NEES@UCDAVIS
Center for Geotechnical Modeling

NEES@UC Davis

Safety Handbook

UCDAVIS
UNIVERSITY OF CALIFORNIA

Revision History

Revision #	Date	Description
0	4/14/2009	Initial version
1	10/13/2010	Update links to web pages and update personnel
2	09/15/2012	Update links to web pages and update personnel

University of California Policy on Management of Health, Safety and the Environment - Effective October 28, 2005

The University of California is committed to achieving excellence in providing a healthy and safe working environment, and to supporting environmentally sound practices in the conduct of University activities. It is University policy to comply with all applicable health, safety, and environmental protection laws, regulations and requirements.

To meet this standard of excellence, the University implements management initiatives and best practices to systematically integrate health, safety, and environmental considerations and sustainable use of natural resources into all activities. All University activities are to be conducted in a manner that ensures the protection of students, faculty, staff, visitors, the public, property, and the environment.

The University's goal is to prevent all workplace injuries and illnesses, environmental incidents, and property losses or damage. Achieving this goal is the responsibility of every member of the University community. Supervisors have particular responsibility for the activities of those people who report to them.

UC Davis Policy for the UC Davis Safety Management Program

It is the policy of UC Davis, through its Safety Management Program, to provide a safe workplace and to minimize potential hazards to employees, students, and visitors.

The Safety Management Program, required by Cal/OSHA, is intended to set a standard for maintaining a safe workplace. It is the responsibility of every department head and supervisor to assure that appropriate information and training are provided to employees. Likewise, it is the responsibility of all employees to follow safe work practices and procedures as specified in written protocols and policies.

NEES@UC Davis Management Commitment Statement

Safety and health at NEES@UC Davis must be a part of every activity. Without question, safety is every employee's responsibility at all levels. The first rule of safety is that everyone is responsible to help maintain a safe working environment.

We will maintain a safety and health program conforming to the best practices of organizations of this type. To be successful, such a program must embody the proper attitudes toward injury and illness prevention on the part of department heads, principals, supervisors and employees. It also requires cooperation in all safety and health matters, not only between management and employees, but also between employees and their co-workers. Only through such a cooperative effort can an effective safety and health program be established and preserved.

The safety and health of every employee is our highest priority. Never do anything or ask anyone to do something that is hazardous. The only exception to this rule is when all individuals exposed to the hazard are fully aware of the hazard and are trained to take all necessary precautions. Management accepts responsibility for providing a safe working environment and employees are expected to take responsibility for performing work in accordance with safe standards and practices. Safety and health will only be achieved through teamwork. Everyone must join together in promoting safety and health and taking every reasonable measure to assure safe working conditions in the company.

09/15/2012

Dan Wilson
Associate Director, Operations Manager

09/15/2012

Ross Boulanger
Director

This Safety Handbook was developed for the training of:

Students, faculty, staff and visitors using the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) facility at the University of California at Davis (NEES@UC Davis, also known as the UC Davis Center for Geotechnical Modeling, CGM).

This handbook has been prepared by the University of California at Davis Center for Geotechnical Modeling in accordance with University Policy (UCD Policy & Procedure Manual Section 290-15: Safety Management Program) and California Code of Regulations Title 8, Section 3203 (8 CCR, Section 3203).

Note that prior to engaging in any activities involving NEES@UC Davis resources, UC Davis personnel must complete appropriate equipment-specific safety training in addition to reviewing this Safety Handbook. Visiting researchers must obtain an "appointment without salary" at UC Davis prior to commencement of work at our site. The "appointment without salary" is critical because it allows visiting researchers to be covered by university liability and necessary insurance. Other benefits include rights to establish a local email address and use of the extensive libraries.

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1 Introduction

The University of California at Davis requires all university personnel including faculty, staff, students and visitors to follow safe working procedures. The UC Davis Office of Environmental, Health and Safety (EH&S) is the department principally responsible for assisting in the implementation of University workplace health and safety principles and policies. EH&S responsibilities include:

- Accident Prevention
- Asbestos Management
- Biological Safety
- Education and Training
- Emergency Preparedness
- Environmental Health
- Fire and Life Safety
- Hazardous Materials Management
- Industrial Hygiene
- Occupational Safety
- Radiation Safety

All NEES@UC Davis personnel are required to comply with UC Davis EH&S policies and standards. In addition to the policies and regulations set forth by UC Davis EH&S, the NEES@UC Davis Safety Training Manual has been developed to ensure a safe and healthful work environment for each employee (including student and contract employees) and visitors while performing centrifuge experimental activities. The NEES@UC Davis Safety Training Manual is intended to establish a framework for identifying and mitigating workplace hazards, while addressing legal requirements for a formal, written Injury and Illness Prevention Program.

This document will make reference to UC Davis Policy and Procedure Manual (PPM) Chapter 290, *Health and Safety Services*, and Chapter 390, *Emergency Management and Campus Security*. This document will also make reference to UC Davis Personnel Policies for Staff Members (PPSM). The UC Davis PPM and the PPSM can be found at http://manuals.ucdavis.edu.

This document will also make reference to UCD EH&S SafetyNets, found at http://safetyservices.ucdavis.edu/safetynets/Safetynets-Master%20List/ and UCD Fire Department FireNets, found at http://safetyservices.ucdavis.edu/programs-and-services/fire-prevention/fire-nets/.

2 Responsibilities

UC Davis Policy and Procedure Manual Chapter 290 (Health and Safety Services) section 15 (Safety Management Program) outlines the procedures and responsibilities of the various groups in implementing the Safety Management Program across campus. The following sections describe the specific responsibilities in more detail for the NEES@UC Davis site.

2.1 NEES@UC Davis Operations Manager

The Operations Manager has the primary authority and responsibility to develop and ensure implementation of a safety plan to ensure the health and safety of faculty, staff, students, and visitors to the NEES@UC Davis Site. This is accomplished by performing the following tasks:

- Analyze work procedures to identify potential hazards and then implement measures to eliminate or control those hazards.
- Communicate work place hazards and safety policies to employees and visitors.
- Establish and enforce safe operating procedures for job tasks.
- Provide proper safety equipment and personal protective equipment to employees.
- Encourage prompt reporting of health and safety problems without fear of reprisal.
- Ensure that employees are trained in proper waste disposal procedures.
- Serve as a liaison with EH&S and other campus safety resources on issues the department cannot resolve
- Review self-audits conducted by a PI, supervisor, lab or shop manager, designated research student, designated staff member, or a safety officer using the NEES@UC Davis Safety Self-Audit Checklist on an annual basis to asses both compliance with, and effectiveness of the NEES@UC Davis Safety Plan.

In addition, the Site Operations Manager will have the responsibility to maintain and update an Injury and Illness Prevention Program (IIPP) for the facility.

2.2 Department of Civil and Environmental Engineering

Our home department (Civil & Environmental Engineering) Safety Committee meets at least quarterly. The committee interacts with committees at the college and campus levels to ensure our department is ready for various emergencies. The committee develops a safety plan by building, develops evacuation plans, coordinates emergency drills, and develops evacuation signage as appropriate.

There are several fairly independent groups within the department. Each group has a designated Safety Coordinator. Each Safety Coordinator is a member of the department Safety Committee.

2.3 NEES@UC Davis Safety Coordinator

The Safety Coordinator has specific responsibilities as described by UC Davis' department of Environmental Health & Safety (EH&S). The Safety Coordinator is the official point of contact for injuries and reporting, workers compensation issues, and staff concerns. They help keep the Materials Safety and Documentation Sheets (MSDS) file up to date and they keep all first aid kits full. The safety coordinator:

- Disseminates health and safety information to the unit.
- Ensure that Material Safety Data Sheets (MSDS) are present for chemicals used in the department.
- Coordinates Facility Inspection Audits, gathers data, and if applicable, transmits results to the department safety committee for review.
- Assists in the review of the effectiveness of unit's Safety Management Program.
- Acts as liaison between the department safety committee and staff, faculty, and students.
- Communicate work place hazards and safety policies to employees and visitors.
- Report work-related fires, accidents, injuries, near accidents, illnesses, property damage, and unusual occurrences to EH&S.
- Maintain copies of Safety meeting minutes and other safety-related records
- Ensure that the Safety Committee is aware of all accidents which have occurred, and all hazards which have been observed since the last meeting
- Monitor that operating procedures for job tasks follow established safe procedures.

2.4 All Students, Faculty, Staff, Visitors and Guests

Every employee, student, or other person authorized to perform NEES@UC Davis activities is responsible for complying with all applicable health and safety regulations, UC policies, and established work practices. This includes but is not limited to:

- Use common sense and good judgment at all times.
- Read and comply with all safety procedures.
- Inform your supervisor of workplace hazards.
- Attend established education and training sessions and comply with health and safety directions.
- Complete a Job Safety Analysis (Appendix B) for your position. Update the JSA annually.
- Ask your supervisor whenever you have a concern about an unknown or hazardous situation.
- Conduct only those activities that your supervisor has approved; use UC Davis facilities, equipment and tools only for the purpose for which they were designed.
- Follow safe operating procedures associated with your job tasks.
- Know emergency plans and procedures for your work area.
- Analyze work procedures to identify hazards; ensure measures are implemented to eliminate or control those hazards.
- Use appropriate personal protective equipment as determined by your supervisor.
- Report unsafe conditions and potential hazards to your supervisor without fear of reprisal. These might include malfunctioning equipment and work-related fires, accidents, incidents, injuries, illnesses, and property damage.
- Warn co-workers about defective equipment and other hazards.
- Ensure that environmental, health and safety obligations are carried out by everyone working in their operations.
- Participate in required inspection and monitoring programs.
- Consult Material Safety Sheets for the chemicals that you use.

- Ensure that proper hazardous waste disposal procedures are followed.
- All doors and gates should remain closed and locked after normal working hours. This is for your own safety as we are in a remote location.

As an employee, you are entitled to employment in as safe a workplace as is reasonably achievable. As an employee who is covered by Cal/OSHA, you also have the right to:

- Receive general training in safe work practices and specific training with regard to hazards unique to the job assignment.
- Be given training in potential health hazards of materials and chemicals to which you may be exposed.
- Refuse to perform work that would violate the Labor Code, or any occupational safety and health standard or order whereby such violation would create a real and apparent hazard to your health or safety.
- Observe any monitoring or measuring of harmful substances in the workplace.
- Know the potential hazards associated with your work and work area as well as the control measures being used to protect you from those hazards.
- Report potential hazards without fear of reprisal or punishment.

2.5 Office of Environmental Health and Safety

The Office of Environmental Health & Safety (EH&S) has responsibility to assist departments in implementing the UCD Safety Management Program and other health and safety programs. Assistance includes, but is not limited to, assessing hazards, conducting safety training, performing audits, developing generic safety documents, documenting safety training as required and investigating reports of unsafe conditions.

2.6 Corrective actions and Safety Rules enforcement

Unsafe conditions that cannot be immediately corrected by an employee, or his/her supervisor, should be reported to the Site Operations Manager or the Site Safety Coordinator.

The site manager and the safety coordinator will have the ongoing responsibility to assess compliance with applicable regulations and campus policies, to evaluate reports of unsafe conditions, and to coordinate any necessary corrective actions. Timely correction of workplace hazards will be tracked by the Site Operations Manager, which will receive and review reports of unsafe conditions, workplace inspection reports, and injury reports. Specifically, the Site Operations Manager will:

- Review the results of periodic, scheduled workplace inspections to identify any needed safety procedures or programs and to track specific corrective actions
- Review supervisors' investigations of accidents and injuries to ensure that all causes have been identified and corrected
- Where appropriate, submit suggestions for avoiding future incidents
- Review alleged hazardous conditions to determine necessary corrective actions, and assign responsible parties and correction deadlines

- When necessary, conduct its own investigation of accidents and/or alleged hazards to assist in establishing corrective actions, or seek the advice of University staff (EH&S).
- Conduct a periodic accident analysis. The accident analysis should include all injuries, property damage incidents, environmental incidents and near misses. The intent of an accident analysis is to search for accident trends, and when such trends are identified, appropriate corrective action should be taken.
- Provide periodic emergency preparedness training to staff members and periodic practice and disaster drills.

Violation of safety rules and regulations is a serious offense and may endanger the life of the violator and the lives of others. Employees and supervisors will be held accountable for violations and action may be taken which includes, but is not limited to:

1. Written and/or (documented) verbal warnings for minor violations.
2. Evaluation of the need for (re)training.
3. Further action for flagrant or repeated violations.

Questions regarding potential hazards in your NEES@UC Davis-related work environment should be directed in the stated order:

1. Supervisor
2. Site Operations Manager
3. EH&S at (530) 752-1493

2.7 Employee Hazard Report

All faculty members, staff, students and visitors at UC Davis have an obligation to perform their work in a manner that does not endanger their health and safety, the well-being of others, or the university environment. Members of the campus community can participate in making the campus a safe place to work, study, and live by identifying health and/or safety hazards or unsafe conditions by informing those responsible for the problem area.

Employees are advised that use of the Hazard Report form or other reports of unsafe conditions or practices are protected by law. It would be illegal for the employer to take any action against an employee in reprisal for exercising rights to participate in communications involving safety. The UC Davis Employee Hazard Report form can be accessed at http://safetyapps.ucdavis.edu/ehs/hazreport/

2.8 OSHA Action Plan

California Occupational Safety and Health Act (Cal/OSHA) safety inspections are made by the California Division of Industrial Safety without advance notice. Insofar as it is possible, inspections must be conducted in a manner compatible with University operations.

UCD PPM Chapter 290 Section 06, *Safety Standards and Interactions with Regulatory Agencies*, instructs all UC Davis personnel to contact EH&S at 530 752 1493 to refer regulatory or safety representatives who wish to investigate or inspect any UCD facility. NEES@UC Davis staff should not respond to Cal/OSHA questions or requests directly.

3 Injury and Illness Prevention Program

3.1 Unit Information

Center for Geotechnical Modeling
Department of Civil and Environmental Engineering
UC Davis
2655 Brooks Road
Davis, CA 95616
530 752-7929

Buildings Occupied by Unit

1. J. Amorocho Hydraulics Lab (model prep room, Schaevitz lab, machine shop)
   Contact: Chad Justice, 530 754 6026

2. Rotunda
   Contact: Chad Justice, 530 754 6026

3. Geotechnical Modeling Facility (Offices, electronics shop, Network Operations Center)
   Contact: Chad Justice, 530 754 6026

3.2 Authorities and Responsible Parties

The authority and responsibility for the implementation and maintenance of the Injury and Illness Prevention Program (IIPP) is in accordance with University Policy (UCD Policy & Procedure Manual Section 290-15: Safety Management Program) and California Code of Regulations (8 CCR, Section 3203) and is held by the following individuals:

Authority and responsibility for ensuring implementation of this IIPP

10/13/2010

Dan Wilson
Site Operations Manager
Associate Director

Direct authority and responsibility for implementing and maintaining this IIPP

10/13/2010

Chad Justice
Safety Coordinator, head technician
Development Technician

Direct authority and responsibility for implementing and maintaining this IIPP

10/13/2010

Lars Pedersen
Development Engineer

3.3 System of Communications

1. Effective communications with CGM employees have been established using the following methods:

    Standard Operating Procedures Manual
    Material Safety Data Sheets
    Weekly unit staff operations meetings
    EH&S safety nets
    Training Videos
    Building Evacuation Plan
    Posters and warning labels
    Job Safety Analysis

2. Employees are encouraged to report any potential health and safety hazard that may exist in the workplace. Hazard Alert Forms (**Appendix A**) are available to employees for this purpose. Forms are to be placed in the Safety Coordinator's departmental mail box. Employees have the option to remain anonymous when making a report.
3. Employees have been advised of adherence to safe work practices and the proper use of required personal protective equipment. Conformance will be reinforced by discipline for non-compliance in accordance with University policy (UCD Procedure 62 - Personnel Policies for Staff Members, Corrective Action).

3.4 System for Assuring Employee Compliance with Safe Work Practices

Employees have been advised of adherence to safe work practices and the proper use of required personal protective equipment. Conformance will be reinforced by discipline for non-compliance in accordance with University policy (UCD Procedure 62 - Personnel Policies for Staff Members, Corrective Action).

The following methods are used to reinforce conformance with this program:

1. Distribution of Policies
2. Training Programs
3. Safety Performance Evaluations
   Performance evaluations at all levels must include an assessment of the individual's commitment to and performance of the accident prevention requirements of his/her position. The following are examples of factors considered when evaluating an employee's safety performance.
   - Adherence to defined safety practices.
   - Use of provided safety equipment.
   - Reporting unsafe acts, conditions, and equipment.
   - Offering suggestions for solutions to safety problems.
   - Planning work to include checking safety of equipment and procedures before starting.
   - Early reporting of illness or injury that may arise as a result of the job.
   - Providing support to safety programs.
4. Statement of non-compliance will be placed in performance evaluations if employee neglects to follow proper safety procedures, and documented records are on file that clearly indicate training was provided for the specific topic, and that the employee understood the training and potential hazards.
5. Corrective action for non-compliance will take place when documentation exists that proper training was provided, the employee understood the training, and the employee knowingly neglected to follow proper safety procedures. Corrective action includes, but is not limited to, the following: Letter of Warning, Suspension, or Dismissal.

3.5 Hazard Identification, Evaluation, and Inspection

Job Hazard Analyses and worksite inspections have been established to identify and evaluate occupational safety and health hazards.

1. Job Safety Analysis

Job Safety Analysis (JSA) identifies and evaluates individual employee work functions, potential health or injury hazards, and specifies appropriate safe practices, personal protective equipment, and tools/equipment. JSA's have been completed for the following job categories:

1. Hydraulics Lab
    a. Researcher
    b. Technical Staff
2. Rotunda
    a. Researcher
    b. Technical Staff
3. Geotechnical Modeling Facility
    a. Researcher
    b. Technical Staff
    c. Administrative Staff

Template **Job Safety Analyses** are located in **Appendix B**. Completed Job Safety Analyses are located in the **IIPP Addendum Binder** in CGM front office.

2. Worksite Inspections

Worksite inspections are conducted to identify and evaluate potential hazards. Types of worksite inspections include both periodic scheduled worksite inspections as well as those required for accident investigations, injury and illness cases, and unusual occurrences. Inspections are conducted at the following worksites:

1)	Location	Model Prep Room, Amorocho Building
	Frequency	Annual
	Responsible Person	Chad Justice
	Records Location	CGM front office
2)	Location	Schaevitz Lab, Amorocho Building
	Frequency	Annual
	Responsible Person	Chad Justice
	Records Location	CGM front office
3)	Location	Machine Shop, Amorocho Building
	Frequency	Annual
	Responsible Person	Chad Justice
	Records Location	CGM front office

4)	Location	Rotunda and Penthouse
	Frequency	Annual
	Responsible Person	Chad Justice
	Records Location	CGM front office
5)	Location	Electronics Shop and NOC, Geotechnical Modeling Facility
	Frequency	Annual
	Responsible Person	Chad Justice
	Records Location	CGM front office
6)	Location	Offices, Geotechnical Modeling Facility
	Frequency	Annual
	Responsible Person	Chad Justice
	Records Location	CGM front office

Template **Worksite Inspection Forms** are located in **Appendix C**. Completed Worksite Inspection Forms are located in the **IIPP Addendum Binder** in the CGM front office.

3.6 Accident Investigation

1. **Center for Geotechnical Modeling employees and researchers** will immediately notify their supervisor when occupationally-related injuries and illnesses occur, or when employees first become aware of such problems.
2. **Supervisors** will investigate all accidents, injuries, occupational illnesses, and near-miss incidents to identify the causal factors or attendant hazards. Appropriate repairs or procedural changes will be implemented promptly to mitigate the hazards implicated in these events.
3. The **Accident Investigation Form** (**Appendix D**) shall be completed to record pertinent information and a copy retained to serve as proper documentation.
4. **Note:** Serious occupational injuries, illnesses, or exposures must be reported to Cal/OSHA by an EH&S representative within eight hours after they have become known to the supervisor. These include injuries/illnesses/exposures that cause permanent disfigurement or require hospitalization for a period in excess of 24 hours. Please refer to EH&S SafetyNet #121 for OSHA notification instructions.

3.7 Hazard Correction

Hazards discovered either as a result of a scheduled periodic inspection or during normal operations must be corrected by the supervisor in control of the work area, or by cooperation between the department in control of the work area and the supervisor of the employees working in that area. Supervisors of affected employees are expected to correct unsafe conditions as quickly as possible after discovery of a hazard, based on the severity of the hazard.

Specific procedures that can be used to correct hazards include, but are not limited to, the following:

- Tagging unsafe equipment "Do Not Use Until Repaired," and providing a list of alternatives for employees to use until the equipment is repaired.
- Stopping unsafe work practices and providing retraining on proper procedures before work resumes.
- Reinforcing and explaining the need for proper personal protective equipment and ensuring its availability.
- Barricading areas that have chemical spills or other hazards and reporting the hazardous conditions to appropriate parties.

Supervisors should use the **Hazard Correction Report** (**Appendix E**) to document corrective actions, including projected and actual completion dates.

If an imminent hazard exists, work in the area must cease, and the appropriate supervisor must be contacted immediately. If the hazard cannot be immediately corrected without endangering employees or property, all personnel need to leave the area except those qualified and necessary to correct the condition. These qualified individuals will be equipped with necessary safeguards before addressing the situation.

3.8 Health and Safety Training

Health and safety training, covering both general work practices and job-specific hazard training is the responsibility of the Site Operations Manager and the relevant immediate Supervisor(s) as applicable to the following criteria:

1. Supervisors are provided with training to become familiar with the safety and health hazards to which employees under their immediate direction and control may be exposed.
2. All new employees receive training prior to engaging in responsibilities that pose potential hazard(s).
3. All employees given new job assignments receive training on the hazards of their new responsibilities prior to actually assuming those responsibilities.
4. Training is provided whenever new substances, processes, procedures or equipment (which represent a new hazard) are introduced to the workplace.
5. Whenever the employer is made aware of a new or previously unrecognized hazard, training is provided.

A template **Safety Training Attendance Record** form is located in **Appendix F**. Completed **Safety Training Attendance Record** forms are located in the **IIPP Training Binder** in the CGM front office. Topics and attendance of safety issues and training covered in weekly staff meetings is logged in the Safety Coordinator's safety log book.

3.9 Record Keeping and Documentation

Documents related to the **IIPP** are maintained in the **CGM front office**:

The following documents will be maintained within the **IIPP Addendum Binder** for at least the length of time indicated below:

1. Hazard Alert Forms (Appendix A form).
   Retain for three (3) years.

2. Employee Job Safety Analysis forms (Appendix B form)
   Retain for the duration of each individual's employment.

3. Worksite Inspection Forms (Appendix C form).
   Retain for three (3) years.

4. Accident Investigation Forms (Appendix D form).
   Retain for three (3) years.

5. Hazard Correction Reports (Appendix E form).
   Retain for three (3) years.

The following documents will be maintained within the **IIPP Training Records Binder** for at least the length of time indicated below:

1. Employee Safety Training Attendance Records (Appendix F form).
   Retain for three (3) years.

4 NEES@UC Davis workplace safety practices

4.1 General Safety

Housekeeping and general caution are key factors in avoiding accidents such as slips, trips and falls. To prevent injury, several general rules should be followed:

- Two man rule. Never work on a project site alone. The NEES@UC Davis Site strictly requires a minimum of two personnel during the installation, maintenance or operation of any equipment. Employees may perform certain administrative tasks (e.g. working at computer workstation) on site when alone.
- When possible, keep floors clear of debris and spilled liquids.
- Keep designated walkways and doorways clear, unobstructed and free of electrical cords, boxes, and other equipment.
- Use proper step stools or ladders, not chairs, when climbing to reach high items.
- Use proper harnesses when working in an area with risk of falling a large distance (e.g. roofs, balconies).
- Properly store and handle any potentially hazardous chemicals.

4.2 Protective Equipment

The use of appropriate protective equipment is required for some tasks. All such equipment must conform to EH&S standards. Training in the use of the equipment will be given prior to the assignment of tasks.

Hardhats. Hardhats must be worn at all times in the laboratory and in the field when hazards due to falling objects are present. Hardhats must be worn when operating the forklift or using the overhead crane. Hardhats are recommended when working below the centrifuge deck.

Eye and face protection. Protective equipment such as safety glasses, goggles or masks is required for anyone working in areas where an operation could cause injury to the face or eyes.

Respiratory protection. Respiratory equipment may be applicable in certain conditions. Respirators or dust masks are required when pluviating sand. See EH&S SafetyNet #88 – *The Respirator Protection Program*. NEES@UC Davis provides dust masks for users with minor exposure. EH&S will provide a respirator and training to any personnel who requests it as described in the SafetyNet.

Hearing protection. High noise areas should be evaluated to determine the typical noise levels. If the average noise exposure is above 90 decibels, the personnel must be included in the *Hearing Conservation Program*, EH&S SafetyNet #112. Employees included in this program must wear hearing protection, undergo periodic hearing evaluations, and receive training on avoidance of hearing damage.

Safety shoes. Steel-toe shoes may be required for certain designated areas or job tasks.

Safety Harness. Harness must be worn in situations where elevations hazards exist, such as working near the ends of the centrifuge arm. NEES@UC Davis maintains fall harnesses for staff exposed to falling hazards. See EH&S SafetyNet #133 – *Fall Protection*.

4.3 Identification of Workplace Hazards

Job Hazard Analyses and worksite inspections are required as discussed in Section 3.

4.3.1 Equipment Operating Manuals

All equipment is to be operated in accordance with the equipment's operating manual. Copies of operating manuals are kept at the NEES facility. Each person intending to use any equipment for the first time in the NEES facility must first attend a safety training session. No equipment can be operated without specific authorization based on evidence of past training (e.g. valid operator's certification) or training provided on site.

4.3.2 Material Safety Data Sheets

The purpose of a Material Safety Data Sheet (MSDS) is to provide information on the hazards of working with a chemical and procedures that should be used to ensure safety. State and Federal law require that employers obtain an MSDS for each hazardous substance they use and make the MSDS available to employees. Hard copies of MSDSs for the chemicals are located in each shop. If an MSDS is found to be missing, a new one can be obtained by faxing a written request to the manufacturer. A copy of this request should be kept until the MSDS arrives.

EH&S maintains links to MSDSs as well as fact sheets explaining how to use MSDSs, videos, and training on how to read and understand the information presented on an MSDSs on their website, http://safetyservices.ucdavis.edu/programs-and-services/research-safety/msds.

4.3.3 Chemical Inventory System / CUPA

Chapter 6.95 of the California Health and Safety Code requires that the campus complete an annual inventory or "business plan" listing specified hazardous materials. Chemical inventory information provided by departments assists the campus in design and renovation of new and existing facilities and provides necessary data for calculating air pollutant emissions in addition to fulfilling the requirements of federal and state law. The Center for Geotechnical Modeling maintains our Chemical Inventory using the UC Davis online Chemical Inventory System, see http://safetyapps.ucdavis.edu/EHS/cis/index.cfm.

EH&S has implemented a self-audit system is designed to help hazardous waste generators and hazardous material users understand their responsibilities and verify compliance. This will also allow the county to do spot-checks rather than visit every laboratory. This self-audit program contains a checklist that includes the critical areas that will be the focus of a county inspection. If the regulations are not followed in your laboratories, you may be fined by Yolo County Environmental Health.

Generators of hazardous waste or hazardous material users must complete self-audits and submit them to EH&S using the on-line program. Completed self-audits must be completed annually

4.3.4 Hazardous Materials Handling

Effective February 8, 2006 state law prohibits the disposal of waste household batteries, electronic devices, and fluorescent light bulbs in regular municipal trash. These items, called universal wastes, contain harmful chemicals, which, if put in the trash may harm people or the environment. UC Davis has been on the forefront of diverting these materials from municipal trash and has many programs in place

to assist the campus community. Please follow EH&S SafetyNet #122 – *Proper Disposal of Universal and Electronic Wastes.*

All hazardous material and hazardous chemical waste must be picked up by Environmental Health and Safety (EH&S) or an EH&S-approved contractor. Instructions and forms to request pickup are available on the EH&S website. Please follow EH&S SafetyNet #8 – *Guidelines for Disposal of Chemical Waste* and SafetyNet #6 – *Can This Go Down the Drain?*

4.3.5 Spill Control

Refer to EH&S SafetyNet #13 - *Guidelines for Chemical Spill Control.*

When 1 pint or more of a hazardous material or any amount of an extremely toxic substance is spilled or when in doubt, call UC Davis Fire Department (911). Evacuate the room, close the door, and wait for emergency personnel.

If the substance spilled is flammable, turn off all ignition sources before securing the room.

In case of chemical contact with skin or eyes, flood the affected area immediately with water; continue for at least 15 minutes. Seek medical assistance at Employee Health Services or Cowell Student Health Center for skin irritation, contact with an extremely toxic substance, any eye injury, or any adverse reaction.

All contaminated clothing must be removed immediately. Clothes must be laundered before reuse or disposed of as hazardous waste.

When incidental to one's duties, small spills (1 pint or less) may be cleaned up by laboratory personnel. It is good laboratory practice to keep spill absorbents on hand. A good, general purpose spill absorbent is available from the Storehouse (Fisher Scientific, Cat. No.: NC9571649, DRIZORB Absorbent). Spill cleanup kits for solvents, acids, bases (caustics), mercury, hydrofluoric acid, and others are commercially available from sources such as J.T. Baker and Lab Safety Supply.

All absorbed spill material must be collected in double plastic bags or plastic containers with secure lids and disposed of as hazardous waste. See EH&S SafetyNet #8 - *Guidelines for Disposal of Chemical Waste* for more information. If the absorbent has been used for a flammable or volatile compound, it must be stored in a well-ventilated area away from sources of ignition while awaiting pickup. A fume hood is a good temporary storage area.

4.3.6 Flammables Storage

Flammable liquid fires are much more volatile than fires fueled by ordinary combustibles such as wood, paper and cloth. Flammable vapors can ignite with explosive force and the resulting fire gives off more than twice as much heat as ordinary combustibles. The rate of temperature rise is greater and burning liquids produce billowing clouds of thick, black and acrid smoke. Flammable liquid fires also spread rapidly when spilled material flows into low lying areas, sometimes many feet away from the original spill. Because of these hazards, special precautions are required when storing, handling and using flammable liquids.

*Flammable and Combustible liquids per control area:

Flammable Liquids		Combustible Liquids	
Class 1-A	30 Gallons	Class II	120 Gallons
Class 1-B	60 Gallons	Class III-A	330 Gallons
Class 1-C	90 Gallons	Class III-B	13,200 Gallons
Combination	120 Gallons		

These quantities may be increased by 100% if in an approved flammable liquid storage cabinet and may be increased by an additional 100% if in a fully sprinkled building.
*Control Area is a building or a portion of a building within which the exempted amounts of hazardous materials may be stored, dispensed, handled or used.
*Control Area(s) are to be separated by a minimum of one-hour fire construction.

Vessels used to store flammable liquids must be clearly marked as to contents and shall comply with the following criteria:

MAXIMUM SIZE					
Container – CLASS	**1-A**	**1-B**	**1-C**	**II**	**III**
Glass	1 pt	1 qt	1 gal	1 gal	5 gal.
Metal/ Listed Approved Plastic	1 gal	5 gal	5 gal	5 gal	5 gal
Safety Can	2 gal	5 gal	5 gal	5 gal	5 gal
Approved Plastic	0 gal	0 gal	0 gal	0 gal	5 gal
Metal Drum	60 gal	60 gal	60 gal	60 gal	60 gal

Examples of Flammable / Combustible Liquids

NAME	CLASS
Hydrogen Cyanide	1-A
Propylene Oxide	1-A
Ethyl Ether	1-A
Methyl Formate	1-A
Gasoline	1-B
Acetone	1-B
Isopropyl Alcohol	1-B
Methyl Alcohol	1-B
MEK	1-B
Ethyl Alcohol	1-B

See UCD Fire Department FireNet *Flammable and Combustible Liquids* for further information.

4.3.7 Lock Out/Tag Out

It is Laboratory policy to prevent the unintended or unexpected startup or release of hazardous energy during servicing, maintenance, or modification activities. No employee shall install, service, remove, or perform maintenance on any equipment or machinery that may involve an energy hazard, until that equipment has been de-energized, locked, tagged and verified to be in a zero energy state.

LOTO is required whenever service, maintenance, or modification is being performed on equipment or apparatus in which the unexpected energizing or start-up of the equipment, or the release of stored energy, could cause injury to people or damage to equipment

It is important that the following LOTO principles are strictly adhered to:

- All sources of hazardous energy must be shut off and secured.
- LOTO must be performed at each identified hazardous energy control point by each LOTO-Authorized Employee who works on the equipment.
- Each LOTO-Authorized Employee must personally witness or verify the absence of hazardous energy, or assure that the verification has been performed.

4.4 Gas Cylinders

Compressed gas cylinders are use throughout the NEES@UC Davis facility, including compressed nitrogen on the shaker, CO_2 during saturation, and various gases used in cutting and welding metals. See EH&S SafetyNet #60 – Compressed Gas Safety, and UCD fire department FireNet "Storage and Handling of Compressed Gas Cylinders."

Combustible Materials Separation. Cylinder storage and use locations must be kept clear of all weeds, grass, brush, and trash, as well as any other combustible materials, for a minimum distance of 5 m (15 ft) from all cylinders. Exception: an approved noncombustible barrier, cabinet, or hood may be used instead

Cylinder Transportation. Only standard DOT cylinders will be used for transporting compressed gas.

Personnel who are trained to use compressed gases may use standard cylinder carts to transport cylinders within buildings and between adjoining buildings. Carts are preferred, but cylinders weighing 11 kg (25 lb) or less may be hand-carried. Valve-protection caps and plugs must be in place during movement of cylinders. Lecture bottles and other cylinders without protective caps must be transported in standard shipping crates, or an equivalent container.

Gas cylinders must be transported between non-adjoining buildings by a person properly trained, licensed, and equipped to transport gas cylinders.

Cylinder Position. Gas cylinders must be stored in a (valve end up) upright position, which includes conditions where the cylinder is inclined as much as 45 degrees from the vertical. Exceptions include cylinders designed for use in a horizontal position, and cylinders with non-liquefied compressed gas that have a water volume less than 5 L (0.18 cf or 1.3 gal).

Cylinder Securing. Gas cylinders must be secured to prevent falling due to accidental contact, vibration, or earthquakes. Cylinders must be secured in one of the following ways:

- By a noncombustible, two-point restraint system (e.g., chains) that secures the cylinder at the top and bottom one-third portions. Exception: cylinders less than 1 m (3 ft) tall require only one restraining point.
- By a noncombustible rack, framework, cabinet, approved strapping device, secured cylinder cart, or other assembly that prevents the cylinder from falling.

Cylinder Valves, Caps, and Plugs. Gas cylinders designed to have valve-protection caps and valve-outlet caps and plugs must have these devices in place. Exception: when the cylinder is in use or being serviced.

Gas cylinder valves must have a handwheel, spindle key, or other approved control handle on the valve stem while the cylinder is in use. Cylinder valves should be opened slowly. Cylinder valves seat in both the closed and open position and are likely to leak unless left in the fully open or fully closed position.

Unauthorized Cylinder Modification or Use. All labels, markings, and tags provided on the gas cylinder by the manufacturer must be maintained in good condition. Gas cylinder parts must not be modified, tampered with, obstructed, removed, repaired, or painted by the gas user.

Empty Cylinders. Gas cylinders should be left with residual pressure (i.e., typically 200 kPa or 30 psi) to prevent contamination of cylinder contents. Cylinders considered to be empty should be handled with the same precautions as cylinders filled with gas because so-called "empty" cylinders still contain residual gas and pressure. Empty gas cylinders must be labeled "Empty."

Cylinder Changing. Two people must be present during hazardous gas purge and cylinder change procedures. Reconnected gas fittings must be checked for leaks using a leak-detection fluid or other approved method.

Cylinder Temperature Control. Gas cylinders should be stored in the shade and must not be exposed to temperatures exceeding 50°C (125°F).

4.5 Elevated Work Locations

Working on the centrifuge requires occasional exposure to heights exceeding eight feet. NEES@UC Davis maintains fall harnesses for staff exposed to falling hazards. See EH&S SafetyNet #133 – *Fall Protection*. NEES@UC Davis maintains fall harnesses for employees exposed to elevated work locations. Employees must be properly trained before using the fall harnesses. Employee training is updated annually.

It is NEES@UC Davis policy to ensure that the equipment and structural provisions for accessing and working at elevated levels and for overhead movement of materials meet the best industry safety standards and comply with DOE, general industry safety orders (OSHA), and (for construction applications) Cal/OSHA regulations.

Ladders. Safety hazards in the use of ladders can be substantially reduced by observing certain basic safety precautions as noted below:

- Painters' stepladders longer than 3.7 m (12 ft) must not be used.
- Wood ladders must not be painted.
- Ladders must be stored to prevent weathering, blistering, or cracking.
- All metal ladders must be legibly marked with signs reading "Caution - Do not use around electrical equipment."
- Portable straight and extension ladders must be equipped with slip-resistant shoes.
- Straight or extension ladders must be placed against a support at an angle such that the distance from the ladder base to the base of the support is one-fourth the working length of the ladder.
- Lash straight or extension ladders when used for access to high places.
- Face ladders when ascending or descending.
- Do not use a ladder as a scaffold.
- Do not place a ladder in front of a doorway, unless the door is blocked open, locked, or guarded.
- Do not place ladders on boxes or unstable bases to obtain additional height.
- Do not climb higher than the second step from the top of a ladder.
- Ladders with broken rungs or missing steps must not be used.
- Inspect all ladders before use.
- Report any defective ladders to your supervisor.
- Supervisors must ensure that any ladder reported as defective or unsafe is removed from service.

4.6 Fork Lifts and other industrial vehicles

Operation of forklifts and other powered industrial trucks is restricted to trained personnel who have completed the required training. NEES@UC Davis certifies our own staff for the use of Forklifts. We maintain appropriate training materials and certification records according to EH&S procedures. See EH&S SafetyNet #134 – *Forklift Certification and Safety*.

Employees may occasionally operate rented vehicles through the campus' vehicle rental programs. Such vehicles typically include small tractors and other specialized vehicles. The employee must be trained to operate such vehicles before they may operate them. Training, certification, and verification for each vehicle are managed by the campus agency providing access to the vehicle.

A training program consists of the following elements and materials:

a. Operating instructions, warnings and precautions for type of truck
b. Similarities and differences to automobiles
c. Control and instrumentation location and use
d. Engine or motor operation
e. Steering and maneuvering
f. Visibility
g. Fork and attachment limitations and use
h. Vehicle capacity

i. Vehicle stability
j. Vehicle inspection and maintenance
k. Refueling or charging batteries
l. Operating limitations
m. Other operating instructions, warnings or precautions listed in the operator's manual
n. Workplace-Related Topics
    i. Surface conditions where truck is used
    ii. Load composition and stability
    iii. Load stacking, unstacking and transport
    iv. Pedestrian traffic
    v. Narrow aisle and restricted area operation
    vi. Operation in hazardous locations
    vii. Ramp and sloped surface operation
    viii. Unique or potentially hazardous conditions
    ix. Operating the vehicle in closed environments

Note: Because powered industrial trucks are manufactured by different companies with various models available, the training must be specific to the operating characteristics of the specific powered industrial truck the employee will be using.

The following rules apply to all use of forklifts and other Powered Industrial Trucks (PITs) at the Lab:

- Do not operate any forklift or PIT unless you have operator training.
- Do not operate any forklift or PIT until a daily inspection has been performed.
- Estimate the weight of the rated load to assure that you do not exceed the rated load capacity of PITs.
- Always ensure the load is against the backrest.
- Follow all safety rules regarding speed, parking, loading, unloading, and moving loads. Operators should use extreme caution when operating on ramps, grades, or inclines.
- Always drive an unloaded forklift with the forks on the downhill side.
- Never turn a forklift sideways on a ramp.
- Check the floor loading limit before a PIT enters an area. The floor must safely support the forklift, the load, and all materials that are already in the area.
- Drive material-moving equipment forward going up a ramp and backward going down a ramp. Note: Pallet jacks should not be used on ramps, unless the load is securely strapped to the pallet and the pallet is strapped to the pallet jack platform.
- Never allow traffic or personnel to pass under a raised load, nor allow a load to pass over personnel or traffic.
- Do not allow passengers to be carried on any PIT unless it is specifically equipped by the manufacturer to carry passengers.
- Never leave an elevated load unattended. Lower the forks to the floor, set the brake, and turn off the PIT before leaving the PIT unattended.
- Keep traffic lanes and loading areas clear and appropriately marked.

- Store materials in work rooms or designated storage areas only. Do not use hallways, fan lofts, or boiler and equipment rooms as storage areas.
- Do not allow exits, passageways, or access to equipment to become obstructed by either stored materials or materials and equipment in use.
- Arrange stored materials safely to prevent tipping, falling, collapsing, rolling, spreading, or any other unsafe motion.
- Modifications of PITs and addition of equipment to PITSs may only be performed by the PIT manufacturer or by qualified PIT mechanics with the approval of the manufacturer.
- Do not use front-end attachments other than factory-installed attachments; make sure that the truck is equipped with a plate that identifies the attachments, shows the approximate weight of the truck with attachments, and shows the lifting capacity of the truck with attachments at maximum lift elevation with the load laterally centered.
- All forklift trucks must carry fire extinguishers, usually 2-1/2lbs ABC, regardless of their location classification.
- Only trained operators shall replace LPG tanks on forklift trucks or charge batteries. Battery changing may be performed only by trained and authorized PIT service personnel

4.7 Manual Lifting

Manual material handling involves lifting, lowering, and carrying objects. If ergonomics principles are ignored, stresses on the muscles, joints, and disks in the back can eventually lead to or aggravate a work related musculoskeletal disorder (WRMSD). For objects that are too heavy or bulky for safe manual handling by employees, mechanical lifting devices must be used for lifting and moving.

See EH&S SafetyNet #46 – *Lifting.*

Best Practices for Lifting

1. Assess the situation.
    - How far will you have to carry the load? Is the path clear?
    - Once the load is lifted, will it block your view?
    - Can the load be broken down into smaller parts?
    - Should you wear gloves to get a better grip?
2. Size up the load.
    - Test the weight by lifting or sliding one corner. If it is too heavy or awkward, STOP!
    - Can you use a mechanical lift or hand truck?
    - Can you lift the load safely, or is it a two- or more person lift? If you doubt you can lift the load safely, ask for help.
3. Use good lifting techniques.
    - Get close to the load with your feet shoulder-width apart.
    - Get a good handhold, and pull the load close to you
    - Bend at your knees and hips, keep the inward curve in your back, and lift with your legs.
    - If you need to lean forward, support your upper body weight with one hand.

4.8 Crane Operation

Operation of cranes is restricted to trained personnel who have completed the required training. NEES@UC Davis certifies our own staff. We maintain appropriate training materials and certification records according to EH&S procedures.

The following rules apply to all use of cranes and hoists related to NEES@UC Davis activities.
Daily Inspection. Each crane or hoist must be inspected before use, during any given work shift.
Annual Inspection. – Each crane is inspected and certified annually.
Personal Protective Equipment. All personnel participating in lifts involving cranes or hoists must wear ANSI-approved safety shoes.

All personnel operating a crane or hoist, participating in the lift or within 15 feet of the vertical plane of the load, where the under carriage of the bridge is more than 12 feet from the ground, must wear ANSI-approved hard hats. Post or barricade the area as needed.

Sturdy work gloves must be worn when handling wire rope or loads with rough or sharp edges or splinters.

Suspended Loads. Follow these rules for suspended loads:

- Do not allow loads moved with any material-handling equipment to pass over any personnel.
- Select the load path to eliminate the possibility of injury to employees should the material-handling equipment fail.
- Do not work on suspended loads. Rest the load on adequate cribbing if it needs to be worked on.
- Never leave a suspended load unattended. Lower it to the floor or the working surface, or onto cribbing, and secure the material-handling equipment before leaving the load unattended.

4.9 Working in Confined Spaces

Work on the centrifuge may occasionally require personnel to work inside the centrifuge arm or other work areas where access is limited. These areas do not meet the definition of “confined space” as listed on the EH&S website and repeated below.

Cal-OSHA defines a confined space as a space that has the three following characteristics:

- Is large enough and configured such that an employee can enter and perform work;·
- Has limited openings for entry and exit; and
- Is not designed for continuous employee occupancy.

A confined space is further defined as a space that meets both of the following conditions:·

- Existing ventilation is insufficient to remove dangerous air contaminants and/or correct oxygen deficiency; and
- Access to or exit from the space is difficult.

EH&S coordinates the campus Confined Space Entry Program. This responsibility entails providing technical consultation and guidance for testing and monitoring confined space environments, controlling potential hazards in confined spaces (such as ignition sources, electrical and machinery lockout, purging and temporary ventilation), providing employee training about potential hazards, and cooperating with the campus Fire Department in rescue procedures. Testing and training requirements may be delegated to other departments that have EH&S-approved confined space entry programs and required instrumentation (for more information, refer to UCD Policy & Procedure Manual 290-86).

4.10 Power Tools- Fixed and Portable

Inspection and Maintenance. Machine tools, machine equipment, and power tools should be routinely inspected to verify that they are not damaged, that the controls function as designed, and that all guarding and shields are securely installed and adjustable. Servicing, including cleaning, lubrication, preventive maintenance, and adjustment of machine equipment and machine tools can help prevent performance and safety problems. Only qualified technicians or qualified vendors are permitted to service equipment. Service equipment only when all electrical, hydraulic, compressed air, and stored energy sources are secured in accordance with the Lockout/Tagout requirements described above.

General Safety Rules for Use/Maintenance of Power Tools, Machine Tools and Machine Equipment. The following general rules apply to the use and/or maintenance of machine tools and machine equipment, regardless of their location.

a. Permit only qualified personnel who have necessary skills, through experience and/or training, to operate or maintain machine tools or machine equipment.
b. Equip all machine tools, power tools, and machine equipment with all required guarding, and prohibit (lock and tag) their operation unless such guarding is in place and fully functional.
c. Operate/maintain machine tools, and machine equipment in accordance with the manufacturer's requirements, and the requirements of this section.
d. Anchor and electrically wire all machinery and machine equipment designed by the manufacturer to be stationary. Only qualified electricians are permitted to install and remove wiring for hardwired shop machinery and machine equipment. Machine tools and machine equipment designed to be electrically connected by cord and plug are not subject to this requirement.
e. Permit only qualified personnel or vendors to repair or otherwise service machine tools or equipment.
f. Only operate machine tools when a second person is within sight or earshot of the tool user. This is an essential requirement in the case of personnel who get caught in machinery or suffer traumatic injuries. The second person need not be qualified to operate the equipment but does need to know how to turn off the equipment and how to call for emergency assistance. This second person must also agree ahead of time to perform such duties should the need arise. Establish a check-in and check-out protocol.
g. Ensure that all machine and tool guards are installed in place, in good working order, properly adjusted, and most importantly, used for their intended purpose. This includes the use of chip shields for any drilling or cutting operations.

h. Wear (at a minimum) safety glasses with side shields while in the vicinity of operating machine tools. This applies both to workers and to visitors. Wear face shields or goggles as required by work authorization for specific operations.
i. Wear substantial closed-toe footwear of sturdy construction, made of leather or other heavy, solvent-resistant material. Wear approved safety shoes when there is a risk of crushing or piercing. Prohibit personnel, including visitors, from entering the work area with sandals or open-toed shoes.
j. Wear appropriate clothing.
k. Wear hearing protection and/or respiratory protection as required by work authorization for operations that generate harmful noise, or airborne emissions. Contact the Industrial Hygiene Group for assistance in determining which operations require such protection.
l. Do not use audio equipment that obstructs the ear canal (e.g., iPods) or cell phone Bluetooth headsets while operating machine or power tools. Such devices distract the operator and can prevent him or her from hearing sounds that could provide warning of an unusual operating condition or someone calling out for assistance.
m. Prohibit personnel under the age of 18 from operating any machine or power tools.
n. Tie back or otherwise secure long hair; cuff or roll up long sleeves, and remove or tape down loose jewelry when working with rotating machinery.
o. Do not prepare or consume food or beverages in areas where hazardous materials (including oils, solvents, chemicals, cuttings, filings, and sawdust) are handled or generated. Designate a food and drink preparation/consumption area, if necessary, in an area that is kept free of hazardous materials at all times.
p. Where applicable, secure and clamp down work pieces in work-holding devices and machines, preventing the work from being lifted or dislodged.
q. Use appropriate push sticks or other approved methods as indicated in the work authorization to keep hands and fingers well away from moving or rotating cutters, blades, and other points of operation.
r. Turn off the machine before using a brush or wooden dowel (not hands!) to remove chips from the machining area. Chips are not only very sharp but can be hot and can snag.
s. Maintain good housekeeping. Work is not complete until cleanup is done. Debris, coolants, and lubricants put workers at risk of cuts or slipping, and can be a skin irritant. Clean up the work area with a broom, brush, and dustpan, and clean up all spills with absorbents and/or degreasers. Avoid using compressed air to blow chips off machinery. Not only is this a hazard to the eyes, it forces material into the precision inner workings of the machine and often distributes coolant, oil, and chips over a larger area. Clean up the machine and sweep the floor area of any remaining chips.

4.11 Machine Guarding

Cal-OSHA requires machine guarding be provided and maintained to protect employees from the hazards associated with the operation of machinery. Machine guarding requirements are addressed in the California Code of Regulations, Title 8, General Industry Safety Orders. The need for machine

guarding may be found in machine shops in academic departments, maintenance shops, print shops, restaurant kitchens, and other areas where mechanical equipment is used.

Any machine part, function, or process within seven feet of the work surface that might cause injury must be safeguarded. When the operation of a machine or accidental contact with it could injure the operator or others in the vicinity, the hazards must be either controlled or eliminated. The following information is provided to assist in assuring machine safety through hazard identification and evaluation, safeguarding, training, and safe operation.

It is the Safety Coordinator's responsibility to ensure that machine tool and machine equipment guarding is adequate. Never remove factory-installed guards unless they are designed to be removed for a particular operation, and equivalent means of protection are used (e.g., table saw guards are removed for fence cuts; when appropriate, push sticks are used).

Guard all reasonably accessible points of operation, pinch and nip points, rotating parts, and flying chip or spark hazards that may expose an employee to injury. In general, guarding prevents inadvertent contact with these hazards. Guarding may be achieved by one or more methods, such as isolation, barriers, shields, devices, or distance.

For further information see EH&S SafetyNet #115 – Machine Guarding.

4.12 Welding

Policy. Employees performing cutting and welding operations (commonly referred to as "hot work"), as well as their supervisors, are required to be suitably trained in the safe operation of the equipment used. Outside contractors and service personnel are expected to follow all OSHA requirements. See also UCD Fire Department FireNet "Welding, Brazing, and Cutting Guidelines."

Potential health, safety, and property hazards result from the fumes, gases, sparks, hot metal and radiant energy produced during hot work. The purpose of this policy is to prevent any fires or injury that may result from hot work processes, and to comply with OSHA regulations (29 CFR 1910.Subpart Q; 29 CFR 1926 Subpart J; 29 CFR 1926.350-354).

Safety Requirements: Prior to hot work being performed, several tasks must be completed. This includes, but is not limited to: Isolating the HVAC system for interior work, posting the hot work permit in a highly visible area, identifying and removing any fire hazards in the work area, and covering sprinkler heads and smoke or heat detectors to prevent accidental triggering.

Proper personal protective equipment (PPE) must be in use while performing hot work. This includes welding helmets, gloves, jackets, etc.

General Arc Welding Safety:

- Before starting any arc welding operation, a complete inspection of the welder should be made.
- Read all warning labels and instructions manuals.

- Remove all potential fire hazards from the welding area.
- Always have a fire extinguisher ready for immediate use.
- Equip welding machines with power disconnect switches which can be shut off quickly.
- The power to the machine should be disconnected before making repairs.
- Proper grounding of welding machines is essential.
- Electrode holders should not be used if they have loose cable connections, defective jaws, or poor insulation.
- An arc should not be struck if someone without proper eye protection is nearby.

Personal Protective Equipment:

- Infrared radiation is a cause of retinal burning and cataracts. Protect your eyes and face with a welding helmet properly fitted and with the proper grade of filter plate.
- Protect your body from welding spatter and arc flash with protective clothing. Such as:
  - Woolen clothing
  - Flame-proof apron
  - Gloves
  - Properly fitted clothing that is not frayed or worn.
  - Shirts should have long sleeves.
  - Trousers should be straight-legged and covering shoes when arc welding.
  - Fire resistant cape or shoulder covers are needed for overhead work.
- Check protective clothing equipment before each use to make sure it is in good condition.
- Keep clothes free of grease and oil.

Proper Ventilation: Be sure there is adequate ventilation available when welding in confined areas or where there are barriers to air movement. Natural drafts, fans and positioning of the head can help keep fumes away from the welder's face.

Ventilation is sufficient if:

- The room or welding area contains at least 10,000 cubic feet for each welder.
- The ceiling height is not less than 16 feet.
- Cross ventilation is not blocked by partitions, equipment, or other structural barriers.
- Welding is not done in a confined space.

**If these space requirements are not met then the area needs to be equipped with mechanical ventilating equipment that exhausts at least 2000 cfm of air for each welder, except where local exhaust hoods or booths, or air-line respirators are used.

Avoiding Electrical Shock: Electrical shock can kill. To prevent electrical shock:

- Use well insulated electrode holders and cables.
- Make sure welding cables are dry and free of grease and oil.
- Keep welding cables away from power supply cables.
- Wear dry hole-free gloves.
- Clothing should also be dry.

- Insulate the welder from the ground by using dry insulation, such as a rubber mat or dry wood.
- Ground frames of welding units.
- Never change electrodes with bare hands or wet gloves.

4.13 Use of Portable Heaters

Winters in Davis are mild. Even so, some work areas may become uncomfortably cold and portable heaters may be used to raise the temperature. The use of portable heaters is governed by UCD Fire Department FireNet – *Portable Space Heater Fire Regulations.*

Look for a heater that is listed with a nationally-recognized testing laboratory (such as Underwriters Laboratories or UL). These heaters are tested to meet specific safety standards, and manufacturers are required to provide important use and care information to the consumer. Unlisted heaters are not permitted. Portable electric heaters that heat by circulating oil or water are preferred. Older style heaters with exposed radiant wires are not permitted.

UC Davis Fire Department requires that all portable space heaters be equipped with tip over protection. Tip over protection will turn off the heater automatically when the heater is tipped over and not in the full upright position.

5 Disaster Preparedness

Planning ahead for disasters is critical for being able to recover safely and quickly. Understand and know the location and proper use of fire extinguishers, fire alarms, emergency exits, telephones, eyewash fountains and safety showers. It is the responsibility of the Safety Coordinator to provide for periodic training of staff members and periodic practice and drills.

Personnel should be prepared to respond safely to the following:

- Fire or evacuation alarm;
- Accidental spills or release of radioactive, chemical or other toxic materials;
- Injury of a co-worker;
- Earthquake; and
- Other natural or man-made disaster.

Fire. As a general rule, UC Davis does not expect its employees to fight fires. Just sound the alarm – pull the fire alarm or call 911 (call 530 752-1234 from a cell phone) – and get out of the building as quickly as possible and report to the emergency assembly area. Do not re-enter the building until you have been notified by the authorities to do so.

Accidents. All accidents and near miss incidents must be reported immediately to the Facility Manager.

Electric shock. Do not touch persons rendered unconscious by electric shock unless you are sure that they are no longer in contact with the source of the electricity or that the power has been turned off.

Earthquake. During any earthquake, you should take cover immediately. After the quake, assess the situation and follow instructions given by the Facility Manager or other supervisor. If the earthquake is severe, you will be asked to evacuate the building. Wait for instructions before re-entering the building or before leaving the area.

In case of emergency evacuation the meeting location is the north side of the LAWR Drainage Lab.

For further information, see UC Davis Policy and Procedure Manual Chapter 390, *Emergency Management and Campus Security.*

6 Emergency Action Plan

The Emergency Evacuation Plan is provided to enable personnel to responds to emergencies in a calm, orderly manner. This Emergency Action Plan has been prepared for the UC Davis Center for Geotechnical Modeling. The plan complies with the California Code of Regulations Title 8 Section 3220.

An "evacuation" is defined as the emptying of an occupied area and the transference of occupants to a safe location. The need to evacuate may be caused by any hazard, including those due to natural, technological or human causes, that threatens the Center for Geotechnical Modeling.

In an emergency, **Dial 911**
(from a cell phone, dial 530 752-1234)

Center for Geotechnical Modeling OFFICE INFORMATION

Center for Geotechnical Modeling		
(Office Name)		
2655 Brooks Rd., UC Davis		
(Office Location)		
530 752-7929	530 752-6758	
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Jenny Chen	530 752-7929	jihchen@ucdavis.edu
(Safety Contact)	*(Phone)*	*(email)*
Chad Justice	530 754-6026	cljustice@ucdavis.edu
(Alternate Safety Contact)	*(Phone)*	*(email)*

This Emergency Action Plan will be reviewed annually in: April

EMERGENCY ACTION PROTOCOL

Warning and Alarms

- During an emergency evacuation, employees may be notified of the emergency condition by an audible alarm.
- Emergency responders will be notified when the fire alarm system is activated.
- The alternate alarm method will be verbal notification.

Prior to Exiting

After hearing the alarm to evacuate, stop all work activities. If time permits, each person should gather their valuables (e.g., car keys, medication and other critical personal items) and close, but do not lock the doors (locked doors can hamper rescue operations). Remember that you may not be allowed back into the building for an extended time.

The person responsible for roll call (Safety Contact or Alternate Safety Contact) will take a personnel list (use attached form or alternate) before leaving the building.

Safety Contact Duties

If safe to do so, assist people exiting rooms, floors, or the building. Recruit volunteers to help you direct evacuees to the Assembly Area. After evacuation, use the attached form or similar format to take roll call. Notify emergency responders and assist by providing information.

Evacuation Routes

During an emergency evacuation use the nearest door or stairway (do not use elevator).

Report the count of evacuated staff members and visitors and any injuries to the Center for Geotechnical Modeling Site Operations Manager.

Assembly Area

After exiting the building, employees, students, volunteers and visitors will follow the evacuation route to the pre-arranged Assembly Area – North Side of the LAWR Drainage Lab. The Safety Contact or Alternate Safety Contact is responsible for taking roll call and reporting injuries to the Center for Geotechnical Modeling Site Operations Manager. The Center for Geotechnical Modeling Site Operations Manager is responsible for informing the on-scene Incident Commander of the status of department employees and visitors. If an employee is in immediate danger, report the location of the person directly to the nearest emergency responder.

Stay within your respective group at the Assembly Area. Do not leave the area until notified.

Person(s) Responsible for Roll Call

Responsible person: Jenny Chen

Alternate person: Chad Justice

Units Reporting to the Assembly Area
All personnel, students, volunteer and visitors.

RESPONSIBILITIES OF THE SAFETY CONTACT

Jenny Chen is the Safety Contact responsible for the planning, evaluation, and execution of the Building Evacuation Plan and should perform the following duties:

1. Review and update this Emergency Action Plan annually or as needed.
2. Conduct annual evacuation drills for department. Know the location of all fire extinguishers; pull alarms, and first aid kits. Ensure evacuation routes are posted and walkways remain clear at all times.
3. Assist mobility impaired persons in evacuating or staging at a pre-designated room.
4. Keep people calm and informed.
5. If ordered by on-scene Incident Commander, move all people to the Assembly Area and inform people when it is safe to re-enter buildings. After a major earthquake, a person may not re-enter buildings until cleared by a qualified building inspector.

If the Safety Contact is not available, the Alternate Safety Contact, Chad Justice or supervisors are responsible for reporting directly to the on-scene Incident Commander and for the duties noted above.

SIGNATURES

This Emergency Evacuation Plan has been reviewed and approved by the following individuals:

Dan Wilson (signature on file)	10/13/2009
(Site Operations Manager)	*(Date)*

The Safety Contact and Alternate are aware of their responsibilities, as described in this plan.

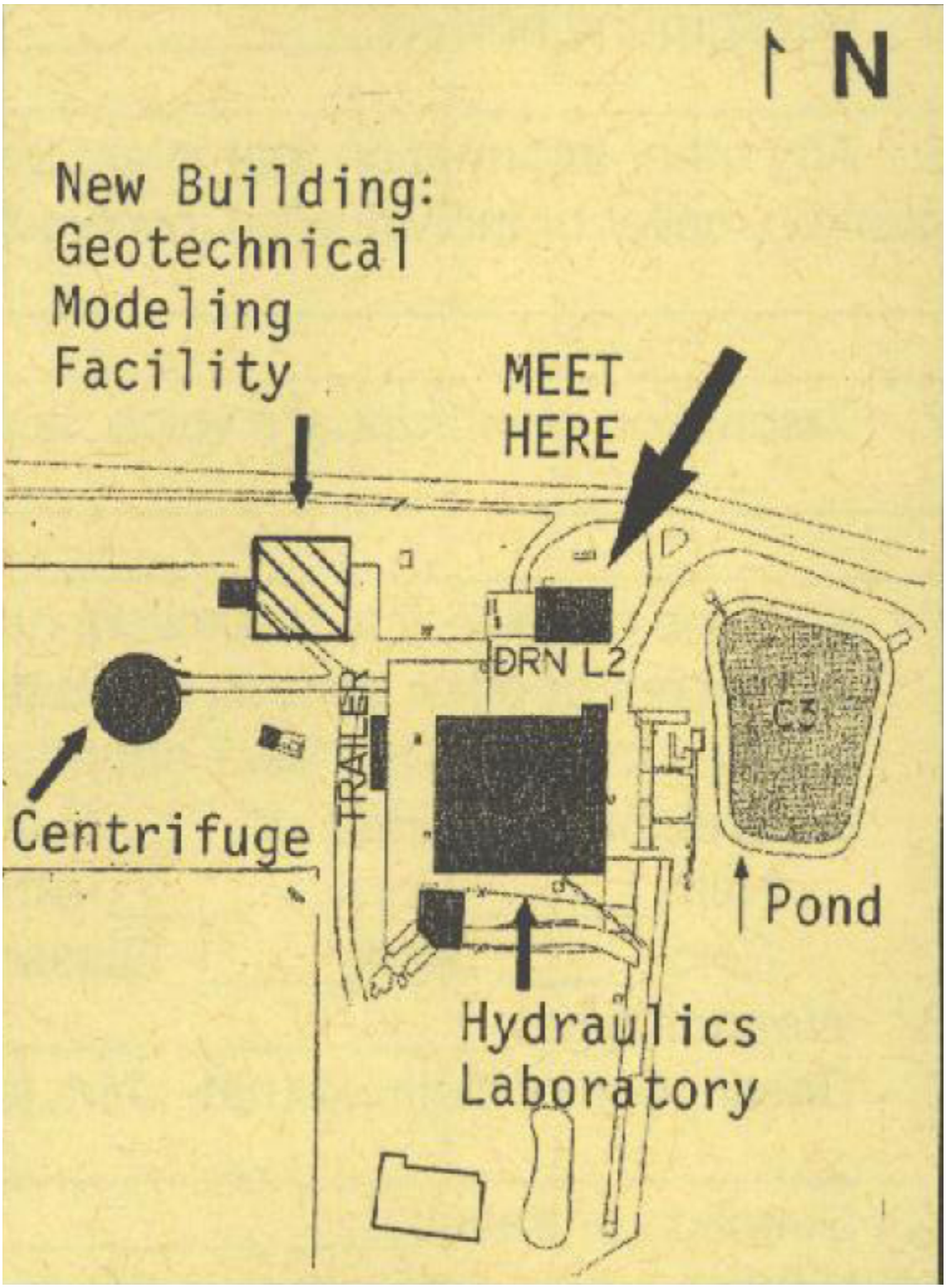
Jenny Chen (signature on file)	10/13/2009
(Safety Contact)	*(Date)*
Chad Justice (signature on file)	10/13/2009
(Alternate Safety Contact)	*(Date)*

Roll Call Sheet
Center for Geotechnical Modeling
Office Location: 2655 Brooks Rd., UC Davis

Jenny Chen and Chad Justice are responsible for maintaining a current list of personnel in the department on this form, retrieving this form during an emergency, and tracking where the people are during that emergency.

Roll Call Sheet (completed hardcopy to be kept posted in office)
Center for Geotechnical Modeling
Office Location: 2655 Brooks Rd., UC Davis

Last Name	First Name	Phone	Pager/Cell	Assigned Space	Status or Location


N
New Building:
Geotechnical
Modeling
Facility
MEET
HERE
DRN L2
TRAILER
Centrifuge
Pond
Hydraulics
Laboratory

7 First Aid

This section will familiarize you with guidelines for treatment of minor injuries and for the application of first-aid for more serious injuries in the period of time before professional medical staff are able to treat the injured person.

7.1 First-Aid Kits

NEES@UC Davis contracts with an outside vendor to provide and maintain first aid kits in each area of the facility. The following basic items should be present in the first-aid box at all times.

- Latex gloves.
- Sterile dressing to stop bleeding.
- Cleansing agent/antibiotic towelettes to disinfect.
- Antibiotic ointment to prevent infection.
- Burn ointment to minimize risk of infection.
- Adhesive bandages in a variety of sizes.
- Eye wash solution.
- Thermometer

If you find the first aid kit is missing any component, inform the safety coordinator so that the kit can be re-stocked.

7.2 Heat Stress

Heat stress can be a significant risk while working in Davis during the summer. The Amorocho Building and the Rotunda building are not cooled. Supervisors of UC Davis employees who work in extreme heat conditions must:

- Be aware of risk factors that contribute to a heat related illness
- Reduce the risk by taking special precautions to prevent a heat related illness
- Be alert for the symptoms of serious a heat related illness
- Train employees about the risks and how to protect themselves (include as part of your Injury Illness Prevention Program)
- Make sure employees working in hot conditions are accounted for at the end of the work shift
- Know what to do and how to summon emergency medical care should a heat related emergency occur

See EH&S SafetyNet #123 – *Heat Illness Prevention.*

Self-awareness is one of the key steps to reducing heat-related disorders. Employees and supervisors should terminate exposure to heat stress at the onset of the first symptoms. Supervisors should consider a worker's physical condition when determining heat stress conditions. Obesity, lack of conditioning, medical conditions, use of medications, pregnancy, and inadequate rest can increase susceptibility to heat stress even in indoor office environments.

Additional industrial hygiene practices and administrative and engineering controls are listed below.

1. Wear lightweight, light colored, loose clothing that allows free movement of cool dry air over the skin's surface to allow the removal of heat from the body by evaporation. Evaporation of sweat from the skin is the body's predominant heat removal system.
2. Drink plenty of chilled hydrating fluids such as water or commercial hydrating fluids to prevent dehydration. Since thirst is not a sufficient indicator of fluid replacement, workers are encouraged to drink about 1 cup of cool water every 15 to 20 minutes during heat stress conditions.
3. To increase evaporation and cooling of the skin, use general ventilation or fans for spot cooling.
4. Work demands should be made lighter by taking frequent breaks in a cooler area, completing them over a longer time period, and setting the work pace with the least heat-tolerant worker in mind.
5. Heavy workloads should be scheduled during cooler times of the day (i.e., early morning).
6. Employees should report to UC Davis Occupational Health Services if they feel they are suffering from the onset of a heat-related disorder. In emergency situations, call 911.

Immediate Response Actions for Heat Stroke:

- Call 911 immediately.
- The victim's body temperature must be lowered as quickly as possible. Applying damp, cool towels, or ice packs to armpits, elbows, wrists, or backs of knees may help.
- Stay with the victim until medical help arrives.

7.3 Wounds

A wound is caused when a tissue in our body is torn or cut. Types of wounds:

- Incised wounds caused by sharp instruments. These wounds bleed extensively.
- Contused wounds caused by crushing. These wounds look bruised.
- Lacerated wounds caused by rough surfaces. These wounds bleed less. Wounds pose two dangers, namely bleeding and infection.

Treating bleeding:

a. Press the sides of the wound together.
b. Raise the injured part of the body above the heart (only if fracture is not suspected).
c. With your palm, gently press a pad bigger than wound until bleeding reduces.
d. If bleeding continues, add new pads without removing original pad.
e. Bandage firmly but not too tightly.

Avoiding infection:

a. The first aid provider must wash own hands thoroughly with soap and water.
b. External wounds should be cleaned thoroughly with potable water and should be dried with sterile gauze.
c. Wound should be covered with sterile or dry sterile gauze and bandaged once bleeding is controlled
d. Cotton should not be allowed to be in direct contact with wound.
e. Antiseptic cream applied to a wound should not be mixed with water.

7.3.1 Blood Borne Pathogens

Please refer to EH&S SafetyNet #36 – *Bloodborne Pathogen Standard*.

In the event human body fluids require clean up due to an injury, only trained personnel are allowed to clean up spills with approved clean up kits. If no trained personnel are present, secure the area and notify the University EH&S department for instructions.

You are responsible for keeping your immediate work area clean and sanitary. If you become aware of needs beyond general housekeeping, report your concern to your supervisor.

All equipment and working surfaces must be cleaned and decontaminated using sanitizing cleanser after contact with blood or OPIM.

If you get blood or other potentially infectious materials in your eyes, nose, mouth, or on broken skin:

- Immediately flood the exposed area with water and clean any wound with soap and water or a skin disinfectant if available.
- Report this immediately to your employer.
- Seek immediate medical attention at UC Davis Occupational Health Services.

7.3.2 Burns and Scalds

Burns are caused when skin comes in contact with dry heat like fire/flames, hot metal, live wires, etc. Scalds are caused by moist heat like boiling water, steam, oil, tar, etc.

The degree of a burn is indicated by the degree of damage to the tissues. Degrees of burning are:

- First degree: the skin appears reddened.
- Second degree: Blisters are seen on the skin.
- Third degree: There is destruction of deeper tissues with scarring.

Dangers from burns include:

- Excessive loss of body fluids.
- Severe pain.
- Infection in affected area.
- After healing, they could leave scars and restrict movements.

Treating extensive burns:

a. Try to keep the patient calm.
b. Do not remove adhering particles of charred skin.
c. Cover the burnt area with a clean dressing and bandage.
d. If hands are burnt, they should be placed above the level of victim's heart.
e. If feet or legs are burnt, they should be elevated.
f. If face is burnt, sit up the patient and observe for breathing difficulty. Maintain an open airway if respiratory problems develop.
g. Do not open the blisters on victim's skin.
h. Try and remove all rings, bangles, belt and boots from the victim's body immediately as it may be difficult later if the limbs begin to swell.

i. If medical help cannot reach the victim within an hour of the burn, and if the victim is conscious and not vomiting, try to feed a weak solution of salt, soda and water (approximately one teaspoon of salt and half teaspoon of baking soda per quart of water).

Treating minor burns:

a. Clean the affected area gently with water.
b. Immerse the burnt area in cold water.
c. Never apply cotton wool directly over burnt area.
d. No greasy substance should be used over the affected area.

7.4 Fractures

Fracture is defined as complete or partial breakage of a bone. Types of fractures include:

a. simple – broken ends of the bone do not cut open the skin
b. compound – broken end of the bone may be in contact with open air.
c. Complicated – an internal organ is broken in addition to the fracture bone.

Signs of fracture include:

a. Severe pain at and/or around place of fracture.
b. Swelling and tenderness over the area with partial discoloration.
c. Inability to perform normal movements of the affected part.
d. Deformity of the limb. The limb may also appear shorter.
e. Crackling sound or unnatural movements.

Treatment for fractures:

a. Fractures generally occur with other injuries like wounds. Symptoms like heavy bleeding must receive priority for first-aid over a fracture.
b. Patient should be handled gently avoiding all unnecessary movements.
c. If broken ends of the bones are seen above the skin, the wound should neither be washed nor treated with antiseptics.
d. The fractured area should not be handled unnecessarily.
e. No attempt should be made to reduce the fracture or to bring the bones to normal position.
f. The fracture area and joints on both sides of fracture should be immobilized by using bandages. It is essential that rescuer be familiar with the use of bandages.

7.5 Electrical injuries

When a body part comes in contact with a live electric wire or cable carrying a live current, the person receives an electric shock. The electric shock could be produced only when the electric current passes through human body, which is in contact with the earth. It passes more readily if the contacting body part is wet or moist. In wet conditions, even lower voltages could be dangerous.

Depending on the voltage and duration of contact, one or all of the following may occur.

a. fatal stoppage of heart
b. sudden stoppage of breathing due to paralyses of breathing muscles
c. superficial or deep burns

Treating victims of electric shock:

a. The source of current should be switched off if the victim is in contact with the current. This must be done with rescuer standing on a dry piece of wooden board.
b. Never use a knife or scissor to cut the current carrying wire.
c. If the current is of very high voltage, arching may occur. The victim should be dragged using non-conductive material like a wooden stick, plank or dry nylon rope.
d. If the victim is not breathing properly, artificial respiration should be given.
e. If required, treat for burns.
f. The victim should be transferred to a hospital as soon as possible. Even for mild electrical injuries, consultation with a doctor is desirable as some effects of electric shock materialize hours/days after the incident.

8 Other Policies and Guidelines

8.1 UC Davis Policy and Procedure Manual

All personnel working at the NEES@UC Davis facility are subject to the policies and procedures included in the **UC Davis Policy and Procedure Manual** Chapter 290, ***Health and Safety Services*** (http://manuals.ucdavis.edu/PPM/contents.htm#290) and Chapter 390, ***Emergency Management and Campus Security*** (http://manuals.ucdavis.edu/PPM/contents.htm#390):

290-06, Safety Standards and Interactions with Regulatory Agencies (11/2/05)
290-10, Smoke-Free Policy (9/17/08)
290-15, Safety Management Program (11/14/07)
    Exhibit A, Safety Committee Guidelines
290-16, Ergonomics Program (9/3/01)
290-25, Health Services for Individuals Having Animal Contact (4/30/98)
290-27, Hazardous Substances Communication Program (3/18/08)
290-30, Use and Care of Animals in Research and Teaching (3/19/07)
290-32, Minors in University Facilities (8/25/08)
    Exhibit A, Waiver of Liability, Assumption of Risk, and Indemnity Agreement
    Exhibit B, Project Checklist for Minors Performing Research in Laboratories
290-35, Environmental Protection (10/20/06)
290-40, Public Health and Sanitation (3/27/02)
290-45, Pest Management (6/24/02)
290-50, Protective Clothing and Equipment (6/14/05)
290-55, Biological Safety (4/27/07)
290-56, Chemical Safety (3/12/04)
290-60, Occupational and Preventive Medicine (6/24/04)
290-65, Hazardous Chemical Use, Storage, Transportation, and Disposal (7/30/07)
290-70, Controlled Substances (5/11/06, rev. 8/18/08)
    Exhibit A, Controlled Substance Transfer Notification (PDF)
290-75, Radiological Safety--Health Physics (1/9/06)
290-80, Diving Safety Program (3/23/05)
290-85, Electrical Safety (12/18/08)
290-86, Hazardous Operations (4/2/09)
290-90, Animal Control on Campus (11/18/04)
290-95, Pesticide Applications (6/24/02)
390-10, Campus Emergency Policy (4/2/09)
390-15, Emergency Alert Notification (8/11/08)
390-20, Maintenance of Order (7/3/07)
390-25, Suspension of Individuals During Declared State of Emergency (8/30/05)
    Exhibit A, Notice of Emergency Suspension (PDF)
390-30, Violence, Threats, and Disruption in the Workplace (4/22/04)
390-35, Terrorist Acts Targeting Research (7/27/00)
390-40, Fire Safety (5/23/05)

8.2 EH&S Safety Nets

"SafetyNets" have been developed by EH&S to provide information sheets about specific health and safety issues or specific hazardous materials. They are used to supplement training programs.

SafetyNets are available at http://safetyservices.ucdavis.edu/safetynets/Safetynets-Master%20List

The following SafetyNets are applicable to personnel at the NEES@UC Davis equipment site:

SafetyNet #2 "Oxyacetylene Safety Update" 02-2007
SafetyNet #5 "Eye and Face Safety Protection for Laboratory Workers" 08-2008
SafetyNet #6 "Can This Go Down the Drain?" 02-2007
SafetyNet #7 "Hazardous Material Inventory Requirements" 01-2007
SafetyNet #8 "Guidelines for Disposal of Chemical Waste" 01-2009
SafetyNet #12 "Why Didn't the Custodian Pick Up My Trash?" 01-2007
SafetyNet #13 "Guidelines for Chemical Spill Control" 10-2007
SafetyNet #17 "Personal Computer Workstation Checklist" 01-2007
SafetyNet #20 "Electrical Safety Guidelines" 01-2007
SafetyNet #21 "Minimizing Aerosol Exposure" 12-2006
SafetyNet #29 "Back Belts" 01-2007
SafetyNet #30 "Building Temperature Extremes" 12-2006
SafetyNet #31 "Use of Refrigerators and Freezers" 01-2007
SafetyNet #33 "Hazardous Materials Information & Training: Guidelines for Departments." 03-2007
SafetyNet #36 "OSHA Bloodborne Pathogen Standard Worker Information" 02-2003
SafetyNet #39 "Safety Training Tips" 01-2007
SafetyNet #40 "Health & Safety Hazards: A Student's Right-To-Know" 01-2007
SafetyNet #41 "What You Should Know to Protect Your Wrists and Hands from Repetitive Motion Injury" 01-2007
SafetyNet #42 "General Guidelines for Management of Laboratory Chemicals" 05-2007
SafetyNet #43 "Identification and Segregation of Chemical Waste" 01-2007
SafetyNet #45 "Glossary of MSDS Terms" 01-2007
SafetyNet #46 "Lifting" 01-2007
SafetyNet #52 "Emergency Medical Care" 08-2007
SafetyNet #54 "Pregnancy and The University Workplace" 01-2007
SafetyNet #60 "Compressed Gas Safety" 03-2007
SafetyNet #64 "Guidelines for Evaluating Safety Performance" 03-2007
SafetyNet #66 "Emergency Eyewash and Shower Testing and Use" 01-2008
SafetyNet #83 "Non-Structural Seismic Safety" 10-2007
SafetyNet #88 "Respiratory Protection Program" 01-2007
SafetyNet #96 "Keyboard and Mouse Use" 01-2007
SafetyNet #99 "Indoor Air Quality" 03-2007
SafetyNet #109 "Power Outages" 03-2007
SafetyNet #110 "Guidelines for Completing the Chemical Waste Label" 01-2007
SafetyNet #111 "Required Postings" 08-2008
SafetyNet #112 "Hearing Conservation" 01-2007
SafetyNet #114 "Confined Space Program" 04-2009
SafetyNet #115 "Machine Guarding" 01-2007

SafetyNet #120 "Preparing for a CUPA Inspection" 11-2006
SafetyNet #121 "Reporting Work-related Fatalities and Serious Injuries or Illnesses" 08-2008
SafetyNet #122 "Proper Disposal of Universal and Electronic Wastes" 05-2006
SafetyNet #123 "Heat Illness Prevention" 06-2006
SafetyNet #124 "Empty Container Management" 05-2007
SafetyNet #125 "Safety Management Guidelines for Department Safety Coordinators" 12-2006
SafetyNet #133 "Fall Protection" 03-2009
SafetyNet #134 "Forklift Certification and Safety" 03-2009

8.3 UC Davis Fire Department FireNets

"FireNets" have been developed by the UC Davis fire department to provide information sheets about specific health and safety issues or specific hazardous materials related to fire danger. They are used to supplement training programs and the SafetyNets provided by EH&S.

FireNets are available at http://safetyservices.ucdavis.edu/programs-and-services/fire-prevention/fire-nets/.

The following FireNets are applicable to personnel at the NEES@UC Davis equipment site:

Emergency Evacuation Signs - March 2000
Maximum Occupant Load for Labs - May 2000
Operating Portable Fire Extinguishers - November 2005
Flammable and Combustible Liquids - October 2007
Welding Brazing Cutting Guidelines - October 2007
Recycling Container Guidelines - November 2007
Corridor Storage Guidelines - December 2007
Corridor Storage Spreadsheet - December 2007
Compressed Gas Cylinders - February 2008
Candles and Open Flame Guidelines - January 2009
Portable Space Heater Fire Regulations - January 2009