

College of Forestry

Safety Manual

For

Students, Faculty, Staff, and Visitors

College of Forestry

Oregon State University

Last Updated

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College of Forestry Safety Manual

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College of Forestry 000: Dean's Letter

Safety Policy & Procedure Manual

Section 000: Dean's Letter

Effective: 01 March 2014

Revised: 10 February 2014

Dean's Letter

Students, Faculty, Staff, and Visitors

College of Forestry

Oregon State University

The College of Forestry is committed to providing a safe environment for our students, faculty, staff, and visitors. Safety is the business and responsibility of every College citizen and can be better achieved through proper engineering, education, training, protective equipment, and enforcement of safety rules. The responsibility begins at the working level and extends upward through Supervisors, Managers, Directors, Department Heads, and Deans to the highest level of administration. It is essential that each of you takes an active part in initiating preventative measures to control and to eliminate hazards associated with activities under your direction.

The College intends to comply with all relevant University, local, state, and federal occupational and environmental regulations, codes, and standards. The College Safety Committee has the responsibility for establishing and maintaining an effective Environmental Safety Program. The success of these programs can only be achieved through the cooperation and support of everyone.

It is my request that each member of our College family accepts the challenge of maintaining an accident-free and healthy environment. It is your positive safety attitude, your knowledge of safe practices, and your actions that will determine the success of our safety program.

Sincerely,



Thomas Maness
Dean, College of Forestry
Oregon State University

College of Forestry 100: Introduction

Safety Policy & Procedure Manual
Section 100: Introduction
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to define responsibilities and expectations for safe working procedures in all College of Forestry activities. Within this section a) a Safety Code is established and defined, b) The College safety committee is established, and c) The College of Forestry Safety Program is established as policy.

Background Information

To all members of the College Community;

The College of Forestry is committed to providing a safe environment for our students, faculty, staff, and visitors. Safety is the business and responsibility of every campus citizen and can be better achieved through proper education, training, use of protective equipment, and enforcement of safety rules. The responsibility begins at the working level and extends upward through Supervisors, Managers, Directors, Department Heads/Service Group Leaders, and Deans to the highest level of administration. It is essential that each of you takes an active part in initiating preventative measures to control and eliminate hazards associated with activities under your direction.

The Forestry Executive Committee asks that each member of the College accepts the challenge of maintaining an accident-free and safe environment. It is your positive safety attitude, your knowledge of safe practices, and your actions that will determine the success of our safety program.

Implementing a systematic approach to workplace safety will require a cultural change in many units, among colleagues, and within the profession. All departments in the College need to nurture a "safety culture." College policy and individual work practice must dictate that safety never take a back seat to other interests. No one should be asked – and no one should tolerate – a potentially disabling or life-threatening risk in the name of cost-cutting, productivity or any other priority. Safety considerations must be an integral part of the operating policies of every department.

College of Forestry 110: Management Commitment to Safety

Safety Policy & Procedure Manual
Section 100: Introduction
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to define the College of Forestry Safety Code and to assign the responsibilities for the implementation of the Safety Code. In addition, the academic department and service group are defined.

Applicability

All academic and research personnel, students, staff, and visitors in the College of Forestry

POLICY

College faculty, staff, students, and visitors who perform any job-related activities in the College of Forestry are required to perform their work activities in compliance with the College Safety Code.

Procedure

Definitions

An *Academic Department* in the College of Forestry is defined as one of the four major departments: Forest Engineering, Forest Resources, Forest Science, or Wood Science and Engineering. It includes all administrative staff, students, employees, and faculty

(including adjunct, emeritus, courtesy, etc.) who report directly or through their supervisor to the Academic Department Head.

A ***Service Group*** in the College of Forestry is defined as a collection of those groups or individuals who provide a primary support role to the Academic Departments. This includes the Dean's Office, College Computing Facilities, College Business Office, College Projects and Maintenance, College Forests, College Student Services, Forestry Media Center, College Communications, and others. It includes all administrative staff, students, employees, and faculty (including adjunct, emeritus, courtesy, etc.) who report directly or through their group leader to the College Director of Operations, Executive Associate Dean, or Dean.

It is the responsibility of all Academic Department heads and Service Group leaders to institute and communicate to all employees, students, and visitors, the *College Safety Code*. The Code:

1. Adds safety to the core values of the College, on the same level and with the same support as other values defined by the Forestry Executive Committee.
2. Recognizes that the Academic Department Head or Service Group Leader is the role model for the unit, and all of his or her actions and decisions add to or detract from the credibility of the safety commitment.
3. Ensures that the Forestry Executive Committee personally sets the standard for safety performance.
4. Establishes a comprehensive evaluation that includes a safety audit of the College, to identify existing and evolving hazards and to develop an effective system of accountability to ensure that hazards are controlled or abated.
5. Recommends that the College annually undergoes an evaluation and discussion of the College's safety performance.

Each Academic Department and Service Group is responsible for adopting programs, rules and procedures that promote safety and productivity, and minimize potential financial loss to the College. In addition, each Academic Department and Service Group shall designate a department or group Safety Coordinator who shall be responsible for coordinating the department's or group's safety programs and representing the Academic Department or Service Group on the College Safety Committee. The College Safety Committee shall assist all Academic Departments and Service Groups in compliance with this order. The College Safety Committee shall:

1. Adopt a written safety policy/mission statement.
2. Publish and enforce safety standards appropriate to the particular needs of each academic department or service group.
3. Establish a program to promote awareness of safe work practices.

4. Institute and promote training and other educational programs for managers, supervisors, and employees to promote awareness of and competency in safe work practices.
5. Establish a procedure for conducting regular safety inspections/surveys so that potential hazards are detected, corrected and/or controlled in a timely manner.
6. Promote effective investigation and management of accidental loss and workers' compensation claims.
7. Maintain accurate, comprehensive records relating to injuries, accidents, property damage and any other incident that has or potentially will expose the state to financial loss. In addition, these records will be kept for a timely period to help in understanding the underlying conditions of accidents and injuries and lead to possible for prevention strategies.

College of Forestry 120: College of Forestry Safety Committee

Safety Policy & Procedure Manual
Section 100: Introduction
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to establish and describe the functions of the College of Forestry Safety Committee.

POLICY

The College of Forestry hereby establishes the College of Forestry Safety Committee. The Committee will be composed of at least one representative from each Academic Department, at least one representative from the service groups, and one representative from the College Forests staff. The committee members will be appointed by the respective department or group leaders (i.e., Department Heads, College Director of Operations (for service groups), College Forests Director). The Dean will designate the Chair for this Committee. Terms of service will be two years with options for renewal and a rotation schedule to ensure continuity.

Procedure

The College Safety Committee shall work closely with the Environmental Health and Safety Unit of University Facilities Services and the University Safety Committee. The current safety committee is identified as:

Steve Tesch, (Chair)

Jim Kiser, FERM; University Safety Committee liaison; forestry field instruction and research safety

Roger Admiral, Building and Facilities; university emergency planning initiative

John Mikkelson, Building and Facilities; university emergency planning initiative

Steve Fitzgerald, College Forests safety

Jeff Wimer, FERM, logging/field safety

Cam Jones, FES, chemical lab safety

Kent Davis, WSE, wood lab safety

Sean SanRomani, Computing Resources, general office and employee safety

Kori Ault, FES, biohazards safety

College of Forestry 130: College of Forestry Safety Program

Safety Policy & Procedure Manual

Section 100: Introduction

Effective: 01 January 2007

Revised: August 2014

PURPOSE

The purpose of this section is to establish and describe the College of Forestry Safety Program.

POLICY

It is the policy of the College of Forestry to provide a safe environment for ALL OF ITS EMPLOYEES, STUDENTS, AND VISITORS. In addition, it is the policy of the College of Forestry to fully comply with the Oregon Administrative Rules - Oregon Occupational Safety and Health Division 437-007-0100.

437-007-0100 Safety and Health Program. Every employer must implement a written safety and health program that establishes management commitment, supervisory responsibilities, accident investigation, employee involvement, hazard identification, training, and annual evaluation of the program.

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

Procedure

It is the purpose of this policy to:

1. Abide by all University, federal, state and local regulations as they pertain to our mission.

2. Apply good sense and safe practices to all jobs.
3. Exercise good judgment in the application of this policy.

To further these goals the following assignments of responsibility are made;

Management

1. Establish rules and programs designed to promote safety and make known to all employees the established rules and programs.
2. Provide all supervisors with copies of appropriate rules and regulations.
3. Make available training necessary for employees to perform their tasks safely.
4. Provide protective equipment for employees where required.
5. Impress upon all the responsibility and accountability of each individual to maintain a safe workplace.
6. Record all instances of violations and investigate all accidents.
7. Provide disciplinary action for any employee(s) disregarding this policy.
8. Appoint a College employee with enforcement authority over safety matters.
9. Insure that safety inspections are conducted of all the College's worksites, maintain records, and continually monitor the safety program for effectiveness.

Supervisors

1. Be completely responsible for on-the-job safety and secure the correction of safety deficiencies.
2. Make sure proper safety materials and protective devices are available and used and all equipment is in safe working order.
3. Instruct employees in safety requirements.
4. Review accidents, supervise correction of unsafe practices, and file accident reports.
5. Conduct jobsite safety meetings and provide employees with proper instruction on safety requirements.
6. Notify Department Heads and Group Leaders of safety violations.

Crew Leaders

1. Carry out safety programs at the work level.

2. Be aware of all safety requirements and safe working practices.
3. Plan all work activities to comply with safe working practices.
4. Instruct new employees and existing employees performing new tasks on safe working practices.
5. Make sure protective equipment is available and used.
6. Make sure work is performed in a safe manner and no unsafe conditions or equipment is present.
7. Correct all hazards, including unsafe acts and conditions which are within the scope of your position.
8. Secure prompt medical attention for any injured employees.
9. Report all injuries and safety violations.

Crew members

1. Work safely in such a manner as to ensure your own safety as well as that of coworkers and others.
2. Request help when unsure about how to perform any task safely.
3. Correct unsafe acts or conditions within the scope of the immediate work.
4. Report any uncorrected unsafe acts or conditions to the appropriate supervisor.
5. Report for work in good mental and physical condition to safely carry out assigned duties.
6. Avail yourself of College sponsored safety programs.
7. Use and maintain all safety devices provided.
8. Maintain and properly use all tools under your control.
9. Follow all safety rules.
10. Provide fellow employees help with safety requirements.

All Personnel

1. Strive to make all operations safe.
2. Maintain mental and physical health conducive to working safely.
3. Keep all work areas clean and free of debris.

4. Assess results of your actions on the entire workplace. Work will not be performed in ways that cause hazards for others.
5. Before leaving work replace or repair safety precaution signs removed or altered. Unsafe conditions will not be left to imperil others.
6. Abide by the safety rules and regulations of every work area.
7. Work in strict conformance with federal, state and local regulations.

Disciplinary policy

The College expects that all persons will adhere to safety procedures and policies in our daily work activities. Non-compliance activities shall be brought to the attention of the immediate supervisor and a written action shall be documented that includes remedial efforts of the non-compliance activity.

College of Forestry 150: Changing the Culture about Safety

Safety Policy & Procedure Manual
Section 100: Introduction
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to introduce the concept of culture change and awareness of safety in the workplace.

Background Information

There is a wealth of information available on safety in the workplace and safety programs within the workplace but there are several common themes. First and foremost is that *the strength of any company or organization is its people*. The second is that *the key to success depends on a visible management commitment to safety*. The third is *communication and reporting*. Fourth is the belief that *all injuries and fatalities are preventable and that "unsafe is unacceptable."* Finally, it is important that everyone understand that *safety begins at home and in our daily lives. The idea is that safety in the workplace is a continuation of safety in our daily practices.*

Creating a Culture of Safety

The key according to industry and agency experts is to *maintain effective standards to protect worker health and safety*. Standards are voluntary practice guidelines to help workplaces meet regulatory requirements. It has been proposed that workplaces may elect to follow either prescriptive, process-driven standards or performance-based standards. Prescriptive, process-driven standards provide rules defining specific actions that must be taken in various situations. Performance-based standards are designed to meet performance goals without specifying how they are to be achieved. A small number of companies favor performance-based standards, while the majority prefer prescriptive standards. Scare programs, reminders, incentives and other magic bullets don't work. They might change reporting but they don't change behavior. The most effective motivations for safety are peer safety culture, management credibility, and an organizational safety system.

Employer and Supervisor Actions for Healthier and Safer Workplaces

- 1. Taking responsibility** - Ensure that you have an effective worker/employer occupational safety committee to help identify and reduce workplace hazards (for higher risk workplaces).
- 2. Meeting standards** – Develop and constantly review the health and safety standards that apply to your work and ensure that these standards are fully met.
- 3. Getting help** – Have contact with a safety association, private consultant or the Occupational Safety & Health Administration ([OSHA](#)) for more information on ensuring your working conditions are as good as they can be.
- 4. Training workers** - ensure that all workers are properly trained and supervised by competent personnel to work safely. Young and/or new workers tend to have more workplace injuries, largely due to inadequate training and supervision.
- 5. Changing workplace culture** - demonstrate a genuine commitment to workplace health and safety at all levels of the organization, starting at the top. Make health and safety an integral part of organizational meetings, hiring, promoting, objectives, publications and reviews.

Employee Actions for Healthier and Safer Workplaces

Everyone has responsibility for workplace health and safety. When it comes to workplace health and safety, workers have the most to gain ... or lose. The action steps below help workers exercise their fundamental rights and responsibilities ...to know, to participate, and to refuse unusually dangerous work.

- 1. Getting involved** – Employees should be encouraged to assist the College Safety Committee identify and reduce workplace hazards.
- 2. Meeting standards** - know the health and safety legislated standards that apply to your work and your workplace. Cooperate with your employer and fellow workers in meeting health and safety standards. Support initiatives to exceed these standards where possible.
- 3. Getting help** - contact the College Safety committee, health and safety web sites, [OSHA](#), or other reliable sources for more information on working conditions. Be mindful of not only shorter-term safety issues, but also longer-term health issues related to the work you do.
- 4. Being trained** - get the proper training for any job you do so that you can do the tasks without endangering your safety or health - or the health and safety of your fellow workers.

5. Walking the talk - demonstrate a genuine commitment to health and safety - on and off the job. Make health and safety an integral part of your way of life ... and support others in protecting their health and safety.

College of Forestry 160: Working Group Safety Plan

Safety Policy & Procedure Manual
Section 100: Introduction
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to define the Working Group, introduce the Working Group Safety Plan and provide information for creating a safety plan applicable to individual working groups.

Background Information

A written Safety Plan is required for each working group and responsibility for the safety plan falls under the working group leader, supervisor, or a designated safety officer.

Policy

It is the policy of the College of Forestry that each and every working group will have a written safety plan and that all workers in the working group shall read and acknowledge that the safety plan has been reviewed with them by their supervisor or designated safety officer.

Procedure

A **Working Group** in the College of Forestry is defined as any subset of individuals in an Academic Department or Service Group who have specific jobs, expertise, and goals. These groups report to an individual working group leader who then reports to the Academic Department Head or Service Group Leader. Examples of working group leaders include Principle Investigators (P.I.'s), and persons designated to head specific service groups (i.e., head of student services or facilities services).

The working group safety plan is a document that contains the following nine sections:

1. Safety Plan
2. Job Safety Analysis (JSA)
3. JSA Forms
4. Acknowledgement Forms
5. Completed Acknowledgements
6. Accident Reporting
7. Accident Reporting Forms
8. SAIF 801 Forms
9. Completed Accident Forms

All working group safety plans will follow the same format. This is necessary for consistency within the College and for ease of identification by outside auditors (i.e., Fire Department Inspection personnel). The College Safety Committee has developed a procedure for creating uniform plans and is willing to assist any working group in the development of their individual plan.

Instructions for creating the plan follow. All files referenced are located on the CD enclosed with the example safety Plan available from the Safety Committee.

Directions for Building the Working Group Safety Plan Manual

Step 1

You will need 2 sets of Avery 5-Tab Dividers and a 1 ½ or 2 inch white binder.

Step 2

Copy the file Safety Plan Heading Inserts and print this out on to the included inserts page. Slip the inserts in this order:

1. Safety Plan
2. Job Safety Analysis
3. JSA Forms
4. Acknowledgement Forms

5. Completed Acknowledgements
6. Accident Reporting
7. Accident Reporting Forms
8. SAIF 801 Forms
9. Completed Accident Forms
10. This divider is not used

Step 3

Copy the file Example Non-chemical Lab Safety Plan or Example Chemical Lab Safety Plan depending on the type lab or work group. This document must be customized for each lab or work group. Please see a Safety Committee member for help with this if needed. If you have a chemical lab, you will also need to copy the file Example Chemical Hygiene Plan and customize this file for your lab or working group.

Step 4

Copy the files for the appropriate floor maps for either Peavy Hall or Richardson Hall. These will need to be customized for the specific evacuation routes for your lab or working group.

Step 5

A copy of the front page of the Safety Plan goes in the clear sleeve on the front cover of the binder. A side insert that says Safety Plan in large font goes in the spine.

Step 6

The Evacuation plan goes in the front sleeve of the folder.

Step 7

A copy of the revised Safety Plan goes in the first section.

Step 8

Copy the Acknowledgement of Safety Rules page and highlight those sections appropriate to your lab. Copy the Job Hazard Analysis page and highlight the appropriate job hazards. Finally copy the Job Safety Analysis manual section and put all of these in section 2. The appropriate job hazards for your lab should be highlighted to match those listed on the Job Hazard Analysis page.

Step 9

Make additional copies of the Job Hazard Analysis page and store in section 3.

Step 10

Make additional copies of the Acknowledgement of Safety Rules page and store in section 4.

Step 11

Store completed Acknowledgement forms in section 5.

Step 12

Copy the Accident Reporting section and put this in section 6.

Step 13

Make 10 or more copies of the Accident Reporting form and put these in section 7.

Step 14

Make 10 or more copies of the SAIF 801 forms and put these in section 8.

Step 15

Store completed accident forms in section 9.

Step 16

Once completed, please register your safety plan manual with the safety committee to make sure you receive updates.

The Lab or Working Group Safety Plan will be stored in a readily accessible location for easy access and reference. An electronic copy is to be archived.

College of Forestry 200: Accident Reporting

Safety Policy & Procedure Manual
Section 200: Accident Reporting
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to make standardized information available for the process of reporting accidents. Included in this section are links to the required forms necessary in the event of a work-related accident and a flowchart that details the process for reporting accidents.

Background Information

Most accidents are caused by the failure of people, equipment, materials, or environments to behave or react as expected. Accident investigations are an important part of the College of Forestry's and University's safety programs through accident prevention.

An important aspect of the entire accident prevention effort is the College's and University's ability to record and track the complete accident experience. This includes not only accidents to employees, but also to students, visitors, and volunteers. The Report of Accident form has been developed to provide the accident-related information in a uniform manner. The information originates at the department level and is then sent to College and University committees and departments that oversee loss control and employee benefit programs, such as the College Safety Committee, the Office of Human Resources (OHR) and Environmental Health and Safety (EH&S). These groups can then direct their efforts and resources to the areas of greatest concern. The College of Forestry accident reporting is intended to conform to the University and OR-OSHA requirements for reporting of all accidents.

Applicability

All academic, research, students, and visitors in the College of Forestry.

Procedure

All accidents that occur on the job and result in injury must be investigated and reported in a timely manner. Late reports result in unnecessary fines and delayed or denied claims. Incidents (accidents involving no medical claims or time lost) must be reported on a [Report of Accident form](#). Accidents involving medical claims or time lost must be reported on the [SAIF 801 form](#) (State of Oregon Worker's and Employer's Report of Occupational Injury and Disease) **and** the [Report of Accident form](#).

These forms must be delivered to OSU Human Resources within 48 hours of the accident or incident.

SUPERVISOR RESPONSIBILITY IN ACCIDENT REPORTING

Supervisors are responsible for completing and filing the necessary report forms and performing an accident investigation of all injury-related accidents. Accident investigations are to be conducted with prevention in mind and should not be done to place blame.

Accidents involving Employees or Volunteers

For injuries or accidents occurring to employees or volunteers, the supervisor must discuss the incident with the employee or volunteer and any witnesses before completing the reports. The supervisor must also make any necessary changes in procedures or conditions to prevent similar accidents.

Accidents Involving Students or Visitors

All injuries incurred by students and visitors at the University should be investigated and reported. The responsibility for reporting has been assigned to the instructor or department administrator who was in charge of the area, class, or function during which the student or visitor was injured. The injury is reported on a [Report of Accident form](#) and it is important to include all pertinent information about the accident and the names of any witnesses.

Accident Reporting Procedure

REPORT OF ACCIDENT FORM

The [Report of Accident form](#) must be completed by the supervisor as soon as possible after the accident. Forms are available from the department office or OHR. The form's purpose is to gather facts on how the accident happened, names of witnesses, and what medical treatment was required. A copy of the completed Report of Accident form must be sent to Human Resources Staff Benefits. If an accident involving an employee eventually requires medical treatment or involves time lost, the original Report of Accident form is sent to OHR along with the [SAIF 801 form](#).

In the event that it is not possible to get the form to OHR within 48 hours, the report can be faxed to 541-737-7771.

The Office of Human Resources is responsible for sending a copy of the Report of Accident and SAIF 801 forms to EH&S who may decide to investigate the accident further. **Supervisors should assist EH&S in this investigation because of the lag time associated with the written reports.** All serious accidents should also be reported by telephone to EH&S as soon as possible (541-737-2273).

SAIF 801 FORM

The [SAIF 801 Form](#) must be completed in addition to the Report of Accident form for all on-the-job injuries that cause lost work time and/or require off-campus medical attention. This form is used to claim payment of benefits for an occupational injury or illness. Forms are available from OHR and completed forms must be filed with OHR within **48 hours of the accident**. Questions regarding Workers' Compensation claims, Report of Accident forms, or SAIF 801 forms may be addressed to the Office of Human Resources, at 737-2916.

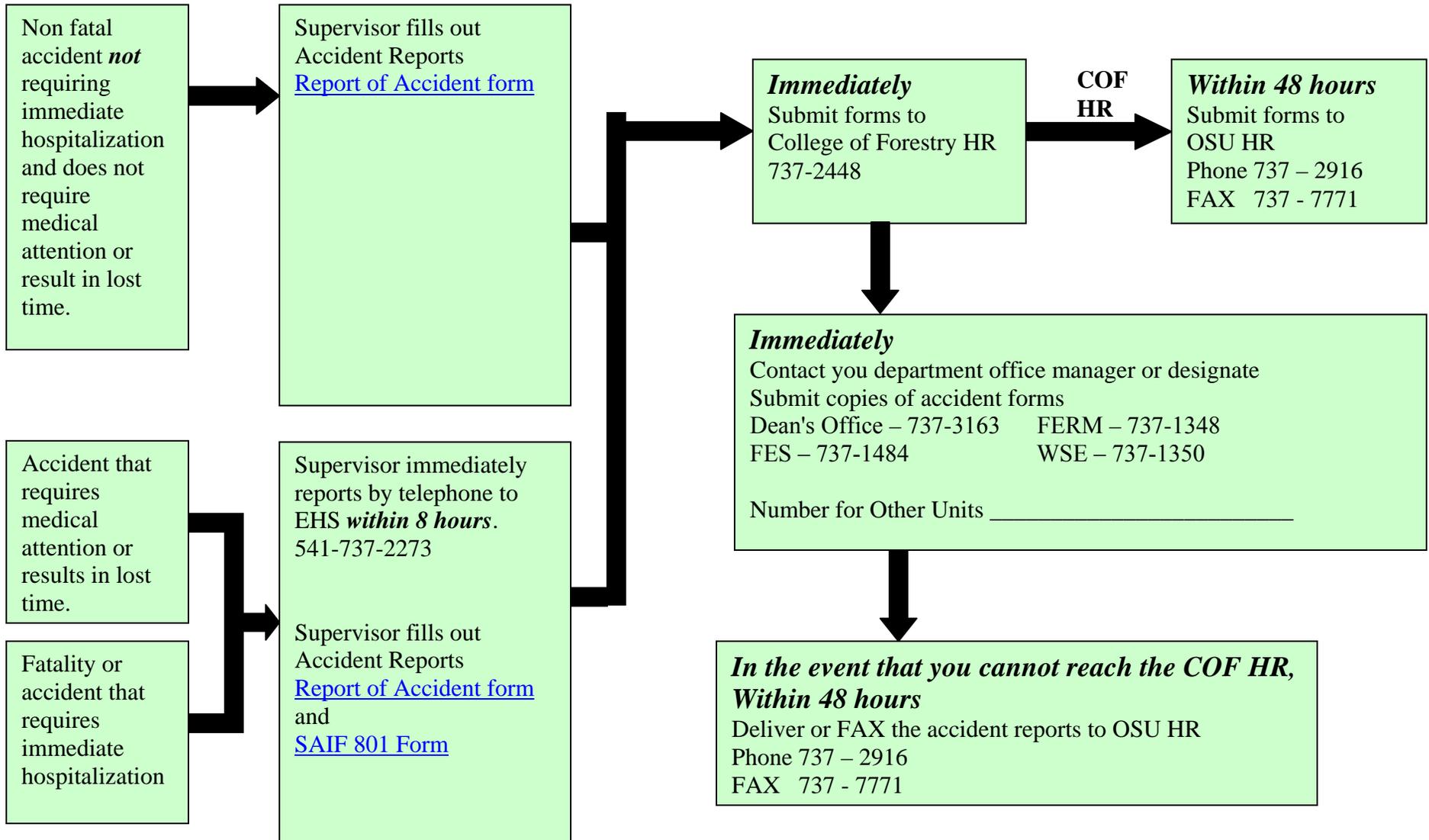
Delivery of Report Forms

It is the responsibility of the supervisor to deliver original copies of the forms to the College of Forestry Office of Human Resources. Copies of the accident report forms are to be delivered to OHR and the department office manager.

FATALITY OR OTHER SERIOUS ACCIDENT

Any on-the-job accident that results in a fatality or the immediate hospitalization of an employee shall be reported **WITHIN 8 HOURS** by telephone to Environmental Health and Safety (541-737-2273), who in turn will make the required notification to Oregon Occupational Safety & Health Agency (OROSHA).

Accident Reporting Process



College of Forestry 300: Laboratory Safety

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide information to help protect employees and students from the health hazards presented by laboratory chemicals and activities conducted in laboratories.

Background Information

A laboratory is defined as a room or group of rooms under the control of a lab supervisor or principal investigator (PI) where relatively small quantities of hazardous chemicals are used on a non-production basis. Rooms such as computer labs, electronic labs, reading labs are not considered "laboratories" for the purpose of this manual.

Workers performing in laboratory conditions are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2,

NOTE:

Laboratory safety instructions are often referenced to additional material. These references are located in a section 395 of this manual.

General

- Laboratory safety is the highest priority during all laboratory activities
- Laboratory Safety is an attitude
- Most accidents are the result of complacency and quite often happen to experienced workers
- Safety is a team effort as well as an individual effort

Sections covered in this manual include:

Section 310 General Laboratory Safety and Chemical Hygiene Responsibilities
Section 320 Personal Protective Equipment
Section 330 Laboratory Chemicals
Section 340 Safety Signs and Equipment
Section 350 Laboratory Training and Hazard Communication
Section 360 Special Precautions
Section 370 Medical Attention and Surveillance
Section 380 Inspections
Section 390 Record Keeping
Section 395 Laboratory References

College of Forestry 310: General Laboratory Safety and Chemical Hygiene Responsibilities

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to help provide information on general laboratory safety for employees and students and to establish the duties and responsibilities of the laboratory Chemical Hygiene Officers.

Background Information

A laboratory is defined as a room or group of rooms under the control of a lab supervisor or principal investigator (PI) where relatively small quantities of hazardous chemicals are used on a non-production basis. Rooms such as computer labs, electronic labs, or reading labs are not considered "laboratories" for the purpose of this manual.

This chapter of the College of Forestry Safety Manual serves as the College's Chemical Hygiene Plan.

These rules apply to all people working in laboratories in the College of Forestry. This includes graduate and undergraduate students and volunteers. Visitors must comply with all rules.

Applicability

All academic, research, students, and visitors in the College of Forestry.

POLICY

It is the policy of the College of Forestry that all faculty, staff, students, and visitors who perform any job-related activities in laboratory conditions are required to follow all rules and regulations with regard to all laboratory activities. In addition, Chemical Safety Officers will be designated as instructed under this section.

Procedure

General Laboratory Safety

1. Safety takes precedence over all other considerations.
2. Every worker must know the location of fire extinguishers, eye wash stations, emergency showers and fire pulls.
3. Every worker must know the meaning of all alarms and the evacuation route.
4. Each laboratory must have a basic first-aid kit and a more comprehensive kit should be in a central location such as the departmental office.
5. Do not work alone while performing dangerous procedures. Be sure there is someone in the immediate vicinity you can reach in case of emergency.
6. Know the location of and how to use eyewash fountains, deluge showers, and fire blankets.
7. Be sure you understand the hazards involved in a procedure and take all necessary safety precautions before beginning.
8. Food products (lunches, snacks, juices, condiments, etc.) are not to be stored in laboratory refrigerators. Consumption of food and beverages or smoking is not permitted in laboratory operation areas. Laboratory glassware will not be used for food preparation or consumption.
9. Heavy items must not be stored on high shelves.
10. Unsafe facilities, equipment, or behavior should be reported to your supervisor.

11. Unattended equipment and reactions are major causes of fire, floods, and explosions. Be sure all utility connections are secure. Anticipate hazards that would result from failure of electrical, water, or gas supply. Use hose clamps on water lines. Be aware that liquid spilled on your floor may be dripping on your downstairs neighbor within minutes.
12. Each laboratory will designate one person as chemical hygiene officer and report the name to the College Safety Committee.
13. Each laboratory will have a paper copy of this manual in an accessible location. Safety rules and instructions specific to work in the lab will be added and the resulting document will be the Laboratory Chemical Hygiene Plan.
14. Each OSU employee working in a laboratory must develop work habits consistent with this Chemical Hygiene Plan to minimize exposure to the chemicals. Laboratory Safety Rules should be understood and followed ([Reference 25](#)).
15. Emergency numbers will be posted near each phone.
16. Plan operations, equipment, and protective measures based on knowledge of the chemicals in use.
17. Use engineering controls (e.g., hoods, centrifuge rotor hoods) appropriately to minimize chemical exposure.
18. Wear appropriate protective equipment as procedures dictate and when necessary to avoid exposure.
19. Each laboratory worker is responsible for maintaining a reasonably clean and uncluttered work space.
20. Lab workers are jointly responsible for common areas of the laboratory.

Chemical Hygiene Responsibilities

A. OSU President

The President of Oregon State University has the ultimate responsibility for chemical hygiene throughout University laboratories, and, with assistance of other program administrators, provides ongoing support for safe use of chemicals at OSU.

B. OSU Chemical Hygiene Officer

1. The Senior Industrial Hygienist (Environmental Health and Safety) shall serve as the OSU Chemical Hygiene Officer.
2. This individual, or the members of their staff, shall have the responsibility and authority to:
 - a. Work with administrators and other employees to develop and implement appropriate chemical hygiene policies and practices.
 - b. Inspect any OSU facility and investigate any accident involving OSU employees, students, or equipment.
 - c. Temporarily suspend the operations in any OSU laboratory in which the practices represent an imminent health hazard.
 - d. Monitor procurement of chemicals.
 - e. Oversee the performance of regular, formal chemical hygiene inspections and inspections of emergency equipment in all OSU laboratories.
 - f. Assist Lab Supervisors/PIs and Laboratory Chemical Hygiene Officers with developing safety precautions and adequate facilities.
 - g. Maintain current knowledge concerning the legal requirements of regulated substances in the laboratory.
 - h. Review the OSU Chemical Hygiene Plan annually.
 - i. Monitor chemical hygiene training for compliance with code-mandated items.
 - j. Coordinate the chemical waste disposal program.

C. Department Chair or Site Superintendent

1. The Department Chair or Site Superintendent will determine the number of Laboratory Chemical Hygiene Officers needed for their unit and designate those Officers. ***At least one Officer will be required for each unit that has a laboratory operation involving chemicals.***
2. The names of the individuals assigned as Laboratory Chemical Hygiene Officers for their department will be sent to Environmental Health & Safety (EH&S). EH&S should also be notified of any change in these assignments.

D. Laboratory Chemical Hygiene Officer

1. The Laboratory Chemical Hygiene Officer will be knowledgeable of the operations in the laboratory or laboratories)for which they are responsible.
2. The Laboratory Chemical Hygiene Officer will perform the following:
 - a. Assist the responsible Lab Supervisor/Principal Investigator in the development of a Laboratory Chemical Hygiene Plan for individual laboratories, if needed.
 - b. Inspect stored chemicals at least annually; inspect laboratory safety equipment and labeling periodically.
 - c. Evaluate procedures in each lab and determine those that are hazardous.

- d. Determine adequacy of ventilation systems for new chemicals/procedures.
- e. Provide information on proper handling of highly toxic chemicals to ordering labs.
- f. Provide information on chemical hygiene, as needed.
- g. Assist in or conduct chemical hygiene inspections in labs.

E. Lab Supervisor/PI

1. The Laboratory Supervisor or Principal Investigator is the individual who has the primary responsibility for safety in the laboratories under their control.
2. This individual, or delegated members of their staff, shall have the responsibility to:
 - a. Develop a Laboratory Chemical Hygiene Plan for their laboratory.
 - b. Inspect their laboratories for unsafe conditions and practices and take appropriate corrective action.
 - c. Provide the required safety training to the employees and students that work in their laboratories. Document the training provided.
 - d. Investigate injuries to lab employees or over-exposure events.
 - e. Evaluate the need for protective equipment or chemical exposure monitoring.
 - f. Request appropriate monitoring from EH&S if necessary.

F. University Chemical Safety Committee

1. The University Chemical Safety Committee members are appointed by the Vice Provost for Research. The Committee is responsible for reviewing and approving any changes to the OSU Chemical Hygiene Plan.
2. The Chemical Safety Committee may also investigate and discuss reported unsafe practices conducted in any OSU laboratory. Their recommendations for correction, including disciplinary action, are to be sent to the Vice Provost for Research.

College of Forestry 320: Personal Protective Equipment

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to ensure that all persons involved in laboratory activities are properly trained in safe working practices and procedures and to ensure that College of Forestry laboratory activities are in compliance with University and OR-OSHA rules and regulations for safety.

Background Information

Laboratory activities that require the use of personal protective equipment (PPE) are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2, subdivision D (437-007-0300).

All PPE that is required to be supplied by the employer must be made available to all employees and other laboratory workers at all times.

Applicability

All academic, research, students, and visitors in the College of Forestry.

Procedure

Personal Protective Equipment

The PPE requirements for each job activity in the laboratory may vary and the supervisor should inform each person under their supervision of the minimum PPE requirements for the activity and insure that each person complies with this.

1. ANSI-approved safety glasses are required, at a minimum, when there is a need for eye protection because of handling highly toxic or corrosive chemicals.
2. Chemical goggles and/or a full face shield should be worn during chemical transfer of large quantities of corrosive chemicals.
3. Lab coats should be laundered periodically and shall be removed from the laboratory if there is significant contamination with a hazardous substance. Lab coats are considered protective gear and must not be worn outside the laboratory (unless in transit between labs).
4. Wear appropriate chemical-resistant gloves at all times when hands may come in contact with chemicals. Discard damaged or deteriorated gloves immediately. Gloves must not be worn outside the laboratory and should be removed before touching common equipment such as computers or phones within the laboratory.
5. Wear thermal-resistant (non-asbestos) gloves when handling heated materials and exothermic reaction vessels. Discard damaged or deteriorated gloves immediately.
6. Respirators may be required for certain procedures, as determined by the lab's supervisor/PI in consultation with the Laboratory Chemical Hygiene Officer, based on the OSU Respirator Program ([Reference 6](#)).
7. Closed toe shoes are required at all times.

College of Forestry 330: Laboratory Chemicals

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to ensure that all persons involved in laboratory activities are properly trained in safe working practices and procedures for the handling and use of all laboratory chemicals

Background Information

Laboratory chemicals are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2, subdivision D (437-007-0300).

Applicability

All academic, research, students, and visitors in the College of Forestry.

Procedure

Purchasing

The decision to purchase a chemical shall be a commitment to handle and use the chemical properly from receipt to disposal. Purchase the smallest quantity that fits your needs. Avoid stocking up on chemicals to save money on the hazardous shipping costs.

Storage and Transport

1. Chemical storage areas must have a standard OSU "CAUTION" sign that identifies emergency contact personnel. Call EH&S at 7-2273 for signs. ([Reference 28](#))
2. Glass containers that contain more than 4 liters of flammable liquids are prohibited.
3. Segregate chemicals by hazard classification and compatibility.
 - a. Separate oxidizers from flammable, combustible, or any organic material.
 - b. Separate acids from acid-sensitive materials such as cyanides and sulfides.
4. Place acid-resistant trays under bottles of mineral acids.
5. Minimize storage of chemicals at the lab bench, in hoods, and at other work areas.
6. An inventory of chemicals in the laboratory must be maintained and updated at least annually. The University has a web-based system for this. Contact EH&S at 7-2273 for a login and password.
7. Stored chemicals shall be inspected at least annually by the Laboratory Chemical Hygiene Officer for deterioration and container integrity. The inspection should detect corrosion, deterioration, or damage to the storage facility as a result of leaking chemicals.
8. Unneeded chemicals shall be discarded through EH&S (call 7-4552).

Handling

Exposure to all chemicals should be minimized because all chemicals inherently present hazards in certain conditions and concentrations. General precautions that shall be followed for the handling and use of all chemicals are:

1. Use a container size of the minimum convenient volume for the task at hand. Quantities of chemicals at the lab bench should be as small as practical.
2. Avoid skin contact with all chemicals.
3. Wash all skin which came in contact with chemicals before leaving the laboratory.

4. Treat substances of unknown toxicity as toxic. Any chemical mixture must be assumed to be as toxic as its most toxic component.
5. Laboratory employees must be familiar with the symptoms of exposure for the chemicals with which they work and the precautions necessary to prevent exposure.
6. In all cases of chemical exposure, the OSHA Permissible Exposure Limit (PEL) is not to be exceeded.

Disposal

1. EH&S provides a chemical waste disposal program for the campus. ([Reference 8](#)). In most cases this service is provided at no cost to the generating department. The exception to this are major lab clean outs and handling some unknowns. To request chemical waste disposal go to <http://oregonstate.edu/ehs/waste>.
2. With only a few exceptions, all chemical waste must be disposed of through the chemical waste disposal program. Some non-hazardous chemical waste can be disposed of by pouring it down the sewer. However, EH&S should be consulted prior to any sewer disposal.
3. All chemical waste containers must be labeled "chemical waste" and have a tight-fitting lid.
4. Waste must be stored in and picked up from the room in which it was generated.

Spills

1. Each laboratory is expected to maintain appropriate material to contain and clean up minor chemical spills (see Laboratory Chemical Hygiene Officer for determination of need or call EH&S at 7-2273 for purchasing information). Workers should tend to minor spills only in their own labs and should not assist neighbors except to call EH&S for assistance.
2. Major chemical spills, or spills which migrate off the bench top or beyond the laboratory of origin are to be cleaned up by trained individuals. EH&S has individuals who are trained and equipped for hazardous material spill management.
3. In the event of a major spill, or a spill of highly toxic chemicals, call EH&S (call 7-2273 or 7-7000 after hours.) A sign warning of the spill must be posted at all entrances to the area unless personnel are on duty to provide adequate warning.

Glassware and Containers

1. All labs using glassware will have a clearly labeled broken glass container. Broken glassware will be immediately disposed of in this container. Full containers should be tightly closed and disposed of in the dumpster.
2. High-vacuum evacuated glass apparatus will be shielded to contain chemicals and glass fragments should implosion occur.
3. All containers of chemicals shall be labeled.
 - a. Labels shall be informative, durable, and, at a minimum, will identify contents.
 - b. The chemical name is preferable over the chemical formula.

The chemical source, receipt date, storage location, and initials/identifier of person who prepared the container should also be placed on the label.

College of Forestry 340: Safety Signs and Equipment

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to ensure that all persons involved in laboratory activities understand all safety signs and are properly trained in the use of all safety equipment.

Background Information

Laboratory signs and safety equipment are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2, subdivision D (437-007-0300).

Applicability

All academic, research, students, and visitors in the College of Forestry.

Procedure

Signs

1. Each main hallway entrance to a laboratory room/area, all chemical storage rooms, and all cold rooms and warm rooms will have a standard "CAUTION" sign listing the individuals to contact in the event of an emergency. ([Reference 28](#))
2. The location of safety and emergency equipment within the laboratory, including spill kits, should be identified by signs.
3. Warning signs are required in the event of engineering controls or special room failures or certain spills. There are no standard signs for such events--create bold, striking signs.

Equipment

1. Emergency showers shall be inspected annually by Facilities Services. Records of inspections will be maintained at EH&S.
2. All laboratory personnel should be trained in the proper use of fire extinguishers.
3. Eyewash stations shall be inspected weekly (per OR OSHA code) by laboratory employees to determine that they operate. Records of inspections shall be maintained in the laboratory.
4. All laboratory safety equipment (e.g., safety glasses, gloves, noise earmuffs) shall be inspected at appropriate intervals by the lab workers for operational sufficiency. Records are not required.
5. Keep access to fire extinguishing equipment, eye washes, showers, electrical disconnects and other emergency equipment unobstructed.

Engineering Controls

1. Inspection and Maintenance
 - a. Improper function of building engineering controls (hoods, exhaust ducts) must be immediately reported to Facilities Services Customer Service Unit (call 7-4038) and the system must be taken out of service until proper repairs have been completed. A sign should be posted indicating that it is out of service.

b. Engineering controls are to be inspected periodically for operational sufficiency (e.g., air is moving in hoods, rotor lids are not cracked) by the Lab Supervisor/PI.

c. Engineering controls will not be modified unless approved by the Laboratory Chemical Hygiene Officer.

2. Fume Hoods

a. Hoods shall be utilized for chemical procedures that might result in release of hazardous chemical vapors or dust. ([Reference 13](#))

b. Be certain that the hood is operating before using it. All hoods shall have a flow indicator on the sash.

c. After using hoods, continue to operate the fan until residual contaminants clear the duct work.

d. Inform the Laboratory Chemical Hygiene Officer of the use of unfamiliar chemicals or procedures to determine if the ventilation system is adequate to protect employees.

e. Always keep the sash of the hood closed or below the height specified by the inspection sticker. When using the hood work space, maintain the sash height as low as possible.

f. Place sources of air contaminants as close to the back of the hood as possible, and always at least 6" back from the sash.

g. Minimize storage of chemicals and equipment inside the hood.

h. Minimize interference with the inward flow of air into the hood.

i. Leave the hood operating when it is not in active use if chemical hazards are contained inside the hood or if it is uncertain whether there is adequate general laboratory ventilation.

j. Hoods shall be inspected on installation and annually or on request, by EH&S (call 7-2273). The hood face velocity shall be tested at each inspection to ensure that it is maintained between 100 to 125 feet per minute. A record of the most recent inspection shall be placed on the hood, and historical records will be retained by EH&S.

3. Glove Boxes and Containment Rooms

The exhaust air from a glove box or containment room must be passed through High Efficiency Particulate Air (HEPA) filters or other treatment before release into outside.

College of Forestry 350: Laboratory Training and Hazard Communication

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to ensure that all persons involved in laboratory activities are properly trained in laboratory procedures, understand all hazards of their job assignments, and are knowledgeable about the proper procedures in the event of an accident.

Background Information

Laboratory training is regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2, subdivision D (437-007-0300).

Applicability

All academic, research, students, and visitors in the College of Forestry

Procedure

Training

1. Each employee shall receive training at the time of initial assignment to the laboratory, before assignments involving new exposure situations, and at a regular frequency as determined by the Laboratory Chemical Hygiene Officer. Training is mandatory and OR-OSHA inspections are likely to include a survey of random individuals about the knowledge required to be presented in this training. Training materials are available from EH&S and on their web site.
2. Supervisor's responsibilities for training employees can be found at:

<http://oregonstate.edu/dept/budgets/SAFManual/SAF205.htm>

This includes links to the reading materials listed on the Acknowledgement of Safety Rules form and the form itself.

In addition to this form, every employee should be assisted in filling out the Job Hazard analysis form. The form and the hazard analysis sheets for each job can be found at:

<http://oregonstate.edu/dept/ehs/oshabrd/ppetasks.pdf>

<http://oregonstate.edu/dept/ehs/oshabrd/hazardanalysis.pdf>

Each job classification has a single page in the manual describing the hazards and listing the personal protective equipment required. The supervisor should determine which jobs are likely for the whole group and print the sheets for those jobs. These can be kept with this manual for employees to consult.

Training will include:

- a. Location and details of the OSU Chemical Hygiene Plan (this document) and, if applicable, the Laboratory Chemical Hygiene Plan;
- b. A review of the Laboratory Safety Rules ([Reference 25](#));
- c. How to use MSDS's and their utility in the laboratory
- d. Location of the Permissible Exposure Limits (PELs) for OSHA-regulated substances ([Reference 8](#));
- e. Chemical hazards in the laboratory, including medical signs and symptoms associated with acute and chronic exposure to those chemicals present in the laboratory that are potentially hazardous to the employee's health given quantities in use. Quantities may include very small amounts

- for carcinogens such as benzidine or large quantities for solvents with PELs over 500 ppm such as acetone;
- f. Location and availability of reference material on chemical safety;
 - g. Location and proper use of emergency showers and eye washes for employees who might be exposed to chemical splashes and discussion of chemicals in the lab requiring urgent medical action. Exceptions to 15-minute flushing with water (e.g., hydrofluoric acid) must be discussed;
 - h. Location and *use* of fire extinguishers and other lab safety equipment and personal protective equipment relevant to the employee's work;
 - i. Building escape routes for use in the event of a fire or serious release of agents that are hazardous.
 - j. Safety concerns specific to the tasks performed in the laboratory.

NOTE:

Supervisors are required to document all training ([Reference 24](#))

Hazard Communication

1. The Hazard Communication booklet should be available in each laboratory ([Reference 9](#))
2. Material Safety Data Sheets (MSDS's) describe relevant safety and health information for a chemical. MSDS's for chemicals used in the laboratory should be in each laboratory or access to the main University MSDS computer data base should be immediately available.
3. MSDS's can be obtained from EH&S.

College of Forestry 360: Special Precautions

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to ensure that all persons involved in laboratory activities understand any and all special precautions of their job assignments including those listed under this section

Background Information

Laboratory training in special precautions is regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2, subdivision D (437-007-0300).

Applicability

All academic, research, students, and visitors in the College of Forestry

Procedure

Hazardous Work

1. Procedures in each laboratory will be evaluated by the Lab Supervisor/PI and the Laboratory Chemical Hygiene Officer, and those that are deemed hazardous (e.g., use of significant quantities [10 x LD (lethal dose) 50] as defined on MSDS's or SARA Title III chemicals, Appendix 13) or as determined by the Laboratory Chemical Hygiene Officer will be identified in the Laboratory Chemical Hygiene Plan.
2. All hazardous operations are to be performed while at least two people are present at the laboratory (or lab area if documented in the Laboratory Chemical Hygiene Plan).

Allergens, Embryotoxins and Teratogens

1. Areas where such agents are used will be identified by a standard caution sign.
2. Wear suitable gloves to prevent hand contact and wear other protective gear (e.g., lab coats) when exposed to allergens.
3. Allergens and embryotoxins will be stored in adequately ventilated areas in unbreakable secondary containers.
4. Handle reproductive toxins only in a hood with a current (within 1 year) inspection label and use protective equipment to prevent skin contact as prescribed by the Lab Supervisor/PI and the OSU Chemical Hygiene Officer.
5. The Lab Supervisor/PI and the Laboratory and OSU Chemical Hygiene Officers will be notified of significant spills and other personal exposure incidents.

Chemicals of High Acute Toxicity

1. Areas where these chemicals are stored and used will have restricted access and have [specific] warning signs naming the hazard types.
2. Vacuum pumps when used with these chemicals must have scrubbers or High Efficiency Particulate Absolute (HEPA) filters.
3. Approval of the Lab Supervisor/PI will be obtained before initiating a new procedure using these chemicals.

Chemicals of High Chronic Toxicity

1. Such chemicals will be maintained in labeled, unbreakable, chemically resistant containers and stored in a limited-access area appropriate for the chemical.

2. Areas where such agents are used shall be identified by a sign on the hood, glove box, or lab area.
3. The Lab Supervisor/PI will be knowledgeable of chemicals in use and will approve new procedures prior to implementation.
4. Vacuum pumps when used with these chemicals must have scrubbers or High Efficiency Particulate Air (HEPA) filters.
5. Any contaminated equipment or glassware will be decontaminated as soon as possible and before further use.
6. For powders, a wet mop or vacuum with a HEPA filter will be used for cleanup, and the waste will be immediately disposed of.

Animal Research

1. All chemicals used in the animal caging/holding areas must be noted in the animal use protocol approved (prior to use of chemicals) by the Institutional Animal Care and Use Committee.
2. The PI is required to work with Lab Animal Resources (7-2263) and the OSU Chemical Hygiene Officer (7-2274) to:
 - a. Develop procedures for the appropriate handling of animals, their wastes, cages, and disposal of the animal to prevent personnel exposure to the contaminant. Assure that personal protective equipment (per protocol) is worn by all persons handling these materials.
 - b. Prepare animal hazard warning signs which are to be posted in the animal housing area.
3. Notify Lab Animal Resources before each use of the chemical agent in animals (i.e., when first initiating use and when beginning again after a layoff, to assure them Lab Animal Resources staff are aware of the impending usage).
4. Administer chemical substances by injection or lavage when possible, rather than by diet. When administration by diet is used, a caging system under negative pressure or under laminar air flow directed through High Efficiency Particulate Air (HEPA) filters will be used.
5. Use procedures to minimize contaminated aerosols from food, urine and feces, including:
 - a. Use HEPA filtered vacuum equipment for cleaning;
 - b. Moisten contaminated bedding before removal from cage.

6. Wear plastic or rubber gloves and fully buttoned lab coats or coveralls in the animal room and when working with exposed animals.
7. For large scale studies with animals administered chemicals of high chronic toxicity, special facilities with restricted access must be used (call OSU Chemical Hygiene Officer at 7-2274).

Radiologicals

The OSU Radiation Safety Office (call 7-2227) is responsible for all radioactive substances and places *additional* restrictions on chemical substances or agents referred to in this Plan that are also radioactive.

Recombinant DNA

1. The OSU Biosafety Committee may place *additional* restrictions on certain experiments involving recombinant DNA.
2. The University BioSafety Officer should be contacted (7-2502) should be contacted regarding notification and approval procedures.

Infectious Agents

1. All laboratories using biological material at containment level I and containment level II must use the guidelines prescribed in the NIH/CDC handbook, *Biosafety in Microbiological and Biomedical Laboratories*. All Research Laboratories using organisms and animals at containment level III must file operating protocols with the University BioSafety Officer. (see Reference 10)
2. All laboratories using level II biological containment hoods must have hoods certified by a competent hood testing agency at least every six months (the University Purchasing Department can direct hood users to competent hood testing agencies.)
3. Infectious laboratory waste from laboratories must be autoclaved or chemically sterilized before being placed in the University waste stream.
4. Specific controls for using blood-borne pathogens are required by OR-OSHA and are detailed in Appendix 18

College of Forestry 370: Medical Attention and Surveillance

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide the procedure for providing medical attention to any person who is injured as a result of any laboratory activities either as an accident or over-exposure.

Background Information

Medical attention and surveillance are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2, subdivision D (437-007-0300).

Applicability

All academic, research, students, and visitors in the College of Forestry

Procedure

Medical Attention

1. An opportunity to receive medical attention from a licensed physician is available to all employees who work with hazardous chemicals in the laboratory.
2. The opportunity for medical attention will be made available to employees at no cost and without loss of pay under the following circumstances:
 - a. Whenever an employee develops signs or symptoms associated with a hazardous agent to which the employee may have been exposed in the laboratory;
 - b. Whenever there is a spill, leak, explosion or other occurrence resulting in the likelihood of an exposure hazardous to health or if a PEL is exceeded. A medical examination must be provided in the event a PEL is exceeded in a personal exposure.

Medical Surveillance Programs

Medical surveillance will be established when exposure monitoring determines a need or if it is likely that an exposure to a hazardous chemical has occurred.

Accidents

Injuries or Over-exposures (Aid to Employees)

1. An exposure exceeding an OSHA PEL is an "over-exposure."
2. If an employee is seriously injured or incapacitated, call 911 to obtain emergency medical treatment. Never enter an enclosed space where a person appears unconscious without assistance from University Public Safety (call 7-7000).
3. Chemical splashes require immediate flushing of the affected areas. 15 minutes of flushing for significant splashes or any splash in the eye is recommended. Eye wash stations and lab deluge showers are intended for this purpose. There are exceptions that should have been covered in training, if relevant.
4. For minor injuries, treat with the laboratory first aid kit or take the person to the hospital or their personal physician. Treatment should prevent exposure to chemicals if the injured person will continue to work in the lab prior to healing (e.g. , a cut on the finger will be covered by a bandage and the person will wear a plastic glove until the cut is fully healed).

5. Most injuries or over-exposure events require completion of an "Report of Accident" form ([Reference 3](#)) that can be obtained from your administrative office.

B. Accident or Over-exposure Investigations

Accident or over-exposure investigations ([Reference 3](#)) will be conducted by the immediate supervisor with assistance from other personnel as deemed necessary.

College of Forestry 380: Inspections

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide the procedure for providing laboratory inspections for compliance with the safety measures covered in Section 300.

Background Information

Laboratory inspections are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2, subdivision D (437-007-0300).

Applicability

All laboratory facilities in the College of Forestry

Procedure

- A. The Laboratory Chemical Hygiene Officer will inspect each laboratory annually.
- B. The purpose of the inspection is to verify that this Plan and, if applicable, the Laboratory Chemical Hygiene Plan are being followed and to identify needed changes in procedures. The form entitled "Laboratory Inspection Checklist and Report" ([Reference 2](#)) can be used for this inspection and could be used for a self-inspection by laboratory staff.
- C. A written inspection report (the checklist with notations) will be provided to the Lab Supervisor/PI and maintained on file in the Laboratory Chemical Hygiene Plan.
- D. The Lab Supervisor/PI is responsible for taking corrective action for deficiencies when indicated in the written inspection report in a timely manner and prior to the next inspection.
- E. Follow-up inspection will monitor correction in cases of serious deficiencies.
- F. The College Safety Committee or EH&S may inspect any laboratory at any time.

College of Forestry 390: Record Keeping

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide the procedure for record keeping of all accidents and over-exposure incidents in the College of Forestry.

Background Information

Laboratory inspections are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2, subdivision D (437-007-0300).

Applicability

All laboratory facilities in the College of Forestry

Procedure

- A. Accident or over-exposure incident reports must be sent to EH&S and must be retained for 5 years.
- B. Records of exposure to personal or biological monitoring of hazardous chemicals and other harmful agents will be maintained in EH&S for the duration of employment of the exposed employee, plus 30 years.
- C. Medical records for employees developed as a result of exposure to hazardous chemicals or harmful agents will be maintained for the duration of employment, plus 30 years, in EH&S.
- D. Results of area air sampling will be maintained by EH&S for 5 years.
- E. Records of employee training will be maintained for 5 years in the employee's departmental personnel record and as instructed in [Reference 24](#).
- F. Records of laboratory inspections will be maintained for 5 years in EH&S.

College of Forestry 395: Laboratory Safety References

Safety Policy & Procedure Manual
Section 300: Laboratory Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide the laboratory references for Section 300.

Applicability

All sub-sections of Section 300 of the College of Forestry Safety Manual.

Reference 2

Reference 3

Safety Instruction Number 18

Update 12/3/04

Accident Recording System

General

- Reporting, recording and evaluating accidents is an important part of OSU's safety program
- Accident records supply information to identify trends to help control conditions and acts that contribute to accidents
- Recording OSU's accident experience is the responsibility of EH&S
- EH&S has a recording system which meets OR-OSHA requirements and provides information about the types of accidents and where they occur
- Information can be combined with medical and disability cost figures from SAIF to reflect the direct cost of occupational accidents
- Managers can use information as an indicator of the financial impact of unsafe behavior and the need for loss control efforts
- Requests for information regarding OSU's accident experience or the recording system should be made to EH&S at 7-2275

Accident Report

- The basis for all information about injury accidents or occupational illnesses that occur at OSU is the [Accident Report Form](#)
- The report is completed for all injuries or occupational illness to faculty, staff, students, volunteers, or visitors, with the exception of injuries caused by athletic activities
 - Employee report form is completed by the immediate supervisor
 - Student reports are by the instructor
 - Visitor reports are completed by the coordinator of the University activity
- Copies of this report form are available from the [Department of Human Resources](#)
- Full explanation and instruction for the Accident Report Form is found in the [Accident Investigation](#) section of the [Safety Procedures Handbook](#)

Accident File

- All injuries and occupational illnesses that are reported to EH&S are entered into the data base which includes information about when and where the accident occurred, who was injured, the type of accident, and the department.
- The data can be manipulated to provide statistical information on any or all of these categories including a breakdown by location, department, or group if desired.

OSHA Log and Summary Report

- All occupational injuries and illnesses that meet the definition of OSHA reportable are placed on the OSHA Log
- EH&S maintains the OSHA Log for the main campus and all off-campus facilities that employ more than 10 employees
- OSU facilities where less than 10 employees are employed are not required to maintain a separate OSHA Log and are considered as part of the main campus
- A copy of the OSHA Log along with a summary report is sent to each of these facilities monthly
- An OSHA form 200 Annual Summary of Occupational Injuries/Illnesses is also prepared by EH&S and sent to each facility to post for one month beginning February 1

Reference 4

Reference 5

Safety Instruction Number 28

Update 12/08/2004

Hazard Awareness Sign System

General

- A sign system to warn visitors entering laboratories has been established at OSU
- A warning sign, depicted below, will be placed at every main entrance to each laboratory room or complex by EH&S
- **Keeping the sign up-to-date is the responsibility of laboratory personnel.**



Sign Components

Hazard Warning Stickers

- A hazard **warning sticker** is required if material or equipment is stored or used **at or above the amounts listed below**
- The sign has room for four stickers
- If more stickers are required to describe the hazards in the room an additional sign can be installed
- Stickers can be obtained from EH&S

Emergency Contact

- Lower part of the sign contains a space where **names of responsible individuals** are listed
- Contact information important for **emergency incidents**
- At least **two names**, with their corresponding access information, should be listed
- A "Sharpie" permanent marker or label should be used to mark the sign
- If changes need to be made, use a 70% solution of ethanol to remove information or contact E&HS to clean or install a new sign

Hazard Warning Sticker Definitions



Flammable Solvents

- Room contains **10 gallons or more** of flammable liquids in a single or multiple containers
- A flammable liquid is defined as any liquid that has a flash point below 100 degrees Fahrenheit (37.8 degrees Centigrade).



Flammable Gas

- The room contains **200 cubic feet or more** of a flammable gas in a single or multiple containers
- A flammable gas is defined as any gas that has a flash point below 100 degrees Fahrenheit (37.8 degrees Centigrade) with a container pressure of 40 psia at 100 degrees F
- An example of this would be a single large compressed gas cylinder of hydrogen.



Toxic Chemicals

- The room contains a total of **2 pounds or more** of toxic chemicals
- A toxic chemical is any chemical considered a DOT division 6.1 poison, packing group I or II (a substance with an oral LD50 of less than 50 mg/kg)
- Liquid chemicals should be converted to pounds for this comparison



Toxic Gas

- The room contains **any amount** of a toxic gas, DOT inhalation hazard zone A (LC50 < 200 ppm)

- includes arsine, cyanogen, fluorine, germane, hydrogen cyanide, hydrogen selenide, nitric oxide, nitrogen dioxide, nitrogen trioxide, phosgene, diphosgene, phosphine, stibene
- or the room contains 500 cubic feet or more of other toxic gases, DOT inhalation zones B-D (LC50 between 200 and 5000 ppm)
 - includes HCl, HBr, HI, HF, boron trifluoride, chlorine, chlorine dioxide, chlorine trifluoride, diborane, fluorine, hydrogen sulfide, methylbromide, nitrogen trifluoride, ozone



Oxidizers

- **More than 20 pounds** of a class 3 oxidizer
 - class 3 oxidizer is defined as a substance that will cause a severe increase in the burning rate of combustible material
 - examples are ammonium dichromate, bromine trifluoride, potassium bromate, potassium chlorate, concentrated perchloric acid
- **More than 250 pounds** of a class 2 oxidizer
 - class 2 oxidizer is defined as a substance that will moderately increase the burning rate
 - examples are calcium hypochlorite, chromic acid, nitric acid, potassium perchlorate, potassium permanganate, sodium permanganate
- **More than 1500 cubic feet** of an oxidizing compressed gas
 - examples of an oxidizing compressed gas are oxygen, oxides of nitrogen.



Corrosive Materials

- The room contains **more than 500 gallons or 5000 pounds** of corrosive materials in a single or multiple containers
- A corrosive material is defined as a solid caustic substance or a liquid which has a pH of greater than 12 or lower than 2
- Typical examples of corrosive materials would be acids such as chromic, hydrochloric, hydrofluoric, and sulfuric; bases such as ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide, potassium carbonate.



Biohazard

- The room contains a **biological agent**, capable of self-replication, which presents or may present a hazard to the health or well being of humans

- The agent is a human bloodborne pathogen or work with the agent has been assigned to be handled in a Biosafety Level 2 or above laboratory based on the guidelines established in the CDC/NIH book "Biosafety in Microbiological and Biomedical Laboratories"
- The name of the agent(s) must be entered on the hazard sticker

Radioactive Material

- The room contains *any amount* of radioactive material.

Radiation Area

- The room contains a *radiation source* that poses a significant external radiation hazard
- Sign issued by Radiation Safety group

X-Ray Equipment

- This room contains a machine which **produces X-Ray radiation**

Laser Light

- The room contains a *Class 2 or Class 3a laser* as defined by ANSI Standard Z136.1
- Under this classification a class 2 continuous wave laser in the visible range (400nm to 700nm) which can emit a power exceeding 0.4 micro Watts
- Class 4 laser installations emit power exceeding 0.5 W and require a special sign issued by EH&S.

Restricted Area

- *Access* to the room is *restricted* to students and visitors. The restriction does not apply to custodians or Facilities Services personnel who are performing required maintenance activities.

Cancer Suspect Agent

- The room contains *any amount* of the following High or Extreme hazard chemical carcinogens as described by the [University's Chemical Carcinogen Safety Program](#)

Reference 6

Safety Instruction Number 20

Update 11/22/2005

Respiratory Protection Program

Policy

- This Safety Instruction defines **OSU rules** regarding the **use of respirators** for personal protection against airborne contaminants
- Before respirators are used, feasible **engineering controls** must be instituted to provide protection against airborne contaminants
- The ability for a respirator to provide adequate protection is based on **proper selection, fit and training**
- Respirators which are intended for protection against harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors must **NOT** be obtained or worn by employees without approval from EH&S and in accordance with this program
- The respirator program is **managed by EH&S** and has been established to **comply with the OR-OSHA regulations** for respiratory protection
- EH&S maintains a **supply** of different types of respirators
- Respirators should be obtained through EH&S in order to ensure the proper selection and fit
- Off campus facilities and other campus groups who have a large number of respirator users may obtain their own respirators after consultation with EH&S
- Such groups should contact EH&S at least every year to review the program and make necessary changes

Use of Respirators

- Every employee that wears a respirator on the job, whether required to wear one or not, shall have it properly fitted prior to initial use and at all times while performing an operation in a hazardous atmosphere
- No employee shall use a respirator or be assigned to a task that requires the use of a respirator until it has been determined that the employee is physically able to perform under such conditions

Medical Fitness Evaluation

- Process begins with the completion of a [cover page](#) AND a [medical questionnaire](#) available from this web site
- The questionnaire has been developed in accordance with OROSHA regulations
- Employee returns the questionnaire directly to OSU-Student Health Services, Occupational Health
- A physical will be conducted for those employees who indicate potential medical problems on the medical questionnaire
- After review by the Occupational Health Clinician, EH&S is notified of the employee's physical ability to wear a respirator
- Periodically, a review of the employee's health status must be made, at the frequency specified by the Occupational Health Clinician, by completing and submitting another questionnaire
- The employing department is responsible for paying all fees associated with the medical evaluation process.

Selection

- The useful life of each respirator or cartridge will vary depending on the job duties and actual time in use
- Each respirator has limitations; for details, refer to the manufacturer's instructions and recommendations
- Air purifying respirators (disposable masks, half or full face cartridge respirators) will not be used in an environment that has less than 19.5% oxygen
- OSU is responsible for determining the "End of Service Life" for all respirator/cartridges combinations based on
 - manufacturer's tests
 - recommendations
 - chemicals used
 - usage patterns
- Consult with EH&S to choose proper respirators and determine service life

Training of Employees

- Each respirator user will be trained on how to use, check, and maintain respirators
- A record will be kept of those employees who have been trained
- Each user must understand and be able to apply the contents of this respirator program in the daily use, care, and safekeeping of the respirators
- Training will be provided by EH&S or by other groups in consultation with EH&S and will include the following:
 1. The reasons for respiratory protection.
 2. The nature, extent, and effects of respiratory hazards to which the person may be exposed.

3. Where applicable, an explanation of why engineering controls are not being applied or are not adequate and of what effort is being made to reduce or eliminate the need for respirators.
4. An explanation of why a particular type of respirator has been selected for a specific respiratory hazard.
5. An explanation of the operation, and the capabilities and limitations, of the respirator selected.
6. Instruction in inspecting, donning, checking the seal of, and wearing the respirator.
7. An opportunity for each respirator wearer to handle the respirator and to wear the respirator, in both a normal atmosphere and a test atmosphere, for an adequate period of time to ensure that the wearer is familiar with the operational characteristics of the respirator.
8. An explanation of how maintenance and storage of the respirator is carried out.
9. Instructions in how to recognize and cope with emergency situations.
10. Instructions as needed for special respirator use.
11. Regulations concerning respirator use.

Fitting of Respirators

- Proper fitting of respirators is essential for employees to receive the protection for which the respirator is designed
- In order to ensure a good face seal, follow the manufacturer's fitting instructions and the following instructions:
 1. The respirator and all straps should be in place and worn in the appropriate position. To adjust head bands, pull the free end tight until a comfortable and effective fit is obtained.
 2. To adjust the face-piece properly, position chin firmly in the chin cup and manually shift rubber mask until the most comfortable position is located. Make final adjustments on the headband and do not break the nasal seal. Modifications to the respirator or straps will not be made.
 3. BEARDS are not allowed. Respirators should not be worn when projections under the face piece prevent a good face seal. Note: Such conditions may be a growth of beard, sideburns, temple pieces on glasses, or a skull cap that projects under the face piece.
 4. Respirators should not be worn if scars, hollow temples, excessively protruding cheekbones, deep creases in facial skin, the absence of teeth or dentures, or unusual facial configurations prevent a good face seal.
 5. Each day, to ensure proper protection, the wearer of a respirator should check the seal of the face-piece by conducting both a positive and negative pressure test. Positive and negative pressure checks will be conducted every time the respirator is put on and prior to each entry into a hazardous atmosphere

- a. **Positive Pressure User Seal Check**
 - Close off exhalation valve with palm
 - Exhale gently
 - A small buildup of positive pressure, with no outward leaks, indicates a good face-piece fit
 - If air leakage is detected, reposition the respirator on the face, readjust the tension of the head bands, or try a different size respirator
 - Repeat the test until a satisfactory seal has been achieved
- b. **Negative Pressure User Seal Check**
 - Cover air inlets with palms or other means; if a disposable, cover the entire filtering surface
 - Gently breathe in so that face-piece collapses slightly
 - Hold breath for 10 seconds
 - If respirator remains slightly collapsed and no inward leaks are felt, the face-piece fits tight enough
 - If air leakage is detected, reposition the respirator on the face, readjust the tension of the head bands, or try a different size respirator
 - Repeat the test until a satisfactory seal has been achieved

Required Fit Tests

- Fit tests are required on initial issuance of respirators for all employees
- Fit tests will be conducted by EH&S or other approved groups as outlined in this document
- Additional fit tests are required for each employee when a new type of respirator is issued
- Negative pressure respirators, requiring a fit factor of 100 or less, will be tested using one of the following **qualitative fit procedures**:
 1. Isoamyl Acetate Test using a fit-test tent (preferred method)
 2. Bitrex™ (Denatonium Benzoate) Solution Aerosol Test using a fit-test tent
 3. Irritant Fume Test using stannic chloride [NO TENT]
- Fit testing of respirators requiring a fit factor of greater than 100 (e.g., tight-fitting atmosphere supplying respirators, such as SCBA) will be performed with quantitative fit testing
- Contact EH&S for additional information or to arrange a test.
- Fit testing must be repeated and documented **at least annually** for all employees

Maintenance of Respirators

- Respirators need to be maintained to ensure effectiveness and to prevent chemical and bacterial contamination
- Proper maintenance of the respirator is the responsibility of each employee

- Respirators issued for the exclusive use of one worker should be cleaned after each day's work, or more often if necessary
- Additional maintenance should be performed in accordance with manufacturer's recommendations
- Respirators used by more than one worker should be thoroughly cleaned and disinfected after each use
- Respirators stored for emergency use should be thoroughly inspected at least once a month and after each use by the responsible individual
- A copy of recent inspection records is to be maintained at the storage location.
- Self-contained air tanks must be hydro-tested at the frequency specified by the US Department of Transportation for type of tank, typically 3 or 5 years

Respirator Cleaning and Disinfecting Procedures

1. Remove all covering assemblies before cleaning and disinfecting:
 - a. Filters, cartridges, canisters
 - b. Speaking diaphragms
 - c. Demand and pressure-demand valve assemblies
 - d. Head band
 - e. Any other components recommended by the respirator manufacturer
2. Wash respirator and appropriate covering assemblies as recommended by the manufacturer, in warm cleaner and disinfectant solution (49°C/120°F max. temp.). A soft cloth may be used to help remove dirt or other foreign material. A recommended disinfecting solution can be made from ordinary household bleach diluted 1:10 with clear water. A two minute immersion will disinfect adequately.
3. Rinse respirator and appropriate covering assemblies in clean, warm water (49°C/120°F max. temp.).
4. Shake respirator as needed to remove water residues and any foreign materials that may still remain.
5. Inspect parts and replace any parts found defective. Set respirator aside to air dry.
6. When dry, reassemble respirator and attach new filters, cartridges or canisters if necessary.
7. Visually inspect and, where possible, test parts and respirator assemblies for proper function.
8. After respirator has been cleaned, dried, and inspected it should be stored in a sealed, clean, sanitary container (zip-lock bag), away from any source of contaminants. Respirators should not be hung on nails. The face-piece, inhalation and exhalation valves must be in a normal position so as to prevent the abnormal "set" of elastomer parts during storage.

Respirator Program Evaluation

- The effectiveness of the respirator program should be **evaluated at least annually** by supervisors and EH&S
- Corrective action should be taken to correct defects found in the program
- Supervisors will monitor the effectiveness of this program by:
 - Frequent unscheduled observations of employee activities throughout the work area to confirm proper respirator use and acceptance by employees.
 - Observation of and discussion with new employees to confirm proper training has been carried out.

Reference 7

Safety Instruction Number 8

Update 12/02/2004

Hazardous Waste Disposal

General

- Hazardous waste generated at Oregon State University must be disposed of through a system managed by Environmental Health & Safety (EH&S).
- The designation "**hazardous**" refers to any substance that is
 - corrosive
 - flammable
 - reactive
 - toxic
- It does not refer to material that is only radioactive or biohazardous.
- Hazardous waste disposal is funded for University units.
- Departments are encouraged to employ waste reduction procedures to limit university costs (see [Safety Instruction No. 9](#)).
- If there are questions or unusual circumstances, please contact EH&S at 7-2273 for assistance.

Waste Determination

- Prior to disposal of any chemical waste, OSU must perform an official hazardous waste determination to see if the waste is hazardous. EH&S performs that service for the university community.
- A short list of non-hazardous chemicals can be found on the EH&S web site; all others should be considered hazardous until the determination has been made.
- Hazardous waste is incinerated, at off-site locations, whenever possible. Departments are encouraged to employ waste reduction procedures to limit costs. Use these guidelines to prepare and request disposal of hazardous chemical waste.

Containers

- Collect each waste in a NON-LEAKING container; match size to amount of waste. Use containers chemicals were received in
- Liquid containers must be less than 5 gallons and 45 pounds (about 3-4 gallons of typical halogenated solvent).
- Reusable solvent waste containers are available from EH&S.

- All containers must have non-leaking, tight fitting lids that are not cracked, broken, or chemically damaged.
- Paper or cardboard containers should be put into sealed plastic bags.
- Containers should be labeled as soon as waste is put into them, and must be capped at all times when not actively adding waste.

Labels

- Chemicals in original non-leaking containers with manufacturer's label will be accepted as is.
- All other wastes require a hazardous waste label, available from EH&S, completed and attached to each waste container.
- Do not cover existing labels or markings.
- Solvent labels should be put onto string tags attached to containers. Tags are available from EH&S.
- Fill out the LOWER part of the orange label with:
 - Your name, building, room number, and department.
 - Identification of contents, including total weight or volume and percent ranges for all constituents.

Packing

- Get boxes for the waste before pickup
- Do NOT pack materials in boxes.
- Waste containers will be examined, and EH&S will then pack waste in boxes according to compatibility.
- Boxes should be sealable and sturdy enough to transport the material.
- Boxes exceeding 45 pounds or 18 inches on a side cannot be safely handled by one person, and will not be picked up.

Pickup

- To request waste pickup, use the [hazardous waste web form](#).
- YOU are responsible for proper containers, labels, and transport boxes.
- Do NOT package waste in boxes.
- All containers must be less than 45 pounds.

Reference 8

Oregon Administrative Rules
Chapter 437 - DEPARTMENT OF
CONSUMER AND BUSINESS
SERVICES

Division 2 Subdivision Z

TOXIC AND HAZARDOUS SUBSTANCES

A-58 A-91

437-002-0360 General

437-002-0368 Deterioration

437-002-0382 Oregon Rules for Air Contaminants

1910.1001 Asbestos

1910.1002 Coal tar pitch volatiles; interpretation of term.

1910.1003 4-Nitrobiphenyl.

1910.1004 alpha-Naphthylamine.

1910.1005 [Reserved]

1910.1006 Methyl chloromethyl ether.

1910.1007 3,3'-Dichlorobenzidine (and its salts).

1910.1008 bis-Chloromethyl ether.

1910.1009 beta-Naphthylamine.

1910.1010 Benzidine.

1910.1011 4-Aminodiphenyl.

1910.1012 Ethyleneimine.

1910.1013 beta-Propiolactone.

1910.1014 2-Acetylaminofluorene.

1910.1015 4-Dimethylaminoazobenzene.

1910.1016 N-Nitrosodimethylamine.

437-002-0364 Oregon Rules for MOCA (4,4'-Methylene BIS (2-Chloro-aniline))

1910.1017 Vinyl chloride.

1910.1018 Inorganic arsenic.

1910.1025 Lead

437-002-0371 Scope and Application (for Lead)

1910.1027 Cadmium

1910.1028 Benzene

1910.1029 Coke oven emissions.

1910.1030 Bloodborne Pathogens

1910.1043 Cotton dust.

1910.1044 1,2-dibromo-3-chloropropane.

1910.1045 Acrylonitrile.

437-002-0373 Oregon Rules for Thiram.

1910.1047 Ethylene Oxide

1910.1048 Formaldehyde

1910.1050 Methylendianiline

1910.1052 Methylene Chloride

1910.1200 Hazard communication.

1910.1201 Retention of DOT markings, placards and labels

437-002-0377 Additional Oregon Rules for Hazard Communication.

437-002-0378 Oregon Rules for Pipe Labelling.

1910.1450 Occupational Exposure to Hazardous Chemicals in Laboratories

437-002-0391 Additional Oregon Rules for Carcinogens in Laboratories.

1910.1499 Source of standards.

1910.1500 Standards organizations.

Technical Manual Chapter 21

437-002-0360

437-002-0360

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal rules as printed in the Code of Federal Regulations, 29 CFR 1910, revised as of 7/1/94:

TOXIC AND HAZARDOUS SUBSTANCES

437-002-0360(1)

(1) (Reserved) 29 CFR 1910.1000 Air contaminants, published 6/27/74, Federal Register, vol. 39, pp. 23540-23543; amended in the following FR publications: 5/28/75, vol. 40, pp. 23072-23073; 5/3/77, vol. 42, p. 22525; 1/17/78, vol. 43, p. 2600; 2/10/78, vol. 43, p. 5963; 3/29/78, vol. 43, p. 13563; 5/4/78, vol. 43, p. 19624; 6/23/78, vol. 43, p. 27394; 6/30/78, vol. 43, p. 28473; 10/3/78, vol. 43, p. 45809; 11/14/78, vol. 43, p. 53007; 12/8/78, vol. 43, pp. 57602-57603; 2/5/79, vol. 44, p. 7141; 6/18/80, vol. 45, pp. 12416-12417; 7/28/80, vol. 45, pp. 50328- 50329; 6/19/81, vol. 46, p. 32022; 6/22/84, vol. 49, p. 25796; 1/2/85, vol. 50, p. 64; 12/13/85, vol. 50, p. 51173; 11/17/86, vol. 51, p. 41477; 9/11/87, vol. 52, p. 34562; 12/4/87, vol. 52, p. 46291; 1/19/89, vol. 54, pp. 2920-2983; 7/5/89, vol. 54, no. 127, pp. 28054- 28061; 9/5/89, vol. 54, no. 170, pp. 366767-36768; 11/15/89, vol. 54, no. 219, p. 47513; 2/5/90, vol. 55, no. 24, pp. 3724; 5/9/90, vol. 55, no. 90, pp. 19258-19259; 11/8/90, vol. 55, no. 217, pp. 46948-46950; 7/1/92, vol. 57, no. 127, pp. 29204-29206. NOTE: 29 CFR 1910.1000 was repealed on 11/15/93 by OR-OSHA. In Oregon, OAR 437-002-0382 applies.

437-002-0382 Oregon Rules for Air Contaminants.

437-002-0360(2)

(2) 29 CFR 1910.1001 Asbestos, published 6/20/86, Federal Register, vol. 51, no. 119, pp. 22612-22790; amended 10/17/86, FR vol. 51, pp. 37002-37007; amended 5/12/87, FR vol. 52, pp. 17754-17755; amended 9/14/88, FR vol. 53, no. 178, pp. 35610- 35627;

amended 9/23/88, FR vol. 53, no. 185, p. 37080; amended 7/21/89, FR vol. 54, no. 139, p. 30704-30705; amended 12/20/89, FR vol. 54, no. 243, p. 52028; amended 2/5/90, FR vol. 55, no. 24, pp. 3731-3732; amended 12/10/90, FR vol. 55, no. 237, pp. 50685-50687; amended 9/4/91, FR vol. 56, no. 171, pp. 43699-43700; 3/5/92, FR vol. 57, no. 44, p. 7878; 6/8/92, FR vol. 57, no. 110, p. 24330; 8/10/94, FR vol. 59, no. 153, p. 41065; 6/29/95, FR vol. 60, no. 125, pp. 33983-34002; 8/23/96, FR vol. 61, no. 165, pp. 43434-43459.

437-002-0366 Identification of Materials.

437-002-0368 Deterioration and Maintenance.

437-002-0360(3)

(3) 29 CFR 1910.1002 Coal tar pitch volatiles, interpretation of term, published 1/21/83, Federal Register, vol. 43, p. 2768.

437-002-0360(4)

(4) 29 CFR 1910.1003 4-Nitro-biphenyl 13 Carcinogens, published 3/7/96, Federal Register vol. 61, no. 46, p. 9242., published 6/27/74, Federal Register, vol. 39, p. 23502; amended by the following FR publications: 5/28/75, FR vol. 40, p. 23072; 8/20/76, FR vol. 41, p. 35184; 10/24/78, FR vol. 43, p. 49751; 5/23/80, FR vol. 45, p. 35281; 4/30/84, FR vol. 49, p. 18295; 6/30/93, FR vol. 58, no. 124, p. 35310.

437-002-0360(5)

(5) 29 CFR 1910.1004 alpha-Naphthylamine See §1910.1003, 13 Carcinogens.

437-002-0360(6)

(6) Reserved for 29 CFR 1910.1005 (Reserved).

437-002-0360(7)

(7) 29 CFR 1910.1006 Methyl chloromethyl ether See §1910.1003, 13 Carcinogens.

437-002-0360(8)

(8) 29 CFR 1910.1007 3,3'-Dichlorobenzidine (and its salts) See §1910.1003, 13 Carcinogens.

437-002-0360(9)

(9) 29 CFR 1910.1008 bis-Chloromethyl ether See §1910.1003, 13 Carcinogens.

437-002-0360(10)

(10) 29 CFR 1910.1009 beta-Naphthylamine See §1910.1003, 13 Carcinogens.

437-002-0360(11)

(11) 29 CFR 1910.1010 Benzidine See §1910.1003, 13 Carcinogens.

437-002-0360(12)

(12) 29 CFR 1910.1011 4-Aminodiphenyl See §1910.1003, 13 Carcinogens.

437-002-0360(13)

(13) 29 CFR 1910.1012 Ethyleneimine See §1910.1003, 13 Carcinogens.

437-002-0360(14)

(14) 29 CFR 1910.1013 beta-Propiolactone See §1910.1003, 13 Carcinogens.

437-002-0360(15)

(15) 29 CFR 1910.1014 2-Acetylaminofluorene See §1910.1003, 13 Carcinogens.

437-002-0360(16)

(16) 29 CFR 1910.1015 4-Dimethylaminoazo-benzene See §1910.1003, 13 Carcinogens.

437-002-0360(17)

(17) 29 CFR 1910.1016 N-Nitrosodimethylamine See §1910.1003, 13 Carcinogens.

437-002-0364 Oregon Rules for MOCA (4,4'- Methylene Bis (2-chloroaniline))

437-002-0360(18)

(18) 29 CFR 1910.1017 Vinyl chloride, published 10/4/74, Federal Register, vol. 39, p. 35896; amended by the following FR publications: 12/3/74, FR vol. 39, p. 41848; 3/25/75, FR vol. 40, p. 13211; 5/28/75, FR vol. 40, p. 23072; 10/24/78, FR vol. 43, p. 49751; 5/23/80, FR vol. 45, p. 35282; 6/7/89, FR vol. 54, p. 24334; 6/30/93, FR vol. 58, no. 124, p. 35310.

437-002-0360(19)

(19) 29 CFR 1910.1018 Inorganic arsenic, published 5/25/78, Federal Register, vol. 43, p. 19624; amended by the following FR publications: 6/30/78, FR vol. 43, p. 28472; 5/23/80, FR vol. 45, p. 35282; 6/7/89, FR vol. 54, p. 24334; 6/30/93, FR vol. 58, no. 124, p. 35310; 3/7/96, FR vol. 61, no. 46, p. 9245.

437-002-0360(20)

(20) 29 CFR 1910.1020 Access to Employee Exposure and Medical Records; published May 23, 1980, Federal Register, vol. 45, no. 102, pp. 35277-35281; amended September 29, 1988, Federal Register, vol. 53, no. 189, pp. 38163-38168; 3/7/96, FR vol. 61, no. 46, p. 9235; 6/20/96, FR vol. 61, p. 31427.

Appendix A - Sample Authorization Letter.

Appendix B - Availability of NIOSH RTECS.

437-002-0360(21)

(21) 29 CFR 1910.1025 Lead, published 11/14/78, Federal Register, vol. 44, p. 53007; amended by the following FR publications: 1/26/79, vol. 44, p. 5447; 3/13/79, vol. 44, p. 14554; 8/28/79, vol. 44 p. 50338; 10/23/79, vol. 44, p. 60981; 11/30/79, vol. 44, 68828; 5/23/80, vol. 45, p. 35283; 12/11/81, vol. 46, p. 60775; 11/12/82, vol. 47, p. 51117; 3/6/83, vol. 48, p. 9641; 4/30/84, vol. 49, p. 18295; 6/5/84, vol. 49, p. 23175; 6/5/84, vol. 49, p. 23175; and modified by OSHA Instruction CPL 2-2.47 published by the U. S. Department of Labor on 1/5/89. Amended 7/11/89, vol. 54, p. 29142; 1/30/90, vol. 55, no. 20, pp. 3166-3167; 2/13/90, vol. 55, no. 30, pp. 4998-4999; modification of OSHA Instruction CPL 2-2.47, published by Office of Health Compliance Assistance, OSHA, on 7/10/90. Amended 5/31/91, FR vol. 56, no. 105, p. 24686.; amended 10/11/95, FR vol. 60, p. 52956.

437-002-0371 Scope and Application (for Lead).

437-002-0360(22)

(22) 29 CFR 1910.1027 Cadmium, published 9/14/92, Federal Register, vol. 57, no. 178, pp. 42388-42453; corrections published 4/23/93, FR vol. 58, no. 77, pp. 21778-21787.

437-002-0360(23)

(23) 29 CFR 1910.1028 Benzene, and Appendices A, B, C, D, and E; published 9/11/87, Federal Register, vol. 52, no. 176, pp. 34562-34578.

437-002-0363 Oregon Amendment (for Benzene).

437-002-0360(24)

(24) 29 CFR 1910.1029 Coke oven emissions, published 10/22/76, Federal Register, vol. 41, p. 46784; amended by the following FR publications: 1/18/77, FR vol. 42, p. 3304; 5/23/80, FR vol. 45, p. 35283; 9/13/85, FR vol. 50, p. 37353; 6/7/89, FR vol. 54, p. 24334.

437-002-0360(25)

(25) 29 CFR 1910.1030 Bloodborne pathogens, published 12/6/91, Federal Register, vol. 56, no. 235, pp. 64175-64182; amended 7/1/92, vol. 57, no. 127, p. 29206.

437-002-0375 Oregon Effective Dates (for BBP).

437-002-0360(26)

(26) 29 CFR 1910.1043 Cotton dust, published 6/23/78, Federal Register, vol. 43, p. 27394; amended by the following FR publications: 8/8/78, FR vol. 43, p. 35035; 10/10/80, FR vol. 45, p. 67340; 12/13/85, FR vol. 50, p. 51173; 7/3/86, FR vol. 51, p. 24325; 6/7/89, FR vol. 54, p. 24334.

437-002-0360(27)

(27) 29 CFR 1910.1044 1,2-dibromo-3-chloropropane, published 3/17/78, Federal Register, vol. 43, p. 11527; amended by the following FR publications: 5/23/80, FR vol. 45, p. 35283; 4/30/84, FR vol. 49, p. 18295; 6/7/89, FR vol. 54, p. 24334; 6/30/93, FR vol. 58, no. 124, p. 35310.

437-002-0360(28)

(28) 29 CFR 1910.1045 Acrylonitrile, published 10/3/78, Federal Register, vol. 43, p. 45809; amended by the following FR publications: 5/23/80, FR vol. 45, p. 35283; 6/7/89, FR vol. 54, p. 24334; 6/30/93, FR vol. 58, no. 124, p. 35310.

437-002-0360(29)

(29) 29 CFR 1910.1047 Ethylene oxide, published 6/22/84, Federal Register, vol. 49, p. 25796; amended 3/12/85, FR vol. 50, p. 9801; amended 10/11/85, FR vol. 50, p. 41494; amended 7/10/86, FR vol. 51, p. 25053; amended 4/6/88, FR vol. 53, p. 11437; amended 7/26/88, FR vol. 53, p. 27960.

437-002-0361 Oregon Effective Dates (for EtO).

437-002-0360(30)

(30) 29 CFR 1910.1048 Formaldehyde, and Appendices A, B, C, D and E, published 12/4/87, Federal Register, vol. 52, no. 233, pp. 46291-46312; and amendments to 1910.1048 published 3/2/88, FR vol. 53, no. 41, pp. 6628-6629; 11/8/88, FR vol. 53, pp.

45080-45088; 11/22/88, FR vol. 53, p. 47188; 7/13/89, FR vol. 54, no. 133, pp. 29545-29546; 8/1/89, FR Vol. 54, No. 146, p. 31765; 8/29/89, FR vol. 54, p. 35639; 9/11/89, FR vol. 54, p. 37531; 10/24/89, vol. 54, pp. 43344-43346; 6/13/90, FR vol. 55, no. 114, p. 24070; 8/10/90, FR vol. 55, no. 155, p. 32616; 12/17/90, FR vol. 55, no. 242, p. 51698; 3/12/91, FR vol. 56, no. 48, pp. 10377-8; 6/12/91, FR vol. 56, no. 113, p. 26909; 8/8/91, FR vol. 56, no. 153, p. 37650-1, 11/13/91, FR vol. 56, no. 219, p. 57593; 1/23/92, FR vol. 57, no. 15, p. 2681-2; 5/5/92, FR vol. 57, no. 87, p. 19262; 5/27/92, FR vol. 57, no. 102, pp. 22307-9; 6/10/92, FR vol. 57, no. 112, p. 24701; 6/18/92, FR vol. 57, no. 118, pp. 27160-1.

437-002-0360(31)

(31) 29 CFR 1910.1050 Methylenedianiline (MDA), published 8/10/92, Federal Register, vol. 57, no. 154, pp. 35666-35681. (NOTE: 29 CFR 1910.1101 Asbestos, was repealed by Federal Register, vol. 57, no. 110, issued 6/8/92, p. 24330.)

437-002-0373 Oregon Rules for Thiram.

437-002-0360(32)

(32) 29 CFR 1910.1051 1,3-Butadiene, published 11/4/96, Federal Register, vol. 61, no. 214, p. 56831.

437-002-0360(33)

(33) 29 CFR 1910.1052 Methylene Chloride, published 1/10/97, Federal Register, vol. 62, no. 7, p. 1601; 10/20/97, FR vol. 62, p. 54382; 12/18/97, FR vol. 62, no. 243 p. 66275. (NOTE: 29 CFR 1910.1101 Asbestos, was repealed by Federal Register, vol. 57, no. 110, issued 6/8/92, p. 24330.)

437-002-0360(34)

(34) 29 CFR 1910.1096 Ionizing radiation, published 6/27/74, Federal Register, vol. 39, p. 23502; amended 10/24/78, FR vol. 43, p. 49746; 11/7/78, FR vol. 43, p. 51759; 4/30/84, FR vol. 49, p. 18295; 6/30/93, FR vol. 58, no. 124, p. 35309; 6/20/96, FR vol. 61, no. 46, p. 31427.

437-002-0360(35)

(35) 29 CFR 1910.1200 Hazard communication, published 8/24/87, Federal Register, vol. 52, p. 31877; amended by the following FR publications: 12/4/87, FR vol. 52, p. 46080; 4/27/88, FR vol. 53, p. 15035; 2/15/89, FR vol. 54, p. 6888; 6/7/89, FR vol. 54, p. 24334; 2/9/94, FR vol. 59, no. 27, pp. 6126-6184; 4/13/94, FR vol. 59, no. 71, pp. 17478; 12/22/94, FR vol. 59, no. 245, p. 65947; 3/7/96, FR vol. 61, no. 46, p. 9245.

437-002-0377 Additional Oregon Rules for Hazard Communication.

437-002-0378 Oregon Rules for Pipe Labelling.

437-002-0360(36)

(36) 29 CFR 1910.1201 Retention of DOT markings, placards and labels, published 7/19/94, Federal Register. vol. 59, no. 137, pp. 36699-700

437-002-0360(37)

(37) 29 CFR 1910.1450 Occupational Exposure to Hazardous Chemicals in Laboratories, published 1/31/90, Federal Register, vol. 55 no. 21, pp. 3300-3335; corrected 3/6/90, FR vol. 55, no. 44, p. 7967; 7/1/92, vol. 57, no. 127, p. 29204.

437-002-0390 Oregon Effective Dates (for Labs).

437-002-0391 Additional Oregon Rules for Carcinogens in Laboratories.

437-002-0360(38)

(38) 29 CFR 1910.1499 Removed. Published 3/7/96, Federal Register vol. 61, no. 46, p. 9245.

437-002-0360(39)

(39) 29 CFR 1910.1500 Removed. Published 3/7/96, Federal Register vol. 61, no. 46, p. 9245.

These standards are available at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Auth.: ORS 654.025(2) and 656.726(3).

Hist: APD Admin. Order 13-1988, f. 8/2/88, ef. 8/2/88 (Benzene).

APD Admin. Order 14-1988, f. 9/12/88, ef. 9/12/88 (Formaldehyde).

APD Admin. Order 18-1988, f. 11/17/88, ef. 11/17/88 (Ethylene Oxide).

APD Admin. Order 4-1989, f. 3/31/89, ef. 5/1/89 (Asbestos Temp).

APD Admin. Order 6-1989, f. 4/20/89, ef. 5/1/89 (Non Asbestiforms-Temp).

APD Admin. Order 9-1989, f. 7/7/89, ef. 7/7/89 (Asbestos & Non-Asbestiforms-Perm).

APD Admin. Order 11-1989, f. 7/14/89, ef. 8/14/89 (Lead).

APD Admin. Order 13-1989, f. 7/17/89, ef. 7/17/89 (Air Contaminants).

OR-OSHA Admin. Order 1-1990, f. 1/11/90, ef. 1/11/90 (Formaldehyde-Temp).

OR-OSHA Admin. Order 3-1990, f. 1/19/90, ef. 1/19/90 Asbestos & Non-Asbestiforms-Temp).

OR-OSHA Admin. Order 6-1990, f. 3/2/90, ef. 3/2/90 (Formaldehyde-Perm).

OR-OSHA Admin. Order 7-1990, f. 3/2/90, ef. 3/2/90 Asbestos & Non-Asbestiforms-Perm).

OR-OSHA Admin. Order 9-1990, f. 5/8/90, ef. 8/8/90 (Labs).

OR-OSHA Admin. Order 11-1990, f. 6/7/90, ef. 7/1/90 (Air Contaminants).

OR-OSHA Admin. Order 13-1990, f. 6/28/90, ef. 8/1/90 (Asbestos-Temp).

OR-OSHA Admin. Order 14-1990, f. 6/28/90, ef. 8/1/90 (Lead).

OR-OSHA Admin. Order 1-1992, f. 1/22/92, ef. 1/22/92 (Formaldehyde).

OR-OSHA Admin. Order 19-1990, f. 8/31/90, ef. 8/31/90 (Asbestos-Perm).

OR-OSHA Admin. Order 20-1990, f. 9/18/90, ef. 9/18/90 (Lead).

OR-OSHA Admin. Order 21-1990, f. 9/18/90, ef. 9/18/90 (Air Contaminants).

OR-OSHA Admin. Order 7-1991, f. 4/25/91, ef. 4/25/91 (Air Contaminants, Asbestos, Formaldehyde).

OR-OSHA Admin. Order 13-1991, f. 10/10/91, ef. 10/10/91 (Lead, Formaldehyde).

OR-OSHA Admin. Order 15-1991, f. 12/13/91, ef. 12/13/91 (Asbestos).

OR-OSHA Admin. Order 4-1992, f. 4/16/92, ef. 4/16/92 (Formaldehyde).

OR-OSHA Admin. Order 5-1992, f. 4/24/92, ef. 7/1/92 (Bloodborne Pathogens).

OR-OSHA Admin. Order 6-1992, f. 5/18/92, ef. 5/18/92 (Asbestos).

OR-OSHA Admin. Order 10-1992, f. 9/24/92, ef. 9/24/92 (Lead-temp).

OR-OSHA Admin. Order 11-1992, f. 10/9/92, ef. 10/9/92 (Asbestos).

OR-OSHA Admin. Order 12-1992, f. 10/13/92, ef. 10/13/92 (Formaldehyde).

OR-OSHA Admin. Order 15-1992, f. 12/30/92, ef. 12/30/92 (Air Contaminants, BBP, Labs).

OR-OSHA Admin. Order 1-1993, f. 1/22/93, ef. 1/22/93 (Cadmium, MDA).

OR-OSHA Admin. Order 6-1993, f. 5/17/93, ef. 5/17/93 (Air Contaminants - Temp).

OR-OSHA Admin. Order 12-1993, f. 8/20/93, ef. 11/1/93 (remainder of 2/Z).

OR-OSHA Admin. Order 17-1993, f. 11/15/93, ef. 11/15/93 (Air Contaminants-Perm).

OR-OSHA Admin. Order 1-1995, f. 1/19/95, ef. 1/19/95 (DOT Markings, Placards and labels).

OR-OSHA Admin. Order 4- 1996 f. 6/00/96, ef 6/00/96 (Lead)

OR-OSHA Admin. Order 6-1996, f. 11/29/96, ef. 11/29/96 (Asbestos).

OR-OSHA Admin. Order 4-1997, f. 4/2/97, ef. 4/2/97.

OR-OSHA Admin. Order 6-1997, f. 5/2/97, ef. 5/2/97.

OR-OSHA Admin. Order 8-1997, f. 11/14/97, ef. 11/14/97.

OR-OSHA Admin. Order 1-1998, f. 2/13/98, ef. 2/13/98.

437-002-0382

437-002-0382 OREGON RULES FOR AIR CONTAMINANTS.

An employee's exposure to any substance listed in Oregon Tables Z-1, Z-2, or Z-3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section.

437-002-0382(1)

(1) Oregon Table Z-1.

437-002-0382(1)(a)

(a) Substances with limits preceded by "C" -- Ceiling Values. An employee's exposure to any substance in Oregon Table Z-1, the exposure limit of which is preceded by a "C", shall at no time exceed the exposure limit given for that substance. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time during the working day.

437-002-0382(1)(b)

(b) Other substances -- 8-hour Time Weighted Averages. An employee's exposure to any substance in Oregon Table Z-1, the exposure limit of which is not preceded by a "C", shall not exceed the 8-hour Time Weighted Average given for that substance in any 8-hour work shift of a 40-hour work week.

437-002-0382(1)(c)

(c) Other Substances - Excursion Limits. Excursions in worker exposure levels may exceed 3 times the PEL-TWA for no more than a total of 30 minutes during a workday,

and under no circumstances should they exceed 5 times the PEL-TWA, provided that the PEL-TWA is not exceeded.

437-002-0382(1)(d)

(d) Skin Designation. To prevent or reduce skin absorption, an employee's skin exposure to substances listed in Oregon Table Z-1 with an "X" in the Skin Designation column following the substance name shall be prevented or reduced to the extent necessary in the circumstances through the use of gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls or work practices.

437-002-0382(2)

(2) Oregon Table Z-2. An employee's exposure to any substance listed in Oregon Table Z-2 shall not exceed the exposure limits specified as follows:

437-002-0382(2)(a)

(a) 8-hour time weighted averages. An employee's exposure to any substance listed in Oregon Table Z-2, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that substance in Oregon Table Z-2.

437-002-0382(2)(b)

(b) Acceptable ceiling concentrations. An employee's exposure to a substance listed in Oregon Table Z-2 shall not exceed the acceptable ceiling concentration for the given substance in the table at any time during an 8-hour shift except:

437-002-0382(2)(b)(i)

(i) Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. An employee's exposure to a substance listed in Oregon Table Z-2 shall not exceed the acceptable maximum peak above the acceptable ceiling concentration, and shall not exceed the maximum duration for the given substance during an 8-hour shift.

437-002-0382(2)(c)

(c) Example. During an 8-hour work shift, an employee may be exposed to a concentration of Substance A (with a 10 ppm TWA, 25 ppm ceiling and 50 ppm peak) above 25 ppm (but never above 50 ppm) only for a maximum period of 10 minutes. Such exposure must be compensated by exposures to concentrations less than 10 ppm so that the cumulative exposure for the entire 8-hour work shift does not exceed a weighted average of 10 ppm.

OREGON TABLE Z-2

			Acceptable Max. Peak Above the Acceptable Ceiling Concentration for an 8-Hour Shift	
Substance	8-Hour Time Weighted Average	Acceptable Ceiling Concentration	Concentration	Maximum Duration
Benzene (a) (Z87.4-1969)	10 ppm	25 ppm	50 ppm	10 min.
Beryllium, and beryllium compounds (Z37.29-1970)	2 mg/m ³	5 mg/m ³	25 mg/m ³	30 min.
Carbon tetrachloride (Z37.17-1967)	10 ppm	25 ppm	200 ppm	5 min. in any 4 hrs

During an 8-hour work shift, an employee exposed to benzene may be exposed to an 8-hour time weighted average (TWA) of 10 ppm. Concentrations of benzene during the 8-hour work shift may not exceed 25 ppm, unless that exposure is no more than 50 ppm and does not exceed 10 minutes during an 8-hour work shift. Such exposures must be compensated by exposures to concentrations below 10 ppm so that the 8-hour time-weighted average is less than 10 ppm.

437-002-0382(3)

(3) Oregon Table Z-3. An employee's exposure to any substance listed in Oregon Table Z-3, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit give for that substance in the table.

437-002-0382(4)

(4) Computation formulae. The computation formula which shall apply to employee exposure to more than one substance for which 8-hour time weighted averages are included in OAR 437, Division 2/Z, Toxic and Hazardous Substances, in order to determine whether an employee is exposed over the regulatory limit is as follows:

437-002-0382(4)(a)

(a)

(i) *The cumulative exposure for an 8-hour work shift shall be computed as follows:*

$$E = (C_a T_a + C_b T_b + \dots C_n T_n) E 8$$

Where:

E is the equivalent exposure for the working shift.

C is the concentration during any period of time T where the concentration remain constant.

T is the duration in hours of the exposure at the concentration C.

The value of E shall not exceed the 8-hour time weighted average specified in subpart Z of 29 CFR part 1910 for the substance involved.

(ii) *To illustrate the formula prescribed in paragraph (4)(a)(i) of this section, assume that Substance A has an 8-hour time weighted average limit of 100 ppm (Oregon Table Z-1). Assume that an employee is subject to the following exposure:*

Two hours exposure at 150 ppm

Two hours exposure at 75 ppm

Four hours exposure at 50 ppm

Substituting this information in the formula, we have

$$[(2 \times 150) + (2 \times 75) + (4 \times 50)] E 8 = 81.25 \text{ ppm}$$

Since 81.25 ppm is less than 100 ppm, the 8-hour time weighted average limit, the exposure is acceptable.

437-002-0382(4)(b)

(b)

(i) *In case of a mixture of air contaminants an employee shall compute the equivalent exposure as follows:*

$$E_m = (C_1 + L_1 + C_2 + L_2) + \dots (C_n + L_n)$$

Where:

E_m is the equivalent exposure for the mixture.

C is the concentration of a particular contaminant.

L is the exposure limit for that substance specified in subpart Z of 29 CFR part 1910.

The value of E_m shall not exceed unity (1).

(ii) *To illustrate the formula prescribed in paragraph (4)(b)(i) of this section, consider the following exposures:*

Substance	Actual Concentration of 8-hour exposure	8-hour weighted average exposure limit
B	500 ppm	1,000 ppm
C	45 ppm	200 ppm
D	40 ppm	200 ppm

Substituting in the formula, we have:

$$Em = (500 \div 1000) + (45 \div 200) + (40 \div 200)$$

$$Em = 0.500 + 0.225 + 0.200$$

$$Em = 0.925$$

Since Em is less than unity (1), the exposure combination is within acceptable limits.

Hist: WCB Admin. Order, Safety 3-1975, f. 10/6/75, ef. 11/1/75.

437-002-0382(5)

(5) To achieve compliance with paragraphs (1) through (4) of this section, administrative or engineering controls must first be determined and implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with 1910.134.

Hist: WCB Admin. Order, Safety 3-1975, f. 10/6/75, ef. 11/1/75.

NOTE: Blue print (or bold on monochrome screens) identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.

NOTE: Some entries in the below table are followed by an ASCII 254 (þ) in OROSHA-Trieve(c). These appear in the hard copy as Registered ((R)) marks. Since there is no ASCII code for a Registered mark, the ASCII 254 (þ) appears instead.

OREGON TABLE Z-1 - ADOPTED VALUES (IN ALPHABETICAL ORDER)

NOTE: Blue print (or bold on monochrome screens) identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.

NOTE: PNOR means "particles not otherwise regulated"

FOOTNOTES:

(a)Parts of vapor or gas per million parts of contaminated air by volume at 25°C and 760 torr.

(b)Milligrams of substance per cubic meter of air. When entry is in this column only, the value is exact; when listed with a ppm entry, it is approximate.

(c)The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than one metal compound, measured as the metal, the CAS number for the metal is given -- not CAS numbers for the individual compounds.

(d)The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except in some circumstances the distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures; for the excepted subsegments, the benzene limits in Oregon Table Z-2 apply. See 1910.1028 for specific circumstances.

(e)This 8-hour TWA applies to respirable dust as measured by a vertical elutriator cotton dust sampler or equivalent instrument. The time weighted average applies to the cotton waste processing operations of waste recycling (sorting, blending, cleaning, and willowing) and garnetting. See also 1910.1043 for cotton dust limits applicable to other sectors.

(f)All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Oregon Table Z-3.

(g)Usually a mixture, in general the aromatic hydrocarbon content will determine which TWA applies.

Hist: WCB Admin. Order, Safety 3-1975, f. 10/6/75, ef 11/1/75.

WCB Admin. Order, Safety 2-1980, f. 4/17/80, ef. 8/1/80.

WCB Admin. Order, Safety 1-1982, f. 3/4/82, ef. 5/5/82.

WCB Admin. Order, Safety 6-1983, f. 5/25/83, ef. 5/25/83.

WCB Admin. Order, Safety 21-1984, f. 12/20/84, ef. 1/1/85.

WCB Admin. Order, Safety 5-1986, f. 5/20/86, ef. 6/13/86.

APD Admin. Order, Safety 13-1989, f. 7/17/89, ef. 7/17/89.

OREGON TABLE Z-2

Hist: WCB Admin. Order, Safety 3-1975, f. 10/6/75, ef. 11/1/75.

WCD Admin. Order, Safety 12-1979, f. 12/21/79, ef. 3/1/80.

WCD Admin. Order, Safety 4-1986, f. 5/5/86, ef. 5/5/86.

APD Admin. Order 13-1989, f. 7/17/89, ef. 7/17/89.

NOTE:Blue print (or bold on monochrome screens) identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.

FOOTNOTES:

(a)This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the Benzene Standard, 1910.1028.

(b)This standard applies to any operations on sectors for which the Cadmium Standard, 1910.1027, is stayed or otherwise not in effect.

OREGON TABLE Z-3 - MINERAL DUSTS

Substance	mppcf(a)	mg/m3
Silica:		
Crystalline		
Quartz(respirable)	250 (b)	(e)10 mg/m3
	%SiO(2)+5	%SiO(2)+2
Quartz(total dust)		30 mg/m3
		%SiO(2)+2
Crystobalite: Use 1/2 the value calculated from the count or mass formulae for quartz		
Tridymite: Use 1/2 the value calculated from the formulae for quartz		
Amorphous, including natural diatomaceous earth	20	80 mg/m3
		%SiO(2)
Silicates (less than 1% crystalline silica)		
Mica	20	

Soapstone	20	
Talc (not containing asbestos)	(C) 20	
Talc (containing asbestos)		
Use asbestos limit		
Tremolite asbestiform (see 29 CFR 1910.1001)		
Portland Cement	50	
Graphite (natural)	15	
Respirable fraction less than 5% SiO(2)		(e) 2.4 mg/m ³
		%SiO(2)+2
Respirable fraction greater than 5% SiO(2)		(e) 10 mg/m ³
		%SiO(2)+2
Inert or Nuisance Dust: (d)		
Respirable fraction	10	5 mg/m ³
Total dust	50	10 mg/m ³

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NOTE: Blue print (or bold on monochrome screens) identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.

NOTE: Conversion factors - $mppcf \times 35.3 = \text{million particles per cubic meter} = \text{particles per c.c.}$

FOOTNOTES:

(a) Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.

(b) The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.

(c) Containing less than 1% quartz; if 1% quartz or more, use quartz limit.

(d) All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Oregon Table Z-1.

(e) Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

Aerodynamic Diameter (Unit Density Sphere)	Percent Passing Selector
2	90
2.5	75
3.5	50
5	25
10	0

The measurements under this note refer to the use of an AEC (now NRC) instrument. If the respirable fraction of coal dust is determined with a MRE the figure corresponding to that of 2.4 mg/m³ in the table for coal dust is 4.5 mg/m³.

Hist: WCB Admin. Order, Safety 3-1975, f. 10/6/75, ef. 11/1/75.

WCB Admin. Order, Safety 6-1978, f. 7/5/78, ef. 7/15/78.

APD Admin. Order 13-1989, f. 7/17/89, ef. 7/17/89.

. Auth.: ORS 654.025(2) and 656.726(3).

Hist: OR-OSHA Admin. Order 6-1993, f. 5/17/93, ef. 5/17/93 (temp).

OR-OSHA Admin. Order 17-1993, f. 11/15/93, ef. 11/15/93 (perm).

OR-OSHA Admin. Order 5-1997, f. 4/22/97, ef. 4/22/97.

OR-OSHA Admin. Order 6-1997, f. 5/2/97, ef. 5/2/97.

1910.1001

Reference 9

Safety Instruction Number 1

Update 12/02/2004

Right-To-Know

General

- Or-OSHA Hazard Communication Standard (HCS, Right-to-Know Act) specifies that both employees and employers know the identity and safety/health hazards of substances used in the work place, in order to reduce occupational illnesses due to harmful chemical exposures
- HCS requires manufacturers of substances that are a health or physical hazard to prepare a Material Safety Data Sheet (MSDS) and provide it to purchasers
- Employers who use these substances must retain the MSDS's and provide hazard training to all employees who may be exposed
- Exposure includes both normal work operations and emergency situations
- Most chemical products used at OSU are considered hazardous

Exempted Products

- Tobacco and tobacco products
- Wood and wood products
- Articles, manufactured items, or products that do not release or otherwise result in exposure to hazardous chemicals under normal conditions of use
- Foods, drugs, and cosmetics (regulated by FDA) intended for personal consumption or use by the employees in the work place
- Hazardous substance while in transport regulated by DOT

What Is On A Material Safety Data Sheet (MSDS)?

- Identity of chemicals found in the substance (chemical and trade names)
- The immediate and long term health effects of exposure
- The routes of exposure and symptoms of overexposure
- The potential for fire, explosion, and reactivity
- Emergency procedures for spills, fire, disposal, and first aid

- Appropriate protective equipment and clothing

Where are MSDS Kept?

- EH&S maintains [web-accessible MSDS site](#) for non-lab chemicals
- Most lab chemical MSDS's are available through [supplier web sites](#)
- OSU maintains a paper copy file of all MSDS's in the EH&S office at Adams Hall
- Employees can request specific MSDS's from EH&S
- In an emergency, OSU employees may call Public Safety @ 7-3010 for 24 hour access to the MSDS data file

OSU Hazard Communication Program

- EH&S is responsible to implement and administer the University's Hazard Communication Program
- All departments have been included in order to comply with the rule
- This written program is in the [Safety Procedures Handbook](#) section of the Administrative Policies and Procedures Manual

Employee Training

- EH&S has a Right-to-Know training program that is offered to all departments
- Program covers the contents of the data sheets, the basic information about chemical toxicity, and how to avoid exposure
- Further training is performed on specific hazardous substances in each department or job classification on request

Your Right-To-Know

- If you are concerned about any substance you are working with, call EH&S at 7-2273
- EH&S can provide more complete information, help interpret data sheets, and evaluate potential health effects of exposure based on your job environment.

Reference 15

Safety Instruction Number 13

Updated 12/02/2004

Laboratory Fume Hood Safety

General

- Laboratory fume hoods are important safety devices.
- Hoods function as local exhaust ventilation that protect personnel from exposure to chemicals being handled
- Training of personnel, proper design of experiments and careful operation of equipment are equally important for lab safety
- Fume hoods cannot completely overcome poor work practices by users

Good Fume Hood Practices

Operation

- Before using a hood check that the **air is exhausting properly**
- If the hood is not working, notify EH&S, 7-2273
- Keep **sash openings** to a **minimum**
- Hoods are annually checked by EH&S and w are done more frequently on request
- Hood sash should not be positioned higher than the line on the "Approved Use" sticker.
- If there is a need for **safety/blast shields** within the hood, they should be obtained separately ;the sash alone should not be used as safety/blast shield.
- **Sources** of emission should be kept at least **6 inches inside the hood**
- Users should keep their **faces outside** the plane of the hood sash
- Keep **front air foil** clear - don't block with lab bench liner
- Don't block **hood exhaust openings** or room **air supply vents**; they are essential for the proper operation and capture efficiency of the hood
- Keep **hood sashes closed** when not in use
- Design experiments **NOT to exceed the hood's exhaust capacity** with anticipated experimental emissions

Storage

- Keep **storage of chemicals** in a hood to a **minimum**
 - Stored chemicals may add to the seriousness of an incident such as a fire
 - Stored chemicals block exhaust openings
- **Only necessary equipment** should be placed in the hood
- **Large equipment impedes air flow** and causes air turbulence and poor capture efficiency
- Place **large equipment on spacers** to allow for air to pass underneath

Reference 16

Safety Instruction Number 19

Update 12/03/2004

Spill Response: Chemicals

General

- It is inevitable: **spills happen**
- To effectively clean up spills, **prepare** for them beforehand
- Whenever employees work with a chemical substance, they should be aware of its characteristics, and should have **formulated plans** of what to do in case of a spill
- Chemical knowledge is critical when performing risk assessment and is available from material safety data sheets and EH&S
- Specifically, employees should know
 - **what** steps to take
 - who to call for **assistance**
 - what **personal protective equipment** is necessary
 - what **absorbent material** should be used to contain and minimize the danger of a spill
 - **where** to find such equipment and material

Preparation

- The first steps in any chemical spill:
 - assess the **magnitude**
 - assess the **hazard**
 - assess the **risk** to responders and other
- Before attempting to fight a spill, make sure employees have proper and adequate
 - personal protective equipment
 - spill treatment materials

OSU Spill Response Team

- EH&S has developed a hazardous chemical spill response team which is readily available on short notice for dealing with spills.
- Response team includes a vacuum designed for mercury spill cleanup
- EH&S can be contacted by calling 7-2273. Campus Security can also be reached at 7-3010
- The chemical spill response available from EH&S should not lessen the responsibility of individual labs to prepare plans to deal safely with small spills
- The preparation of spill response kits at strategic locations within labs or departments is encouraged
- EH&S will respond appropriately to reports of any size spill.

Reporting

- DEQ regulations require OSU to submit reports for spills over certain specified amounts
- All large spills of a hazardous chemical (more than 1 gallon liquid or 1 pound solid) must be reported promptly to EH&S
- EH&S will make the report to DEQ if necessary
- Reporting smaller spills to EH&S is encouraged

Spill Control

1. Spill control generally follows the same basic steps, regardless of the materials used, after the initial risk assessment
2. Assess the **magnitude, hazard, and risk** of the spill
3. **Get assistance** if you are unsure about your ability to control a spill
4. Acquire and put on **personal protective equipment** appropriate for the situation, which should include
 - respiratory protection
 - eye protection
 - gloves
 - impervious shoes/boots
 - body protection
5. Get **spill control materials**, available equipment in two general forms:
 - loose materials (vermiculite, cat litter)
 - spill control pillows, which are produced in various shapes and contain different types of absorbents.
 - Materials are available designed for specific types of chemical spills such as acids or solvents
6. In general, liquid materials present a much greater danger than solids, and quick response is therefore critical.
7. Contain and absorb the spill

- dike the outside perimeter with absorbent if there is danger the spill may spread
 - absorb the spill
 - contain and absorb the material first, then try any neutralization/treatment schemes - don't try "floor chemistry"
8. Collect the contaminated absorbent.
- put into an impervious container, such as a heavy cardboard box with a plastic liner
 - spill pads and pillows are much easier to collect than loose absorbents
 - close the container
9. Dispose of the material correctly - [contact EH&S](#) for waste determination and disposal

Reference 21

Safety Instruction Number 30

Update 12/08/2004

Chemical Storage Guidelines

Proper chemical storage is essential in assuring a safe work environment

Segregate Chemicals - Store By Hazard Class

Do Not Store Chemicals Alphabetically, except within a hazard class. Hazard classes that should be stored separately include:

- radioactive materials
- pyrophoric materials
- flammable materials
- oxidizing materials
- water reactive substances
- oxidizing acids
- inorganic acids
- organic acids
- caustics (bases)
- poisons (general laboratory reagents separated into organic and inorganic groups)

Provide physical segregation (sills, curbs, trays) or separation between hazard classes.

Keep flammable materials by themselves in approved storage cans, cabinets, or rooms. Store oxidizers well away from flammable materials.

Store Chemicals To Minimize The Risk From Damaged Containers

- *Store large bottles and containers* close to but not on the floor
- **Store acids and caustics below eye level**
- *Shelves should be securely fastened* to the wall and have lips or restraining cord to prevent bottles from falling
- *Secondary containment* such as polyethylene or stainless steel trays as appropriate should be provided for spill protection

Label Chemical Containers And Storage Areas Properly

- *Chemical containers* should have the chemical name, a warning label identifying the major hazards, and information about handling precautions
- *Storage areas* should be labeled with hazard class

Chemical Hazard Classes - Examples

Pyrophoric - (many are also water reactive)

- phosphorous (red, white)
- methylmagnesium bromide (and other grignard reagents)
- diethylzinc
- triethylaluminum

Oxidizing Materials

- nitrates
- perchlorates
- permanganates
- iodates
- chromium (VI) compounds
- bromine
- nitrates
- iodine

Water Reactive

- alkaline earth metals (sodium, potassium, lithium, calcium)
- calcium carbide
- hydrides
- titanium tetrachloride
- acetic anhydride

Flammable

- solvents
- sodium metal
- sodium sulfide
- sulfur

Inorganic Acids

- hydrochloric acid
- hydroiodic acid
- phosphoric acid
- hydrobromic acid
- hydrofluoric acid

Inorganic Acids - Oxidizing

- sulfuric acid
- nitric acid
- perchloric acid

Organic Acids

- formic acid
- acetic acid
- propionic acid
- butyric acid

Caustics

- hydroxides of sodium, potassium, calcium, lithium

Reference 24

Safety Instruction Number 35

Update 12/8/04

Safety Training

Required Safety Training

- Many OR-OSHA, DEQ, and DOT regulations require the safety training of employees if they perform certain functions, or work in certain environments. These regulations also require that this training be documented and a training file be maintained. It is the responsibility of supervisors to identify the types of safety training required for each of their employees and to see that this training is provided. This required safety training can be divided into 1) initial employee training at the time of hire, and 2) job-specific training throughout the period of employment. Safety training can be provided by supervisors, EH&S or other OSU personnel, or by an approved outside training provider.

Safety Training Sources

- Supervisors can give initial safety training for their new employees by using the "Acknowledgement of Safety Rules Emergency Procedures and Hazard Communication" form in combination with Safety Rules section of the "OSU Safety Procedures" Manual (section 10), and the OSU booklet "*Working Safely with Hazardous Materials: A Handbook for Employees*". To assist supervisors in identifying the required job-specific safety training, the "OSU Safety Training Identification Worksheet" has been developed (page 2). This matrix includes: prompts that indicate if an employee needs any of the required job specific training; codes listed in parentheses () next to each item which indicate the training programs available and options for obtaining the training; and an asterisk (*) if the training should be repeated annually. The form has been designed to be used in the following manner:
 - Use one form per employee.
 - Supervisor reviews the form's questions and makes a check in the space to the right of the prompter.
 - For all checked items, supervisor looks in the () for a code number that corresponds to training program available through EH&S.
 - A separate list describes the training program that corresponds to the codes found in the ().

- Supervisor contacts EH&S; training programs and video equipment will be provided at no charge.
- When employee receives the needed training the date can be entered on the form.
- This form is designed to be kept in the employee's file.

Record Keeping

- Documentation and record keeping is an important element of the training process. A tracking system should be used to record safety training. Forms shown below have been developed by EH&S to aid in this process. These forms need to be filled out and kept in departmental records. It is the supervisor's responsibility to document all safety training. It is important to capture all the information requested on the form for each training session.

OSU Safety Training Identification Work Sheet [\(Printable Version\)](#)

EMPLOYEE NAME:	SUPERVISOR:
DEPARTMENT/UNIT:	DATE:

Instructions: Supervisor reviews this list and make checks in the space to the left of each item if the employee meets any of the listed criteria. All questions refer to conditions that the employee will encounter working at OSU. When training is completed the date of the training can be placed in the right hand space. This form can be kept in the employee's file.

Letter and numbers inside () refer to programs available through EH&S; see list below. Items with * require annual training if program or hazard changes or new chemicals are used.

Will This Employee Use:			
	Date of training		Date of training
Tractors or heavy ag equipment (<i>TI</i>)		Ladder or scaffold (<i>L2</i>)	
Fork lift (<i>F3</i>)		Hand tools (<i>Z1</i>)	
Power tools (<i>P2 & P3</i>)		Manlift, vehicle mounted work platform (<i>Z1</i>)	
"Powder" actuated tools (<i>Z2</i>)*		Industrial truck (<i>Z1</i>)	
Welding equipment (<i>A1 & O3</i>)		Video display terminal (<i>W3</i>)	

Fume hoods (<i>Z1</i>)		Respirator (<i>Z1</i>)	
Personnel-protective equipment (<i>E2</i>)		Fall arrest system (<i>F1</i>)	
Herbicides or pesticides (<i>P1,H4,W2,W4</i>)*		Chemical or chemical compounds (<i>H2</i>)*	
Eye wash or safety shower (<i>Z1</i>)		Mechanical power press (<i>Z1</i>)	
Signs, signals, barricades (<i>Z1</i>)		Office equipment (<i>O1</i>)	
Required to use fire extinguisher (<i>F2</i>)*			
Will This Employee Perform Any of the Following Tasks:			
Lift, push, pull, or stand constantly (<i>B1</i>)		Perform maintenance at greenhouse (<i>W4</i>)	
Tree trimming (<i>Z2</i>)		Respond to chemical spill (<i>Z1</i>)*	
Enter a confined space (<i>C2</i>)*		Dig trenches or excavate (<i>T2</i>)	
Food service work (<i>Z1</i>)		Perform first aid (In Job Description) (<i>B3</i>)*	
Repair or install pitched roof (<i>F1</i>)		Transport, package, hazardous waste (<i>H3</i>)	
Recharge storage batteries (<i>Z1</i>)		Service single or multi piece wheels (<i>Z1</i>)	
Drive university vehicle (<i>Z1</i>)		Package or receive hazardous materials (<i>H3</i>)	
Work with human blood/other body fluids (<i>B3</i>)*		Work around/with electricity (<i>E1</i>)	
Remove lead based paint (<i>Z1</i>)		Work on or maintain equipment that needs to be locked or tagged out to prevent accidental injury (<i>L3</i>)*	
Diving (<i>Z2</i>)		Remove asbestos containing material (<i>Z2</i>)*	
Will This Employee Work in an Area Containing any of the Following:			
Asbestos (disturb when working) (<i>A2,A3</i>)		Radioactive materials or radiation (<i>R1</i>)	
Noise exceeding 80 dBA (<i>Z1</i>)*		Laboratory chemicals (<i>L1</i>)*	
Hazardous chemicals (<i>H2</i>)*		Carcinogens (<i>Z1</i>)*	
Safety Training Programs Available Through OSU EH&S			
A1	Arc Welding: Safety & Operations - 13 min video	L1	Laboratory Safety: The OSHA Lab Standard - 28 min video

A2	Asbestos Health Hazards - Contact EH&S to Schedule Program	L2	Ladders & Scaffolds: It's up to you - 19 min video
A3	Asbestos at Oregon State University - Contact EH&S to Schedule Program	L3	LOTTO: Lockout/Tagout - 15 min video
B1	Back Care and How to Lift Properly - Contact EH&S to Schedule Program	M1	Maintenance Person Safety - 13 min video
B2	Basic First Aid - Humorous - 17 min video for Supervisor	O1	Office Safety (Risky Business) - 20 min video
B3	Bloodborne Pathogens - Videos Available; Contact EH&S for Information	O2	Operating Instructions for the Karcher Brand Power Washers - Video
B4	Brace Your Space (earthquake-proofing) - video	O3	Oxyacetylene Welding: Safety & Operations - 15 min video
B5	Brush Chipper Safety - 20 min video	P1	Pesticide Safety in the Landscape - 27 min video
C1	Chain Saw Safety - 28 min video	P2	Portable Power Tools - Contact EH&S for appropriate video
C2	Confined Space Entry Training - Contact EH&S to Schedule Program	P3	Power Hand Tools For Grounds Maintenance Workers - 30 min video
E1	Electrical Safety-Related Work Practices in General Industry - 24 min video	P3	Practicing Safe Science - 29 min video
E2	Equipped for Safety (Personnel Protective Equipment) - 9 min video	R1	Radiation Safety For Ancillary Employees - Contact EH&S to schedule program
F1	Fall Protection - video	R2	Right to Know Industrial - 39 min video
F2	Fire Extinguisher Training and Use - 15 min video	T1	Tractor Safety Begins with You - 20 min video
F3	Forklift Safety - 18 min video	T2	Trenchers - 18 min video
G1	Grinding Wheel Safety Parts I and II - videos	W1	Working Safely With HIV In The Laboratory - 20 min video
H1	Hand Tool Safety - videos	W2	Working Safely with Pesticides - 18 min Video
H2	Hazard Communication - Contact EH&S to Schedule Program	W3	Work Station Design (VDT Use) - Contact EH&S to schedule program
H3	Hazardous Materials Transportation - Compliance and Enforcement - Contact EH&S	W4	Worker protection standard - 30 min video
H4	Herbicide Safety In The Landscape - video	Z1	Contact EH&S For Training Materials
H5	HIV in the Laboratory - 28 min video	Z2	Need to use competent/certified outside training provider.

OSU Safety Training (Information in this document will become part of the employee's record.)

Course Name:			
Course Date(s):		Total Hours of Training:	
Name (Please Print)	Social Security Number	Department/ Phone	

Reference 25

16: Laboratory Safety

These concepts may apply in any areas where hazardous chemicals are used or stored.

GENERAL

1. Safety takes precedence over all other considerations.
2. When performing dangerous chemical procedures, be sure there is someone in the immediate vicinity you can reach in case of emergency.
3. Know the location of eyewash fountains and emergency showers. Find out how to use them properly.
4. Before beginning a procedure, take a minute to investigate hazards involved; take all necessary safety precautions.
5. Store food products in separate non-lab refrigerators specifically reserved for that use.
6. Eating, drinking, and smoking is not permitted in laboratory areas. Break rooms should be available for that use.
7. Remove unsafe equipment from service. Report unsafe facilities or behavior to your supervisor.
8. Because unattended equipment and reactions are major causes of fire, floods, and explosions, double check utility connections. Anticipate hazards that would result from failure of electrical, water, or gas supply.
9. Use hose keepers on water condenser lines.

PERSONAL PROTECTION, CLOTHING, AND HAIR

10. Properly label all containers.
11. Wear approved eye and face protection suitable for the work at hand. Safety glasses or goggles should be worn at all times while working with chemicals at the counter or laboratory hood. A face shield should be worn when working with potentially eruptive substances.
12. Remind all visitors and non-lab staff to observe lab safety rules, including eye protection, while in the laboratory.
13. Wear protective gloves and clothing whenever handling corrosive, toxic, or other hazardous chemicals. Wear closed-toe shoes at all times in the lab.
14. Check that guards are provided on moving parts of mechanical apparatus to prevent hazardous contact.
15. Maintain lab areas reasonably neat and uncluttered.

16. Use the fume hood for all operations involving harmful gases or fumes and for flammable or explosive materials. Check the hood to see that it is operating adequately and has been inspected within the last year.
17. Use a safety shield or barrier to protect against explosion, implosion, and flash fires when performing reactions with large volume of flammable liquids or unstable material.
18. Inspect glassware for cracks, sharp edges, and contamination before using. Broken or chipped glassware should be repaired and polished or discarded.
19. Always use a lubricant (e.g., water, glycerol) when inserting glass tubing into rubber stoppers or grommets. Protect hands in case tubing breaks.
20. Broken glass should be put in impervious containers that are large enough to completely contain the glass. These containers are to be placed into the building trash dumpsters by laboratory personnel.
21. Do not handle radioactive isotopes without oversight from the Radiation Safety Office.

CHEMICAL HANDLING

22. Transport dangerous or flammable liquids in a safety pail or other adequate secondary containment. Prevent containers from tipping when transporting on a cart.
23. Take extra precautions when working with large quantities of reactants.
24. Use caution when adding anything to a strong acid, caustic, or oxidant. Add slowly.
25. When adding solids (boiling chips, charcoal, etc.) to a liquid, check that it isn't hot.
26. Use a pipet filler - not mouth suction - for all pipet work
27. Keep the mouth of any vessel being heated pointed away from any person (including yourself).
28. When working with biohazardous material, guard against infection by skin contact, inhalation of aerosols, and contamination of food and beverages.
29. Known carcinogens, mutagens, and teratogens should not be used or stored in normal laboratory situations. Such substances require extreme precaution, tight security, limited access, secondary containers, and other safety procedures; see the OSU Carcinogen Safety program.
30. Flammable liquids should only be heated with steam, hot water or a grounded heating mantle. Check the area for possible flames or electrical sparks.
31. All experiments involving volatile flammable liquids (e.g., diethyl ether) should be considered fire or explosive hazards.
32. When not in use, laboratory natural gas lines should be shut off at the line valve rather than at the equipment.
33. Whenever possible, position energized electrical equipment, or other devices that may emit sparks or flame, at least six inches above the floor.
34. Properly ground electrical equipment.
35. Laboratory electrical equipment should have a three-conductor cord that connects to a grounded electrical outlet, unless the equipment is dual-insulated..

36. Electrical wiring for experiments, processes, etc. should be done neatly, and must conform to electrical code requirements.
37. Store strong oxidants (e.g., nitrates, chlorates, perchlorates, peroxides) in a dry area apart from organic materials.
38. Use a specially designed wash-down laboratory hood for heated perchloric acid digestions.

CHEMICAL STORAGE

39. Include the word "flammable" on all flammable liquid containers.
40. Whenever possible, store flammable solvents in NFPA-approved flammable liquid storage cabinets or approved solvent storage rooms.
41. If storing more than 10 gallons of flammable liquids in a laboratory, a flammable liquid cabinet **MUST** be used.
42. Pay careful attention to peroxide-forming compounds. Organic peroxides may detonate by shock, friction, or heat. Compounds with dangerous tendencies to form peroxides by reaction with oxygen (e.g., many ethers and other chemical classes) have a limited shelf life. They should be dated on opening, and should in no case be stored for longer than one year.
43. Keep caustics stored below eye level.
44. Keep glass containers of chemicals off the floor - unless they are inside protective containers or pans that are kick-proof.
45. Inventory chemicals periodically and discard old, no-longer-needed substances through the campus hazardous waste disposal program.
46. Report chemical inventory annually to EH&S for OR-OSHA and State inventory reporting purposes.
47. See *Safety Bulletin #30* for more information on chemical storage.

PRESSURE AND VACUUM SYSTEMS

48. Plan and provide for the possibility of explosion prior to conducting experiments that develop high pressure or vacuum.
49. Heat reactants only in a system with an approved pressure release.
50. Wait for pressure to be released before opening a pressurized vessel (autoclave, etc.).
51. Secure compressed gas cylinders in an upright position at all times to prevent from falling. Keep protective caps in place when moving or storing gas cylinders.
52. Regulators designed for specific cylinders are not interchangeable.
53. Keep flammable gas cylinders away from exits and oxygen cylinders.
54. When moving cylinders with a lift truck or hand truck, make sure there is an approved rack or securing device.
55. **STOP HERE** Never use oxygen as a substitute for compressed air. Do not use oil on gauges or regulators for oxidizing gases. Oxygen under pressure reacts violently with oil or grease.
56. Never use compressed gas from a cylinder without a reduction of pressure through a suitable pressure regulator.

57. Pressure adjusting screws on regulators shall always be FULLY RELEASED BEFORE the regulator is attached to a cylinder. Always open the valves on cylinders slowly. Do not stand in front of pressure regulator gauge faces when opening cylinder valves.
58. Do not strike valves with tools, or use excessive force in making connections.
59. Avoid mixtures of acetylene and oxygen or air prior to use except at a standard torch.
60. Cylinders not provided with fixed hand wheel valves shall have keys or handles provided on valve stems at all times when cylinders are in use.
61. Cylinders should not be dropped, bumped violently, skidded or rolled horizontally. Compressed gas cylinders are high-pressure vessels and should be handled accordingly.
62. Do not store cylinders in direct sun, or in boiler or furnace rooms.

CONTAINER HANDLING

63. Properly label all containers. If unsure, check rule # 10 (above).
64. Before re-using any food container, first remove the original label completely.
65. Chemical transport containers are not to be used for non-compatible chemicals or for food products at any time.
66. All containers should have a lid at all times except during an active experiment.
67. Refrigeration of flammable materials must be done in spark-proof or explosion-proof refrigerators.

CHEMICAL SPILLS AND DISPOSAL OF CHEMICAL WASTES

68. Devise a plan to deal with small spills before one occurs. POST the plan in the lab and get appropriate equipment. Quickly and thoroughly clean up any liquid or solid chemical spill in the laboratory or area of operations. If any uncertainty exists, call Environmental Health & Safety (EH&S).
69. For large spills, contact EH&S to activate OSU's chemical spill response team.
70. Dispose of chemical wastes by approved methods only. Unwanted or no-longer-useful chemicals are chemical wastes. Contact EH&S for waste disposal guidelines.
71. Reagent bottles should be thoroughly cleaned of any hazardous material prior to disposal. Clean glass reagent bottles can usually be recycled.
72. Four simple steps to help comply with hazardous waste rules:
 - Perform a waste determination on all wastes (EH&S responsibility)
 - Label all waste containers with "waste" or "used", plus a chemical description, **BEFORE** adding waste.
 - Keep all waste containers closed except when adding waste.
 - Keep the waste in the room where it was generated.

College of Forestry 400: Forest Field Safety

Safety Policy & Procedure Manual
Section 400: Forest Field Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide information to help protect employees and students from the health hazards presented by field activities conducted in the forest.

Background Information

Workers performing in forest field conditions are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 7,

437-007-0001 Authority of Rules. These rules are promulgated under the Director's authority contained in ORS 654.025(2) and ORS 656.726(4).

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0002 Purpose of Rules. The purpose of the rules contained in this Division is to prescribe minimum safety and health requirements for all employees employed in forest activities work.

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

General

- Field safety is the highest priority during all field activities
- Safety is an attitude
- Most accidents are the result of complacency and quite often happen to experienced workers
- Safety is a team effort as well as an individual effort

Sections covered in this manual include:

Section 410 Personal Protective Equipment

Section 420 Planning, First Aid, and Work Conditions

Section 430 Tools, Fire Extinguishers, and Explosives

Section 440 Cutting Trees, Pre-commercial Thinning, and Slash

Section 450 Forest Driving

College of Forestry 410: Personal Protective Equipment

Safety Policy & Procedure Manual
Section 400: Forest Field Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is a) To ensure that all persons involved in forest field activities are properly trained in safe working practices and procedures and b) to ensure that College of Forestry field activities are in compliance with University and OR-OSHA rules and regulations for safety.

Background Information

Forest activities that require the use of personal protective equipment (PPE) are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 7, subdivision D (437-007-0300).

The College of Forestry keeps and makes available to all of its employees and students hardhats, Hi-Vis safety vests, foam hearing protection, gloves, and safety goggles as well as field first aid kits through the Peavy Instrument Room. Hardhats are inspected for use by equipment room personnel and replaced after the service life has expired. First aid kits are inspected for perishable items and these are replaced as needed. Employees or students may check out safety equipment during the instrument room posted hours or by contacting the instrument room manager during other times. In addition, safety equipment may be reserved through the web page. The instrument room manager is

Jim Kiser,
Department of Forest Engineering
541-737-4219
jim.kiser@oregonstate.edu

The webpage link for the Peavy Instrument Room is:
<http://www.forestry.oregonstate.edu/peavy-hall-instrument-room>

Applicability

All academic, research, students, and visitors in the College of Forestry

POLICY

College faculty, staff, students, and visitors who perform any job-related activities in forest field conditions are required to obtain and use personal protection equipment where designated by this section.

Procedure

Personal Protective Equipment Checklist

The PPE requirements for each job activity in the forest may vary and the supervisor should inform each person under their supervision of the minimum PPE requirements for the activity and insure that each person complies with this. The following checklist is a summary of the minimum requirements for forestry field activities.

- Hard Hat
- Footwear
- Hi-Vis Safety Vest
- Eye Protection (Glasses with shields or goggles)
- Hearing Protection
- Hand Protection (gloves)
- Personal first aid kit

Required Personal Protection Equipment

Hard Hat



A hard hat is required anytime you are outside of the vehicle on forest lands where there is potential for head injury from falling or flying objects. Hard hats must conform to ASTM standards and be Hi-viz in color. **OR-OSHA (437-007-0305 Head Protection)**

NOTE:

The employer is required to provide and require the use of hard hats for employees.



Footwear

Boots should be worn that are appropriate for the field conditions. Boots are defined as work boots with ankle support and non-skid soles. Persons whose duties require them to walk on trees, logs or boomsticks, must wear sharp caulked boots, or the equivalent. Caulks are recommended when working in and around logs and slash. Caulks are not recommended on rocky ground. Persons who operate chain saws must wear cut resistant foot protection that will protect against contact with running saw chains. **OR-OSHA (437-007-0330 Foot Protection)**

NOTE:

The employer is not required to provide logging boots for employees. The cost of logging boots may be borne by employees.



Clothing

A hi-viz vest is required around any active equipment. **OR-OSHA (437-007-0310 High-Visibility Color)**

A minimum standard of short-sleeved shirt and long pants are required for forestry field activities.

Hearing Protection



Hearing protection is required in areas where the db is > 85 . This includes chain saw use. *OR-OSHA (437-007-0335 Hearing Protection)*

Hand Protection



Gloves must be used in any activity that exposes the hands to hazards including rough or sharp surfaces and any type of chemical or thermal use. *OR-OSHA (437-007-0320 Hand Protection)*

NOTE.

The employer must provide and require employees to use hand protection where required:

Eye Protection



Safety goggles or shields for eyeglasses must be used where eyes are exposed to flying particles. *OR-OSHA (437-007-0315 Eye and Face Protection)*

NOTE.

The employer must provide and require employees to use eye protection where required:

First Aid Kit



Each person should carry a small personal-sized first aid kit in addition to the larger crew first aid kit.

In addition to the listed minimum requirements for PPE, special job activities may require the use of additional required PPE including flotation devices where workers are on or near water and respiratory protection where workers are exposed to air contaminants.

College of Forestry 420: Planning, First Aid, and Work Conditions

Safety Policy & Procedure Manual
Section 400: Forest Field Safety Effective:
01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is a) To ensure that all persons involved in forest field activities are properly trained in the identification of workplace hazards and the planning of safe working conditions including proper medical supplies and first aid training.

Background Information

All forest activities may be subject to the rules and regulations for planning, first aid and work conditions as regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 7, subdivision C (437-007-0200).

Forest activities are divided into those of more than one day duration and those of no more than one day duration. Activities in this section include *Site Planning and Implementation, Hazard Identification, Checking Systems, Working Alone, Medical Services, and Weather Conditions*.

Applicability

All academic, research, students, and visitors in the College of Forestry who are conducting forest field activities.

Procedure

The following checklist for supervisor should be evaluated prior to the start of any new activity.

- A pre-work onsite safety inspection has occurred
- Identified hazards have been identified and marked where necessary
- A checking procedure for all workers has been established especially for employees working alone
- A medical plan for the site has been established
- A weather plan has been established
- Field sanitation has been provided for where appropriate

Site Planning and Implementation

Supervisors are responsible for the following regulations in the case of all activities whose duration is longer than one day are subject to the following:

Onsite Surveys

Before the start of any activities an onsite safety survey must be conducted. **OR-OSHA (437-007-0200)**. The purpose of the survey is to identify any safety hazards that may be present on the site. In addition, the employer is required to conduct a pre-work safety meeting with all employees working on the site to discuss the site conditions and identified hazards as well as the medical evacuation procedures for that site.

NOTE:

This meeting must be documented and may be used to satisfy the requirement for monthly safety meetings (**OR-OSHA 437-007-0130(4)**).

Prior to the start of any activities, danger trees or snags in the work area must be evaluated by a competent person. If any are deemed as hazards, they must be felled or at a minimum the work must be arranged to minimize danger to workers.

The employer is responsible for arranging forest activities so that the actions of one worker do not create a hazard for any other workers on the site.

Hazard Identification

Supervisors are responsible for identifying any worksite hazards and insuring they are marked appropriately (**OR-OSHA 437-007-0205**). Hazards are to be marked with hazard identification ribbon that must be bright orange, at least 1 1/2 inches wide, and marked in black with “skull and crossbones” and/or the word “Danger.

NOTE:

The employer must notify employees of existing marked hazards in their work area and instruct all employees in the recognition and use of hazard identification ribbon. This ribbon must not be used for any other purpose than identifying hazards and must be removed when the hazard is abated.

Checking Systems

Supervisors are responsible for implementing a checking system to account for all employees at the end of each work shift. Employees must be knowledgeable about the checking system (**OR-OSHA 437-007-0210**).

NOTE:

In the case of employees working alone, the employer is required to implement a system to check on the well being of those workers as provided in the section on ***working alone*** (**OR-OSHA 437-007-0215(3)**).

The checking system must include the time interval between checks and the procedures to be followed if the employee cannot be contacted, including provisions for emergency medical care and treatment.

- A specific person must be assigned for contacting the lone employee and verifying when contacts were made.
- The time intervals for checking must be understood and agreed to by all parties.

- Intervals should reflect the hazardous nature of the work and the methods available for checking.
- The system for checking an employee's well-being must be reviewed at least annually

Working Alone

Workers are not prohibited from working alone when performing certain jobs which by their nature may be single employee assignments, provided the employer complies with the requirements for Checking Systems and Medical Services and First Aid (**OR-OSHA 437-007-0215 (3)**).

NOTE: (OR-OSHA 437-007-0215 Sections 1, 2, and 4).

The employer must not assign workers to a task or location so isolated as to be without visual, audible, or radio contact with another person who can summon or provide aid in an emergency.

When the job tasks include fire, suppression, prescribed fire, tree climbing, power chain saw operation, yarding, loading or a combination of these duties a minimum crew of two employees who must work as a team and must be in visual or natural unassisted voice communication with one another. In addition, when the job tasks include moving heavy parts or there is a probability of something heavy falling on a worker, there must be another person in the area who can render immediate assistance or emergency care.

Medical Services and First Aid

Supervisors are responsible for developing and implementing an emergency medical plan to ensure emergency medical service to employees with major illnesses and injuries (**OR-OSHA 437-007-0220**).

All employees must be knowledgeable concerning the emergency care and emergency medical treatment plan (**Section 2**).

All personnel employed in forest activities must be trained in first aid and CPR as follows (Section 3):

- (a) In a language they understand.
- (b) At least every 2 years or as required by a nationally recognized first aid training provider.
- (c) All supervisors must be first aid and CPR trained prior to their initial assignment.
- (d) All new employees, other than supervisors, that are not first aid and CPR trained prior to their initial assignment must receive a first aid and CPR briefing.
- (e) All new employees must receive first aid and CPR training within 6 months of being hired.
- (f) For the initial start-up of an operation where new employees are assigned, at least one out of every five crew members must be first aid and CPR trained before work starts.

NOTE: (OR-OSHA 437-007-0215 Section 4).

Each worksite must have at least one serviceable and operable two-way radio, phone or radio/phone combination available to reach ambulance service. Citizens' band radios are permitted only as a secondary means of communication. In the event of a communication "dead area" the crew must have a mobile communication unit or advance plans to relay emergency calls through another site.

NOTE: (OR-OSHA 437-007-0215 Section 6).

At worksites of more than one day duration, the employer must have available near the worksite communication device(s):

- Written land directions to the worksite.
- The worksite location by Township, Range and Section.

NOTE: (OR-OSHA 437-007-0215 Section 7).

At work sites of more than one days duration When air evacuation is available, the employer must have available, near the worksite communication device(s), the:

- Name and phone number of the air evacuation service.
- Worksite location by latitude and longitude or township, range and section as required by the air service.

First Aid and Transportation

The employer must assure that transportation is always available to a point where an ambulance can be met, or the nearest suitable medical facility (**OR-OSHA 437-007-0215 Section 8**).

NOTE: (**OR-OSHA 437-007-0215 Section 9**).

Vehicles used for the transportation of personnel must carry a suitable first aid kit that is easily located. In addition to the vehicle first aid kit, additional first aid kits must be available at the job site. First aid kits must be suitably equipped for the job.

The instrument room carries these and they are available for checkout.

First aid supplies must be stored in adequate containers, clearly marked "First Aid", and regularly inspected and replenished as needed. The container must not be locked but may be sealed. All employees must be informed of the location of first aid supplies.

Working Near Unstable Objects and Danger Trees

Supervisors are responsible for conducting a general inspection of the worksite to identify trees, logs, rootwads, rocks, chunks or other objects that may roll, slide or fall towards personnel. If any object is likely to move during work activity, it must be removed, stabilized, or the work activities modified so that the unstable objects are no longer a hazard. (**OR-OSHA 437-007-0225**).

NOTE:

Consideration must be given to rain, snow, other weather conditions, or working below felled and bucked timber that may increase the likelihood that objects may roll, slide or fall.

Working Conditions

Supervisors are required to have a competent person must determine if work activities can be safely conducted during inclement weather conditions or darkness. When weather conditions or darkness pose a hazard to workers, the activity must be discontinued until the work is arranged to mitigate the hazard.

NOTE:

This rule does not prohibit work activities at night, but it requires an assessment of conditions so work can be done safely.

NOTE:

Additional OR-OSHA regulations concerning Night Logging, Field Sanitation Requirements for Reforestation, and Working Around Power Lines are in the OR-OSHA Rules and Regulations at the end of this section.

Field Location Information

The following information should be recorded to assist emergency or search crews to reach the work site.

Legal Description

Section _____

Township _____

Range _____

County _____

Emergency Contacts Include the nearest medical facility

Name _____

Phone _____

Name _____

Phone _____

Medical Facility _____

Phone _____

College of Forestry 430: Tools, Fire Extinguishers, and Explosives

Safety Policy & Procedure Manual
Section 400: Forest Field Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is a) To ensure that all persons involved in forest field activities are properly trained in the use of hand and portable tools, chain saws, fire extinguishers, and explosives used in any forest activities.

Background Information

The use of hand and portable tools, chain saws, fire extinguishers, and explosives used in any forest activities may be subject to the rules and regulations regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 7, subdivision C (437-007-0400). The section on explosives has been deleted from this section. Employees engaged in any work activity that includes the use of explosives should follow the OR-OSHA directives with regard to the use and regulations of explosives (OR-OSHA 437-007-0415).

Applicability

All academic, research, students, and visitors in the College of Forestry

Procedure

The following checklist for supervisor should be evaluated prior to the start of any new activity.

- All tools have been inspected for safe condition
- All wooden handles have been inspected
- All tools have been stored in vehicles properly
- All employees using chain saws have been through a training course
- Required fire extinguishers are available and have been inspected

Hand and Portable Power-Driven Tools

Supervisors are responsible for the safe condition of hand and portable power tools used in forest activities regardless of tool ownership. The supervisor must insure that all safety devices and controls must be in place and function properly. In addition, the supervisor must require all personnel to:

1. Inspect each tool before use to assure its safe condition
2. Report any unsafe tool condition
3. Remove or repair tools if the condition affects the safe operation

NOTE:

If a slick or slippery axe or hammer handle cannot be firmly gripped, the tool must not be used.

All tools must be appropriate for their use and used in a safe manner.

Wooden handles must be sound, straight-grained and tight-fitting.

Heads of shock or impact-driven and driving tools must be dressed or ground to remove any mushrooming.

When the heads of shock or impact-driven tools show a tendency to chip, they must be removed from service.

Cutting edges of tools must be sharp and properly shaped.

When tools are not being used, they must be stored in a location where they will not create a hazard.

Racks, boxes, holsters, barriers or equivalent means must be provided and used so the passengers and/or driver will not be endangered by tools, equipment or materials being transported, loaded or removed.

Chain Saws

The College of Forestry provides training in the safe use of chain saws. If you or your employees have not received this or equivalent formal training in the use of chain saws, you should not use them. Chain saw training can be arranged through the College Safety committee.

Operation of chain saws is regulated through OR-OSHA 437-007-0405

All chain saws must be inspected prior to use for cracked handles, loose bars, or other defective parts.

Fueling for chain saws must be away from open flames and never with the engine running.

Chain saws must have an operable chain brake and an automatic throttle.

Chain saws must always be started on the ground or some position with firm footing.

Never start a chain saw in the air.

Chain Saw Use

You should never use a saw:

- To cut directly overhead in a manner that would cause limbs, chunks of bark or pieces of wood to fall on the operator.
- At a distance that would require them to relinquish a safe grip on the saw.
- In a position or at a distance that could cause you to become off balance, or have insecure footing.

When carrying a chain saw beyond a short distance, the engine should be off while walking and the chain brake engaged.

Fire Extinguishers

Fire extinguishers, where required are regulated through OR-OSHA 437-007-0410.

Fire extinguishers in use must be fully charged and maintained in operable condition. They must be visually inspected monthly in addition to having an annual maintenance check. The annual maintenance check date must be recorded and this record must be retained for one year.

Explosives and Blasting Agents

(1) The storage, transportation, handling, and use of explosives and blasting agents must be in accordance with OAR Chapter 437, Division 3, Subdivision U, Blasting and The Use of Explosives.

(2) Explosives and blasting agents must be handled only by qualified, designated personnel.

(3) Explosives and blasting agents must not be transported in:

(a) The driver's compartment.

(b) Any passenger-occupied area of a machine or vehicle.

(4) Explosives must not be hauled on any vehicle while it is engaged in transporting workers.

EXCEPTION: This rule does not prohibit the driver and one qualified person from riding in a vehicle in which explosives are being hauled.

College of Forestry 440: Cutting Trees, Pre-commercial Thinning, and Slash

Safety Policy & Procedure Manual
Section 400: Forest Field Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to ensure that all persons involved in forest field activities that involve cutting or felling of commercial trees, pre-commercial thinning, or cutting brush and slash are properly trained in the field procedures for these activities.

Background Information

Forest activities that require the felling of commercial-sized trees, pre-commercial thinning and slash cutting regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 7, subdivision I (437-007-0800).

Applicability

All academic, research, students, and visitors in the College of Forestry

POLICY

The policy of the College of Forestry is that no personnel under any circumstances are to fell any tree greater than 6" DBH unless they have been through a recognized training course and have been certified to fell trees. Projects that require felling trees greater than 6" DBH are to contact the College Safety Committee for available personnel who are trained and certified to fell trees. Personnel trained and certified to fell trees are to follow all rules in the section on *Logging Safety* in this manual.

Procedure

The following regulations are for those activities involving trees less than 6" DBH, bucking downed logs, or cutting slash.

Any worker falling a tree or bucking a log must be located so their work will not endanger others.

Personnel must not approach within two tree lengths of a tree being felled without receiving a signal from the person falling the tree that it is safe to approach.

The minimum distance between any worker(s) manually falling trees and any other personnel must be twice the height of the trees being felled.

EXCEPTION: This does not apply to a team of two or more working on the same tree.

NOTE:

All College personnel using chain saws or other tools are to be properly trained. Employees who are inexperienced in log bucking are to be directly supervised by a qualified person during any bucking activities. Supervisors are not to ask employees to use chainsaws for bucking logs if they are uncomfortable or feel unsafe in the activity.

Bucking Logs

Activities involving bucking logs (includes cutting disks off of downed logs) are regulated through OR-OSHA 437-007-0820.

When a worker is bucking, they must give a timely warning to others within range of any log that may move after being cut off. If unsure you should not proceed. In the case of windfalls only qualified persons are to buck windfalls.

Before workers start bucking, they must always examine the log to determine which way logs will roll, drop or swing and notify all others in the area before proceeding.

NOTE:

Never buck a log on the downhill side:

Before a worker starts to buck a tree or log they must:

- (a)** Clear away brush and other material which might interfere with a quick escape.
- (b)** Establish firm footing.

Logs that are not completely bucked through must be conspicuously marked with hazard identification ribbon as required by OR-OSHA 437-007-0205, sections (1) through (5).

Two or more persons must not buck the same tree or log at the same time.

The employer must provide and require employees to use applicable personal protection equipment where required:

College of Forestry 450: Forest Driving

Safety Policy & Procedure Manual
Section 400: Forest Field Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is a) To ensure that all persons involved in forest field activities are properly trained in safe driving practices on forest roads.

Background Information

Driving on forest roads presents a host of safety issues not normally found on paved public roads. Most forest roads in both the national forests and industrial lands are single lane roads, with occasional turnouts and surfaced with rock and gravel. These roads were all originally designed and constructed to be logging roads and are commonly steeper and windier than public highways, and probably most important, they were designed and constructed to be single lane roads. In addition, most roads are gated with special vandal-resistance gates that have their own hazards associated with them.

Applicability

All academic, research, students, and visitors in the College of Forestry

Procedure

General Driving Practices

When driving on forest roads, you will normally see only one set of wheel tracks in the road. This means that if someone is coming towards you, they are driving in the same set of tracks! There are some practices that make this situation safer.

Drive at a speed where you can stop in $\frac{1}{2}$ the distance that you can see down the road. That way, when you meet someone who just came out from around a blind corner, you can each stop before hitting the other vehicle. For most forest roads under good conditions the maximum safe speed is 15-20 MPH.

Stay to the right side of the road around blind corners. Usually the sharp blind corners have wide spots for the outside lane to use. Make it your regular practice to swing wide around these corners in case someone is coming the other way. These roads were built for limited traffic volumes. Today there are far more vehicles driving around in remote parts of the forest.

Pay attention to the road as far ahead as you can. Often you can see part of the road where you will be next, even when you can't see around the next corner. Sometimes it is even in sight out your side window. Notice if there are any vehicles there that you will be meeting soon. A good practice on dry days is to look ahead for dust indicating another vehicle coming.

A number of other safe practices include:

- When driving on forest roads you should always have headlights on to help others see your vehicle approaching.
- All passengers as well as the driver must wear seat belts whenever the vehicle is moving. This is also state law.
- Every vehicle should have a first aid kit and all persons in the vehicle should know where the first aid kit is located.
- On forest roads, trucks, lowboys, graders, and emergency vehicles have the right-of-way. Whenever you need to move over to the right you should remember to stay out of the ditches and be especially careful of soft shoulders which are typical on forest roads.

Forest Vehicles

Know your vehicle well. In many cases you will be driving a vehicle that is different from your personal vehicle. It may be larger in size and/or engine power and likely have 4 wheel-drive. If it does have 4 wheel-drive, make sure you know how to engage and disengage it before you need to use it. Some vehicles are automatic and require nothing more than a simple button push from the cab while others are fully manual and require you to manually lock the wheel hubs from the outside. If you are alone and need to do this, turn off the engine and put the vehicle in park before getting out to lock the hubs.

Public Use of Forest Roads

On state and federal lands in particular, the roads and forests are used by the public sometimes in large numbers. A good practice when encountering others hiking or biking on the roads is to assume that they may have dogs with them. You should be alert to the possibility that a pet dog may be nearby in the brush or across the road running loose. When encountering bicyclists remember they do not have as many options for moving over on loose gravel. Be courteous as well as safe and slow down. Horseback riders pose an additional safety concern. Horses by nature are prone to panic at the slightest occurrence. This poses a danger for the rider and it is best to stop and allow the horse and rider to pass unless the rider motions for you to pass.

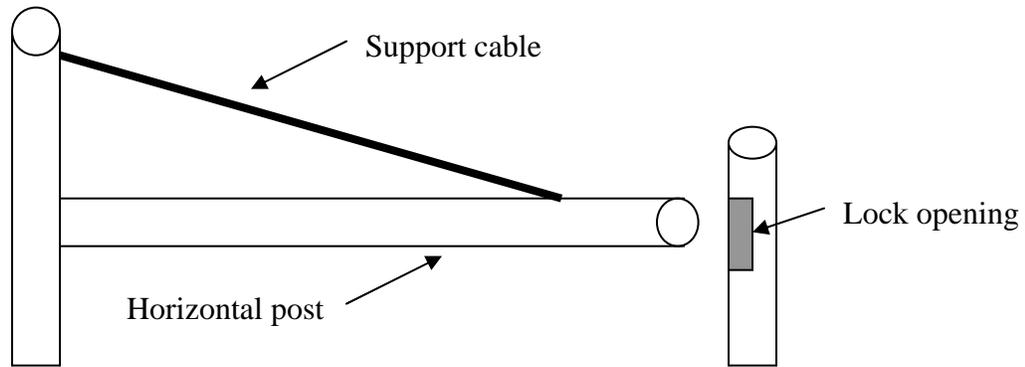
Active Forest Operations

If you are visiting or come upon an active forest operation you should always consider the following.

- Stay well away (300 feet or more) from equipment until the operator acknowledges your presence, stops the machine, and motions for you to proceed forward.
- If you come across steel cables on the ground across the road do not drive over them until you have been instructed to. Many of these are “live” lines and could move at any moment.
- Be aware that the road surface around active operations may be quite soft and disturbed. Drive carefully around these.

Forest Gates

Forest roads are generally controlled by steel post gates similar to the one shown. The gates have a locking mechanism inside the opening in the small post and in some cases will have multiple locks in a configuration that allows the gate to be opened by unlocking any one of the locks present. It is important that before opening one of these you carefully note the configuration and are able to replace it the same way. Failure to do this could result in becoming locked behind the gate.



The lock opening in the small post is a favorite place for wasps and hornets to build nests. In addition, vandals have been known to place broken glass and other objects inside these openings. ***NEVER place your hands inside to open a lock without first looking inside.***

The cable that attaches the horizontal post is a support cable. You should always pay attention to its condition. Vandals have been known to cut or damage this support cable. ***NEVER pull a gate open toward you. Always push it away.*** If the horizontal post were to fall off the hinge it will land on the ground and not on you.

When you are on forest roads remember that you are generally on someone else's lands. The general rule is to leave gates as you find them. If gates are open when you arrive, leave them open. If they are locked you should lock them after you pass through. A good habit to get into is to leave a note in the lock box indicating to others that you are somewhere on the roads inside the gates. A better option is to place a metal tag out on the gate lock that has your name and phone number on it. This indicates to others that you are still inside the area.

College of Forestry 460: Remote Site safety

Safety Policy & Procedure Manual
Section 400: Forest Field Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

Content to be provided.

Background Information

Content to be provided.

Applicability

Content to be provided.

Procedure

Content to be Provided

Content to be provided.

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College of Forestry 500: Office and General Safety

Safety Policy & Procedure Manual
Section 500: Office and General Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide information to help protect employees and students from the health hazards presented by office and general building environments.

Background Information

OR-OSHA does not currently provide specific guidelines or requirements for administrative and classroom environments. However, the College is intent on providing a safe and orderly working and learning place for all employees and students. To this end, each employee has an obligation to their co-workers, to students and to themselves to be aware of potential hazards, and then to prevent, remove or report hazards and unsafe conditions.

General

- Safety is the highest priority during all laboratory activities
- Safety is an attitude
- Most accidents are the result of complacency and quite often happen to experienced workers
- Safety is a team effort as well as an individual effort

The following hazards and remedies may seem like common sense, but a moment's distraction or leaving a potential problem for someone else to resolve can quickly result in an accident and injury.

- Pathways, stairwells, and doors must be clear of obstacles. Unexpected obstacles become trip hazards, and could impede emergency exiting of the building.
 - Pick-up items left on the floor.
 - Store boxes and materials in proper shelving/closets/storerooms.
 - Place items for custodial or surplus removal out of the way.
 - Report damaged flooring or carpeting.
 - Clean up beverage spills immediately.
 - Know your emergency exit routes; post plan near doorways.
- Electrical and wiring problems can cause shocks, fires, and trips.
 - Use power strips for multiple connections, but do not overload electrical capacity.
 - Do not use extension cords for permanent power.
 - Secure wires and cords away from walkways.
 - Use only UL listed electrical equipment.
 - Maintain the grounding pin on all plugs.
 - Match plugs and outlets – College buildings have a variety of voltage configurations in use.
- Portable electrical equipment can cause fires, burns, and other injuries.
 - Space heaters are not recommended, but if used they must contain tip-over protection, be utilized away from flammable materials, and have adequate amperage at the outlet.
 - Fans must have proper cage guards around blades, and should be properly balanced on stands or the floor.
 - Coffee makers and toasters should only be used in kitchen type areas and must have appropriate safety switches for the heating elements.

- Furniture is to be used and positioned in ways that avoid trips, falls, strains and pinches.
 - o Close drawers and cabinet doors when not in use.
 - o Don't open more than one drawer at a time on file cabinets.
 - o Use handles when opening and closing drawers.
 - o Don't place heavy equipment/boxes on unstable desks, chairs or tables.
 - o Desk, chair and equipment should be ergonomically compatible with the user.

- Handling heavy boxes and equipment can cause back injuries and falls.
 - o Lift by bending and using the legs, not bending over with the back.
 - o Avoid carrying items that block your vision.
 - o Do not try picking up more than you can safely handle.
 - o Use stepladders or stepstools for overhead reaching.

- Office supplies, copier toner, cleaners or glues may contain chemicals that are irritants/poisons if swallowed, breathed or spilled on skin.
 - o Read labels or material safety data sheets for items being used in your office and be aware of any appropriate safety precautions or response procedures for accidental exposure.
 - o Follow the proper instructions for installing toner cartridges in copiers, and properly dispose of waste cartridges.

- Sharp instruments can cause cuts or puncture wounds.
 - o Store paper cutters with blades in down position.
 - o Only use utility knives or razors with blade guards.
 - o Remove staples with a staple remover.
 - o Put away scissors after use and carry with blades aimed downward.

- Spilled blood and certain bodily fluids are automatically considered infectious and require proper clean-up and handling. Vomit is not considered infectious and requires no special handling. In general, spilled bodily fluids means paramedics will likely be on site, and the same applies for large amounts of blood.
 - o Employees should not directly touch the blood of others.
 - o Minor (small scratch or cut) amounts of blood and absorbent material can be disposed of by the bleeder in a toilet, sink or plastic waste bag.
 - o Blood on hard surfaces must be sanitized with bleach or other EPA approved disinfectant. Since neither these materials nor disposable gloves are generally available, the custodial team should be contacted at 737-2157.

College of Forestry 600: Workshops and Shop Tools

Safety Policy & Procedure Manual
Section 600: Workshops and Shop Tools
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide information to help protect employees and students from the health hazards presented by workshops and both power and hand tools in the shop environment.

Background Information

Workers performing in shop conditions using power and hand tools are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2. Most all activities in workshops will be covered under sub-sections N, O, P, and Q.

General

1. **Eye protection** shall be worn at all times when operating power equipment and tools. Safety glasses should have the Z87.1 logo on them to assure they are industrial quality.
2. **Report all equipment defects** immediately. Do not use unsafe equipment until it is repaired.
3. When **disconnecting equipment**, pull on the plug, not the cord. Whenever the use of electrical extension cords is required, keep them clean, dry, and free from kinks. Protect them from oil, hot or sharp surfaces, and chemicals. Exterior cords should not be extended across aisles, through water, doors, or into areas where they are apt to be damaged.
4. **Use tools properly.** Always use proper-sized tools and equipment for the job. Use each tool only for the job for which it was intended. Forcing a small tool to do the job of a large one may result in injury or tool damage. Never use a screwdriver to see if electrical circuits are hot. Never use a machinist's hammer in place of a carpenter's hammer. Do not strike a hardened steel surface, such as an anvil, with a steel hammer because a small piece of steel may break off and injure someone. Be sure wrenches fit properly. Never use pliers in place of a wrench. Never strike wrenches with hammers. Pull on wrenches, do not push. When sawing secure the material in the saw vise.
5. **Do not leave power tools unattended while in operation.**
6. Portable electric circular and band saws shall not be used unless the **guard mechanism** is functioning properly.
7. Oversized drill bits shall not be ground to fit smaller electric drills.
8. **Wear proper clothing.** This varies depending on the type of hand tool you are working with. Work clothing should not be loose, baggy, or highly flammable. To protect against burns, wear clothing such as coveralls, high-top shoes, leather aprons and leather gloves. Remove all paper from pockets and wear cuffless pants. When working with heavy metals wear hard-toed shoes with non-skid soles. Avoid wearing synthetic clothing because it has a low flashpoint, which can result in severe burns. Do not wear jewelry. It can get caught in moving parts.
9. **Protect your hair, scalp, and head.** Pull back long hair in a band or a cap to keep it from getting caught in tools. Be extremely careful with long hair when using a drill or drill press. When handling carpentry materials wear a hard hat or bump cap to protect your head.
10. **Watch your fingers.** Take special care when hammering so that you strike the object, not your fingers.
11. **Keep your mind on your work.** Avoid horseplay and loud talk. Loud talking as well as pushing, running, and scuffling while working with hand tools can cause serious accidents. Be alert and work defensively.
12. **Keep work area and tools clean.** Dirty, greasy, and oily tools and floors can cause accidents. Clean and put away all unneeded tools and materials. Clean up spills and scraps from the floor and equipment. Keep paths to exits clear. If conditions are dusty, use a respirator.

13. **Keep cutting-edge tools sharp.** Dull cutting-edge tools are dangerous, as they require excessive pressure and hammering to make them cut. When cutting always cut away from the body. Before using any cutting tool, remove nails or other objects that might destroy the tool's cutting edge.
14. **Carry and store tools properly.** All sharp-edge tools and chisels should be carried with the cutting edge down. Never carry sharp tools in a pocket. Store all sharp-edge cutting tools with the sharp edges down.
15. **Inspect tools before using.** Avoid using damaged tools. Tools that appear to be damaged or have broken handles should be marked unsafe. Do not use them until they have been repaired.
16. **Grip tools firmly.** Hold hand tools securely so that they do not slip and hit someone. Do not wear gloves--they are bulky and make gripping tools difficult.

College of Forestry 610: Power Tools

Safety Policy & Procedure Manual
Section 600: Workshops and Shop Tools
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide information on proper procedures for the use of power tools and to help protect employees and students from the health hazards presented by power tools in the shop environment.

Background Information

Workers performing in shop conditions using power tools are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2. Most all activities in workshops using power machinery will be covered under sub-section O, Machinery and Machine Guarding.

Safety rules for each piece of equipment being used must be reviewed with the employee by the immediate supervisor or someone designated by the immediate supervisor to provide such training.

Every area that uses hand or power tools shall have a safety plan that includes a section on power and hand tools safety and an acknowledgement that each person using such tools has been adequately trained prior to use.

Procedure

Woodworking Machines

1. Workers shall make sure that guards or other protective devices for woodworking machines are in place and properly adjusted before starting work. Workers shall not operate woodworking machines with cracked or defective blades or cutters.
2. Workers shall not install blades or cutters unless they are designed to run at the speed of the machine on which they are to be mounted.
3. Operators of woodworking machines SHALL NOT WEAR GLOVES unless the point of operation is completely guarded and contact with the blade, or moving parts, is not possible.
4. A push stick or block shall be used for any operation which requires the fingers to be within 2 inches of the blade. Dust or wood scrap should not be removed from the danger area by hand. Always use a brush.
5. Saw operators should not stand in line with material to be cut.
6. The operator's position should be kept clear of sawdust, blocks, etc., at all times.
7. Power saws shall not be stopped by thrusting a block of wood against the cutting edge or side of the blade.
8. Kickbacks on table saws are extremely hazardous. The following conditions may lead to injury:
 - a. Improper alignment of the rip fence.
 - b. Failure to use a spreader.
 - c. Crosscutting narrow stock while using the rip fence as a stop.
 - d. Attempting to rip or crosscut stock that is too large to control.
 - e. Cutting warped, wet or twisted grain lumber that binds the blade.
 - f. Failure to use anti-kickback dogs.
 - g. Attempting to rip stock that does not have at least one straight edge for use against the fence.
 - h. Failure to lock the fence securely in place.
 - i. Using a dull or improperly set blade.
 - j. Using a blade that is out of round, or improperly balanced.

Grinding Machines

1. Grinding wheels and wire brushes shall not be operated in excess of the speed recommended by the manufacturer. Check the recommended rpm against that of the shaft or motor before mounting a new wheel. Check all grinding wheels for chips and cracks before use.
2. Face shields, safety glasses, or chipper's goggles shall be worn at all times when grinding or using a wire brush.

3. Gloves shall not be worn while grinding, nor will cloth be used to hold work pieces.
4. Do not operate grinding machines unless metal wheel hoods are in place. Do not apply work too quickly to a cold wheel.
5. Tool rests shall be secured at all times and adjusted to within 1/8 inch of the wheel. Top wheel guards shall be adjusted to within 1/8 inch of the top of the wheel.
6. Disc grinder tables shall be adjusted to within 1/8 inch of the disc.
7. When a grinder is first turned on, do not stand in line with the grinding wheel. If any wobble or vibration is noticed, the machine must be turned off and repaired.
8. Except where specifically designed, one should not grind on the sides of the grinding wheel.
9. Do not grind wood, aluminum, copper, or other soft materials on wheels designed for steel and iron.

Metal Lathes

1. Chip guards should be used in operations that could endanger the operator or others nearby.
2. Chip breakers shall be used whenever practical. Tool ways must be kept clear and clean.
3. Tools should not be set or adjusted while the lathe is in operation. Tools and chucks must be checked for defects before use.
4. Brushes or chip pullers shall be used for removing chips. Operators shall not use their hands, or compressed air in excess of 30 psi, to remove chips.
5. Heavy chucks, face plates, or other heavy equipment should never be handled without proper lifting equipment.
6. Tools or other equipment shall not be stored on top of the head stock.
7. Rotating stock extending into aisles should be marked with a warning device (yellow tape, rag, tag) or contained by physical barrier.
8. Magnesium or similar metals shall not be machined unless appropriate fire protection is provided.
9. Do not stop lathe with tool bit in the cut, or with feed clutch engaged. Hand pressure should not be used to stop free spinning chucks.

Metal Cutting Band Saws

1. Before starting an operation, be sure the machine is set for the recommended speed, feed, and blade type for the material to be cut.
2. A complete face shield shall be worn when blades are electrically welded on the machine.

3. The portion of the blade between the upper wheel and the saw table should be completely enclosed except for the point at which the cut is made.
4. Inspect and adjust the table and blade guide to be sure that small parts cannot jam between the table and moving blade.
5. The length of the exposed blade should not be more than 3/8 inch greater than the thickness of the stock being cut.
6. Use pliers, tongs, jigs, or other hold-down devices when sawing small parts that could jam between the blade and saw guide.
7. Warn personnel or install barriers during sawing or welding operations that throw hot sparks onto nearby work stations.

Metal Planers, Shapers, drilling and Boring Machines

1. Always use brushes or chip pullers to clean the work area. Operators shall not use their hands or compressed air in excess of 30 psi to remove chips.
2. Always clamp the work securely before starting the cut. Do not measure the job while the machine is in operation.
3. Always remove the stroke-change screw handle before starting the shaper.
4. Do not place heavy parts or tools on the machine without the use of approved lifting equipment.
5. Only soft metal or plastic hammers should be used when setting up jobs on a drill press or boring mill.
6. Adjustable wrenches should not be used on the machine parts or equipment. Properly sized box or open-end wrenches should be used.
7. Do not operate drill presses with dull tools.
8. Never make adjustments on the chuck when the machine is in motion.
9. Boring mill operators should never attempt to make measurements near the tool, reach across the table, or adjust the work while the spindle is turning.
10. When deep holes are being drilled beyond the flutes of the drill, the drill should be withdrawn frequently to keep it free of chips.
11. Stop the machine before attempting to clear work that has been jammed.

Power Presses and Forming Equipment

1. Do not operate power punch presses without “point of operation guarding.” Do not remove or modify guards.
2. Power presses shall not be operated in the continuous tripping cycle unless the point of operation is guarded on all sides by approved barrier guards.
3. Safety tongs shall be used whenever it is necessary to reach into the point of operation of any machine.

Explosive Actuated Tools

1. Explosive actuated tool operators must be trained and certified for this work.
2. Always wear safety goggles to avoid the possibility of flying chips, etc.
3. Never, under any conditions, attempt to discharge a stud or pin into free flight.
4. Use only the appropriate boosters, studs, and pins designed for the tool.
5. Never drive a stud or pin into extremely hard surfaces such as glazed tile, glazed brick, glass, tool steel, etc. Such surfaces may cause a ricochet.
6. Do not drive fasteners closer than 3 inches from the edge of concrete, brick, or other like materials.
7. Do not drive fasteners closer than 1/2 inch from the edge of steel.
8. In the event of misfire the tool is to be held in operating position for a minimum of 30 seconds before disassembly.

College of Forestry 620: Hand Tools

Safety Policy & Procedure Manual
Section 600: Workshops and Shop Tools
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide information on proper procedures for the use of hand tools and to help protect employees and students from the health hazards presented by hand tools in the shop environment.

Background Information

Workers performing in shop conditions using hand tools are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 2. Most all activities in workshops using hand tools will be covered under sub-section P, Hand and Portable Power Tools and Other Hand-held Equipment.

Safety rules for each piece of equipment being used must be reviewed with the employee by the immediate supervisor or someone designated by the immediate supervisor to provide such training.

Every area that uses hand or power tools shall have a safety plan that includes a section on power and hand tools safety and an acknowledgement that each person using such tools has been adequately trained prior to use.

General

1. Defective tools shall be removed from service
2. When not in use, tools shall be placed where they will not create a hazard.
3. Flexible cords with damaged insulation or defective parts shall not be used
4. Handles of all tools shall be smooth, without sharp edges or splinters, and shall be firmly attached to the tool. Wooden handles of tools shall be of firm straight grained stock.
5. The heads of all shock tools (hammers, sledges, cold chisels) shall be dressed or ground as they begin to mushroom or crack. When such tools show a tendency to chip they shall be immediately removed from service.
6. The cutting edges of tools shall be maintained in a uniformly sharp condition to eliminate the additional hazard resulting from dull edges.
7. Heavy leather holsters, guards, or equivalent protection shall be used for sharp-edged or sharp-pointed tools carried on the worker's person.
8. Workers who use sharp-edged cutting tools shall use appropriate protective equipment such as gloves, aprons, and leg guards.
9. Hand tools used in explosive or flammable atmospheres shall be of the spark arresting type.

College of Forestry 630: Chemical Handling

Safety Policy & Procedure Manual
Section 600: Workshops and Shop Tools
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide information on proper procedures for the use and handling of chemicals in the workshop environment.

Background Information

Workers performing in shop conditions where hazardous chemicals are stored or in use should refer to the sections of the safety manual on chemical safety. In addition, these areas must have a safety plan in place that includes appropriate knowledge and training in the use of these chemicals. All chemicals shall have appropriate MSDS sheets readily available and posted in a conspicuous location for reference by all workers.

General

1. Do not wash hands in cleaning solvents. Absorption of these liquids through the skin can cause serious illness.
2. Do not handle chemicals of any type unless you are aware of the potential skin and inhalation hazards. Consult the appropriate MSDS.
3. Wear appropriate skin, face, eye, and hand protection when moving or handling bulk chemicals.
4. Always wear chemical resistant gloves, aprons, and complete eye protection when handling corrosive chemicals. If chemicals contact skin, wash with large amounts of water immediately.
5. Do not open chemical containers that have been stored in the sun unless proper care is taken. Many chemicals will build up pressure in the container when exposed to heat.
6. Clean up small chemical spills immediately if you can do it safely; otherwise, notify supervisor.

College of Forestry 800: Student Logging Crew Safety

Safety Policy & Procedure Manual
Section 800: Student Logging Crew Safety
Effective: 01 January 2007
Revised: August 2014

PURPOSE

The purpose of this section is to provide safety information and work procedures for those employees and students taking part in the College of Forestry Student Logging Crew Program.

Background Information

Workers performing in forest field conditions are regulated under Oregon Administrative Rules Oregon Occupational Safety and Health Division, Division 7. College of Forestry Policy is that all student workers and volunteers shall comply with these procedures and rules. Section 810 contains the supplemental rules and procedures adopted by the Associated Oregon Loggers (2003).

437-007-0001 Authority of Rules. These rules are promulgated under the Director's authority contained in ORS 654.025(2) and ORS 656.726(4).

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0002 Purpose of Rules. The purpose of the rules contained in this Division is to prescribe minimum safety and health requirements for all employees employed in forest activities work.

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.