves for solid waste.

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 Supervisor.

Use of gloves and boots and gloves for solid waste.  
Use of gloves and boots and gloves for solid waste.

03 2

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the paper towel. Allow to stand wet for 15 minutes, then wipe up the area with an additional paper towel and place paper towels



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

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This procedure will be done in Murie 203.

All personnel are required to wear the following personal protective equipment (PPE) whenever conducting this procedure. All PPE must be obtained ahead of time from the Lab Technician:

- Flame-resistant lab coat

- Safety goggles

- Waterproof, thermally protective

Samples should be placed in plastic centrifuge tubes and

- This is now an Excel compatible file in the data file. Open up my computer to find the files.

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 chilc

I, the undersigned, have read and understand the above SOP. I have been trained to carry out this procedure and  
I will follow the above SOP. I agree to contact my Supervisor and `ndnev pi edure al e

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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.

3. Place absorbent paper or towels under the specimen. Paper towels must be absorbent.
4. Place disinfectant spill kits at the specimen location.
5. Ensure that spill kits and spill bags are on hand.
6. Ensure that a secondary container is available to collect liquid spills in a secondary container.
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 the lab to ensure compliance with SOP and well-being.

4. Place disinfectant spill kits at the specimen location.
5. Ensure that spill bags are on hand.
6. Ensure that a waste container is available to collect liquid from specimens. It 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 the lab to ensure compliance with SOP and well-being.

Collect gloves and any bloody paper towels in a biohazard bag. Paper towels used to wipe up bleach should be placed in regular trash. Inform the Laboratory Supervisor that specimens are ready for disposal, where they

Biology and Wildlife Laboratory Supervisor	474-5622
Biology and Wildlife Laboratory Technician	474-7205
EHSRM Hazardous Materials (if B&W Lab Supervisor not available, assistance with a spill)	474-5617
EHSRM Indust	474-6777

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8. Connect lead

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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

N/A

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 Sup

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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 this material in accordance with this SOP before they run gels.

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.

Murie B&W teaching labs, rooms 204, 206, 306

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.

All personnel are required to wear the following personal protective equipment (PPE) whenever conducting this procedure:

- o Nitrile gloves, thickness of 0.11mm
- o Safety goggles
- o Lab coat, long sleeve



ethidium bromide  
 agarose and gel casting trays or precast agarose gels  
 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)

PPE must be used appropriately throughout the procedures.

1. Don appropriate PPE. Mark off and set up a 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; B&W uses 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 the 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 hazardous waste (see below).
4. Ethidium bromide containing gels shall be stored prior to use in a sealed, leak proof container. This container shall be clearly labeled with the contents, hazard, course, instructor, and date of preparation. Secondary containment shall be used to prevent contamination of surfaces.
5. The TA or instructor shall set up the electrophoresis chamber by placing the gel in the rig and adding a buffer. This should not be delegated to students.
6. When loading samples containing ethidium bromide, students shall take turns using a pipet designated for use with ethidium bromide. They should NOT use multiple pipets as this contaminates many pipets and thorough decontamination of pipets is difficult. Pipet tips must be collected in a designated, labeled waste container at the ethidium bromide work space.
7. Follow the SOP for electrophoresis and any other relevant SOPs for any other hazardous materials used.
8. After electrophoresis is complete and the power turned off and units unplugged, gels will need to be visualized. PPE must be worn when transferring gels out of the buffer. Gels should be contained in trays or dishes that prevent ethidium bromide contamination of surrounding surfaces.
9. Used buffers contaminated with ethidium bromide shall be transferred to a leak proof waste container that can be tightly sealed. The waste container shall be in secondary containment that is large enough to hold the entire volume of buffer collected. Transfer from the chamber to the waste container shall be done over a bin or bucket.

All conta

If a spill occurs, personal safety should come first.  
Alert everyone in the area where the spill occurred. Students should be dir

I, the undersigned, have read and understand the above SOP. I have beQ

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## Biology and Wildlife

Phenylthiourea, N-Phenylthiourea

JT Baker storage code is blue; stored in a locked cabinet in 209 in a secondary container designated

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.

- 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 TU)



The authorized person(s) using this material is (are) responsible for the s`

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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 material is most often used as an inhibitor of polyphenol oxidase (aka catechol oxidase). Catechol is also a hazardous material, and the SOP for its use must also be followed. Phenylthiourea is a more hazardous substance than catechol. When working with both substances at once, the more restrictive specifications for phenylthiourea take precedence over the specifications for catechol.





Biology

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## Biology and Wildlife



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

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 lif

[A

If used ethidium bromide  
Don't use appropriate PPE.

3. Turn on UV light box

4. Move gel to a light box

Turn on UV light and observe  
with the shield and PPE  
that the photograph can

6. When photographing the  
camera does not become  
handling the gel or light

If the UV shield must be  
PPE is used

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move gloves to  
back on after

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If it is determined that UV light is not being properly shielded, work should be discontinued until proper shielding can be put in place.

Biology and Wildlifelif



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