

## UAF Policy 507

Original Adoption: **September 2019**

Revised: \_\_\_\_\_

Responsible Department/Office: **EHSRM**



# Laboratory Chemicals Shelf Life Policy

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## POLICY STATEMENT

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This policy communicates prudent practices and procedures to ensure that laboratory reagents are not retained beyond their useful life. It supplements and supports UAF Health and Safety Policy 02.09.001, and also supports the UAF Fire Safety Guidelines, Chemical Hygiene Plan, Hazard Communication Plan and Non-Radioactive Hazardous Materials/Waste Management Plan.

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## BACKGROUND & JUSTIFICATION

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All chemicals must be managed in accordance with applicable laws, regulations, standards and codes including, but not limited to, those established by the State of Alaska, Occupational Health and Safety Administration (OSHA) National Fire Protection Association (NFPA), American National Standards Institute (ANSI), Environmental Protection Agency (EPA), US Department of Transportation (DOT), Nuclear Regulatory Commission (NRC), International Fire Code (IFC) and International Building Code (IBC) and other similar agencies that govern the shipping, handling, storage, use and disposal of chemical substances.

Certain time-sensitive chemical substances or formulations and select compressed gases, when stored for prolonged periods or under improper storage conditions, can develop hazards that were not present in the original formulation. These hazards include an increased risk of fire, explosion or the production of poisonous gases.

Container integrity can be compromised due to the improper or long term storage of chemical substances. Containers and caps/lids can become brittle and corroded, increasing the risk of exposure, fire and chemical release. Fugitive vapors can impact air quality, degrade labels, shelves, cabinets, and the containers themselves.

Certain materials, when improperly managed, may be deemed “inherently waste-like” and become subject to violation by regulatory agencies.

The goal of this policy is to support compliance with the above mentioned regulations, reduce risk to UAF employees, students and visitors due to improper storage, and provide guidance to chemical users on storage and maintenance.

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## DEFINITIONS

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The following definitions apply to this policy.

**Chemical Hygiene Officer (CHO)** is an employee designated by a department who is qualified by training or experience to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan (CHP) for the individual labs within the department. The CHO is designated by the Dean, Director, or Department Head.

**Chemical Hygiene Plan (CHP)** is a written plan required by the Occupational Health and Safety Administration (OSHA) under 29 CFR 1910.1450 “Occupational Exposure to Hazardous Chemicals in Laboratories.” The CHP provides information to laboratory personnel with regard to protecting themselves from potential hazards associated with the use of chemicals. The UAF Chemical Hygiene Plan template is available at: <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hygiene-plan/>

**Chemical Shelf Life** is the time period in which a specific chemical product retains the same properties and characteristics that it possessed at the time of packaging. This period is often identified as an expiration date\*(see expiration date), which is set by the chemical manufacturer. The chemical shelf life can be adversely impacted by factors such as temperature, humidity, sunlight and dispensing technique. Age and improper storage of chemicals can lead to container degradation and failure.

**Employee** is anyone who is employed by the University of Alaska.

**Environmental Health, Safety and Risk Management (EHSRM)** is the UAF department that provides technical assistance on environmental compliance, occupational health, worker and campus safety, and operational risk management services to the colleges and departments of the University of Alaska Fairbanks (UAF).

**Expiration Date\*** is the amount of time that a chemical should remain in use after opening.

**Hazard Communication Plan** is a written plan required by the Occupational Health and Safety Administration (OSHA) under 29 CFR 1910.1200 “Hazard Communication” often referred to as the “Employee Right to Know”. UAF Hazard Communication information is available at: <https://www.uaf.edu/safety/occupational-safety/hazard-communication/>

**Inherently waste-like** is a term used in the Resource Conservation Recovery Act (RCRA) hazardous waste regulations at 40 CFR 261.2(d). These regulations are enforced by the Environmental Protection Agency (EPA). The EPA Administrator may add wastes to the existing inherently waste-like list that include materials which may pose a substantial hazard to human health and the environment. In addition, RCRA inspectors can declare materials found at an inspection site inherently waste.

**Non-Radioactive Hazardous Waste Management Procedures** provide information regarding the handling, storage and disposal of hazardous wastes which are generated at UAF campus and extended sites. These procedures are available at: [https://www.uaf.edu/files/safety/hazmat/UAF-Hazwaste-Management-Procedures\\_2017\\_Update.pdf](https://www.uaf.edu/files/safety/hazmat/UAF-Hazwaste-Management-Procedures_2017_Update.pdf)

**Principal Investigator** for the purpose of this policy is defined as a faculty member (professor, associate professor, assistant professor, or instructor), a research professional, an academic professional, or laboratory director who is associated with or provides guidance to a laboratory or laboratories using chemicals.

**Time-sensitive chemicals** are those chemicals that, when stored for prolonged periods or under improper storage conditions, can develop hazards that were not present in the original formulation. These hazards include, but are not limited to fire, explosion and the release of hazardous materials. Information regarding time-sensitive chemicals and management procedures is available at: <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hazards/peroxides-ethers/>

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## RESPONSIBILITIES

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*The following responsibilities, related to this policy, are established in UAF Health and Safety Policy 02.09.001. Specific responsibilities as they relate to this policy are provided below.*

### **UAF Chancellor**

Establish, oversee, and authorize health and safety programs and a system for assessing safety performance for the University (Section 3.11.1).

### **Vice Chancellors, Associate Vice Chancellors, Deans, and Directors in all locations under their control**

Provide oversight of facilities, equipment, and practices to support a safe working and learning environment (Section 3.12.4). Designate the CHO for the department.

Determine whether safety needs for unit/department are met (e.g., training, personal protective equipment, and corrective measures including non-mandated items identified in safety audits (Section 3.12.7).

### **All UAF Employees**

Properly manage chemical storage in accordance with University, state and federal requirements (Section 3.10).

### **Chemical Hygiene Officers (CHO)**

A Chemical Hygiene Officer (CHO) is an employee designated by a department who is qualified by training or experience to provide technical guidance in the development and implementation of the provisions of the UAF Chemical Hygiene Plan (CHP) for the individual labs within the department. The CHO is designated by the Dean, Director, or Department Head. The CHP is available at:

<http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hygiene-plan/>

The CHO shall:

1. assist PIs and other laboratory employees with development and implementation of standard operating procedures and practices, including providing consultation and information
2. keep abreast of legal requirements concerning regulated substances and communicate any changes to PIs and laboratory employees
3. seek ways to improve the overall chemical hygiene program

### **Environmental Health, Safety and Risk Management (EHSRM)**

EHSRM provides guidelines to assist and help the University ensure compliance as it relates to relevant environmental, health and safety laws, regulations, policies and guidelines (Section 3.14.2) and for the proper management of hazardous materials (Section 3.14.8). EHSRM also provides industrial hygiene support services, occupational, biological and radiological safety services. EHSRM provides safety training programs and maintains a university wide chemical inventory and surplus chemical program. EHSRM conducts quarterly shipments of hazardous wastes generated on campus to EPA permitted treatment, storage and disposal facilities (TSDFs).

### **Faculty, Principal Investigators, Department Chairs/Heads and Supervisors**

Ensure that employees, volunteers and students properly manage hazardous material storage in accordance with University, state and federal requirements (Section 3.13.8).

### **Fire Department and Fire Prevention Office**

The UAF Fire Marshal is responsible for providing building review, conducting fire inspections to ensure compliance with the fire code and areas within code such as: maintaining egress, fire suppression system selection and maintenance, and hazardous materials use and storage. The Campus Fire Safety Policy identifies responsibilities for all members of the campus community. This policy is available at:

<http://www.uaf.edu/fire/prevention/>.

### **Principal Investigators (PI)**

Principal Investigators are responsible for maintaining a safe laboratory environment. Every individual in the lab is expected to conduct all operations and procedures involving chemicals in a safe and prudent manner. The PI has responsibility for implementation of the UAF and site specific Chemical Hygiene Plan (CHP) in his/her laboratory. The PI shall:

1. complete all required safety training, including those related to lab safety

2. ensure that workers are trained and follow the CHP
3. ensure that the necessary protective and emergency equipment is available and in working order
4. ensure that appropriate training has been provided
5. ensure that periodic laboratory inspections are performed and that deficiencies are corrected (refer to Appendix 2 of the UAF Chemical Hygiene Plan)
6. the PI or their designee must document all laboratory chemicals, under their control, in the UAF EH&S Assistant on-line chemical inventory system
7. know current legal requirements concerning regulated substances
8. review and evaluate the effectiveness of the laboratory standard operating procedures (SOPs) at least annually and update as necessary

### **Laboratory Workers**

Laboratory employees are responsible for:

1. completing required safety training, including those related to lab safety
2. planning and conducting each operation in accordance with practices and procedures established in the UAF and site specific Chemical Hygiene Plan (CHP)
3. using equipment only for its designed purpose
4. being familiar with emergency procedures, including knowledge of the location and use of emergency equipment for the laboratory, as well as how to obtain additional help in an emergency
5. knowing the types of protective equipment available and using the proper type for each procedure
6. being alert to unsafe conditions and actions and calling attention to them so corrections can be made as soon as possible

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## **PROCEDURES**

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*The following procedures will better ensure safe laboratory and chemical storage area environments, and help meet regulatory agency requirements.*

### **General Laboratory Solvents and Reagents Procedures**

1. Observe the shelf life and expiration dates on all chemical substances; submit expired calibration standards, solvents and reagents for disposal via the UAF EH&S Assistant Program. <https://www.uaf.edu/safety/hazardous-materials/ehs-assist.php>
2. Retain only the essential laboratory solvents and reagents in the laboratory. Submit all surplus chemicals to the UAF EHSRM Division of Hazardous Materials. Benefits include additional useful work space, a reduction in potential workplace hazards, and less time spent in updating chemical inventories and safety data sheet collections.
3. Ensure that all time-sensitive chemicals are properly managed. Time-sensitive chemicals are those chemicals that, when stored for prolonged periods or under improper storage conditions,

can develop hazards that were not present in the original formulation. Additional information regarding time-sensitive materials is available at: <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hazards/>

4. Never abandon chemical stock in laboratories and/or storage areas when projects or work assignments are completed. Follow the Appendix 4 Checklist for Vacating Labs found in the UAF Chemical Hygiene Plan; <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hygiene-plan/>
5. Check the chemical surplus list prior to purchasing additional laboratory stock. The surplus chemical list is accessed through the EH&S Assistant program. The user logs into the EH&S Assistant and opens their chemical inventory. To access the surplus chemical list click the button at the left of "Surplus Chemicals". Then click and scroll through the pages looking for the chemical of interest. The EH&S Assistant program is located at: <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-inventory/>
6. Review, understand, and implement the provisions of the UAF Chemical Hygiene Plan by completing a site specific plan. Chemical hygiene plans are a required and essential part of UAF laboratory operations. Standard operating procedures are a major element of chemical hygiene plans. The UAF Chemical Hygiene Plan template is available at: <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hygiene-plan/>
7. A physical inventory of all laboratory chemicals, verification of the data on each item, reconciliation of differences must be performed, at least, annually and documented in the UAF EH&S Assistant on-line chemical inventory available at: <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-inventory/>
8. Store all chemicals with regard to chemical compatibility and in appropriate containers; additional information is available at: <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hazards/>
9. Adhere to the chemical storage limitations as established by the International Fire Code (IFC) and International Building Code (IBC) and National Fire Protection Association (NFPA). Contact the UAF Fire Marshal for additional information on the maximum allowable quantities permitted in control areas.
10. Ensure that all chemical containers are labeled appropriately. Maintain existing labels on in-stock and newly purchased chemicals. Label all containers of hazardous chemicals (including transfer vessels, beakers, flasks and process equipment) with the chemical name(s) and hazard warnings. No unlabeled substances should be present in the laboratory at any time.

## NON-COMPLIANCE

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1. University employees are subject to disciplinary action, up to and including termination, if they disregard or fail to comply with established health and safety policies and procedures.
2. Non-compliance with OSHA and other regulatory agency requirements may result in citations and penalties/fines. Departments may be charged for the fine or a portion of the fine based on their participation in the notice of violation.
3. Students who disregard or fail to comply with established health and safety policies and procedures are subject to review under the Student Honor Code, and if circumstances warrant they are subject to termination of enrollment or other necessary measures to protect their safety and the safety of others.
4. Volunteers or other non-university employees may be restricted from participating in activities in association with the university.

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## EXCEPTIONS

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There are no exceptions to this policy.

THIS POLICY IS EFFECTIVE AS OF September 1, 2019.

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## ACRONYMS

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ANSI – American National Standards Institute  
CHO – Chemical Hygiene Officer  
CHP – Chemical Hygiene Plan  
EPA – Environmental Protection Agency  
DOT – Department of Transportation  
IBC – International Building Code  
IFC – International Fire Code  
NFPA- National Fire Protection Association  
NRC – Nuclear Regulatory Agency  
OSHA – Occupational Safety and Health Administration  
RCRA – Resource Conservation Recovery Act

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## REFERENCES RELIED UPON

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UAF EHSRM Ethers and Peroxides and other Time-Sensitive Chemicals  
<http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hazards/peroxides-ethers/>

Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards: Updated Version.  
<http://www.ncbi.nlm.nih.gov/books/NBK55868/>

National Fire Protection Association 45 Standard on Fire Protection for Laboratories Using Chemicals;  
<http://www.nfpa.org/codes-and-standards>

UAF Fire Department – Fire Safety Guidelines; <https://www.uaf.edu/fire/prevention/>

University Regulation Part V – Finance and Business Management Chapter 05.09 - Risk Management and Environmental Health and Safety; Section R05.09.040. Roles and Responsibilities;  
<https://www.alaska.edu/bor/policy-regulations/>

UAF Policy 02.09.001 Health and Safety Policy; <http://www.uaf.edu/files/chancellor/policies/UAF-Policy-02.09.001-Health-and-Safety---FINAL.pdf>

OSHA Standards for General Industry; 29 CFR 1910 <http://www.osha.gov>

UAF Chemical Hygiene Plan (CHP); <http://www.uaf.edu/safety/industrial-hygiene/laboratory-safety/chem-gas/chemical-hygiene-plan/>,

International Fire Code

International Building Code