

GEOSCIENCES AND ENGINEERING DIVISION

Proc. AP-010

ADMINISTRATIVE PROCEDURE

Revision 4 Chg 0

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Title: **LABORATORY CHEMICAL HYGIENE PLAN**

EFFECTIVITY

Revision 4 of this procedure became effective on TBD. This procedure consists of the pages and changes listed below.

<u>Page No.</u>	<u>Change No</u>	<u>Date Effective</u>
All	0	10/21/2005

Supersedes Procedure No. AP-010 Revision 2, Chg 0 dated 5/13/2002

Approvals

Prepared by	Date	Approved by	Date
<i>Bradley A. Werling</i>	10-21-05	<i>E. J. [Signature]</i>	10/21/05

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LABORATORY CHEMICAL HYGIENE PLAN

1. LABORATORY CHEMICAL HYGIENE OFFICER

Bradley Werling is the Geosciences and Engineering Division (Division) Laboratory Chemical Hygiene officer designated to coordinate all aspects of the Chemical Hygiene Plan for the Division laboratories in Buildings 57 and 51.

2. GENERAL OVERVIEW

The Division is utilizing Buildings 51 and 57 on the Southwest Research Institute® (SwRI®) campus for in-house laboratory work. Laboratory work is being conducted in the general areas of geochemistry, thermohydrology, corrosion, biochemistry, radiochemistry, structural deformation, and rock mechanical properties. Many laboratory activities involve the use of hazardous chemicals for sample preparation and analysis. General types of hazardous chemicals include acids, heavy liquids, and organic reagents. Hazardous chemicals are stored in approved areas, separate from general chemical storage and work areas. Radioactive materials are handled in accordance with procedures set forth in the SwRI Radiological Health and Safety Manual. Specific methods for the handling and disposal of radioisotopes have been developed for the Division laboratories and are on file with the Institute Radiation Safety Officer.

Division personnel authorized and trained to work with hazardous chemicals are those who have read this Chemical Hygiene Plan and provided Division Quality Assurance (QA) the appropriate acknowledgment. The list of the people who have read and acknowledge this procedure may be obtained from the Division QA department.

The Division Laboratory Chemical Hygiene Plan (AP-010) is available on the Division's QA (website <http://tuti/qa/>) in the administrative procedures section. Each group of laboratories will maintain a hard copy of the Division Laboratory Chemical Hygiene Plan. The hard copies will be located in the following areas:

Building 57 laboratories L101, L105, L111, and L113
AP-010 hard copy located in L111

Building 57 laboratories L102, L104, and L106
AP-010 hard copy located in L106

Building 51 laboratories (all)
AP-010 hard copy located in front area

Laboratory personnel (including principal investigators, new Division staff, and student scientists) and those who work for Division staff are to follow this Chemical Hygiene Plan.

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3. SPECIFIC LABORATORY PROCEDURES

The staff is involved in regulatory analysis, technical assistance, and laboratory work for the U.S. Nuclear Regulatory Commission (NRC) and others. Since much of the work in the laboratory is "prototyping" or one-time testing, use of laboratory or scientific notebooks is the primary method of documenting work accomplished. Standardized procedures (ASTM, and other developed procedures) are utilized whenever possible, and are referenced in Division operation plans, proposals, and project plans. For repetitive analytical work in the Division laboratories, staff personnel are encouraged to develop and implement a technical operating procedure (TOP). TOP and quality assurance procedures (QAPs) applicable to laboratory activities are available on the Division's QA website (<http://tuti/qa>).

3.1 Chemical Inventory

Each laboratory or group of laboratories will maintain a current chemical inventory. Laboratories under the same supervision may maintain a single inventory document in a central location. A hard copy of this inventory document will be kept readily available to supervisor personnel.

3.2 Safety Requirements

(i) Hazardous chemicals

Characteristics of the hazardous chemicals involved in laboratory experiments are located in the material safety data sheets (MSDS). Each laboratory or group of laboratories will maintain a MSDS for each chemical on the inventory. The material safety data sheets databases are available within the department of safety and industrial hygiene portion of the SwRI intranet (<http://i2net.swri.edu/services/safety/default.htm>).

(ii) Notification and emergency reporting procedures

In the event of an emergency, employees should immediately dial 2222 and report the emergency (six SwRI locations are alerted by this one call during normal working hours). The same number is used after hours and on weekends which connects with the security supervisor on duty.

(iii) Storage (temporary/permanent) and transportation of hazardous chemicals

Chemicals will be stored in proper locations with compatible materials. Material safety data sheets manufacturer storage codes and National Fire Protection Association (NFPA) hazard codes are tools that may be used to determine the proper storage location for a chemical. Hazardous chemicals are stored in approved areas, separate from general chemical storage and work space. Flammable chemicals are stored in specially marked flame retardant storage cabinets. Spent chemicals are collected in appropriate containers and labeled such that the

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contents of the containers can be clearly determined by all laboratory personnel. Chemical waste containers are then transported to the Institute chemical waste storage facility.

(iv) Provisions for information/training

MSDSs provide laboratory personnel information on chemicals present in the workplace. Safety training aids are available from the safety office. New employees working in the Division laboratories shall be immediately trained on the duties and safety requirements of the job to which they are assigned. The chemical hygiene plan and the operating procedures of the Division shall be reviewed by each new employee.

The appropriate supervisor or his/her designee shall walk the new employee through the laboratories, showing him or her safety equipment and the hazards of working with certain chemicals and/or equipment. Ample opportunity shall be afforded for the new employee to ask questions and become fully safety conscious in the new job.

3.3 Emergency Procedures

The safety training record for each employee is available from the Department of Safety and Industrial Hygiene.

(i) Fire

Personnel have been familiarized with building exits and all exits are marked. Fire extinguisher training is provided to all employees. Fire extinguishers are located outside each laboratory in Building 57 and, in some cases, inside the laboratories. The Division laboratories in Building 51 are equipped with three fire extinguishers. In the case of a major fire, extension 2222 is dialed for assistance.

(ii) Chemical/hazardous material spill procedures for acids, bases and solvents

- Notify the supervisor and the SwRI Chemical Hygiene Officer of the spill. Assess the situation, and prepare a plan of action.
- Any areas contaminated with a chemical spill should be cleaned in accordance with the proper material safety data sheets and instructions provided with the spill kit. Proper protective clothing (gloves, etc.) shall be worn while cleaning chemical spills, especially acids. Materials used to clean a contaminated area should be disposed of properly.
- For a large or dispersed spill, contact the Safety Department immediately.

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(iii) Medical

In the event that laboratory personnel come in contact with hazardous chemicals, the chemical should be removed from contact with the body and the affected area flushed with copious amounts of water, if appropriate. If the accident involves an inhalation victim, remove the person to fresh air.

Dial 2222 if medical attention is required. If the exposure requires medical attention, file an accident report with the SwRI nurse and Division safety point of contact as soon as possible.

(iv) Special emergency procedures for non standard hours (nights, weekends)

In the event of an emergency after normal hours, on weekends, or holidays, employees should immediately dial 2222. This contacts the security officer manager who can summon the proper emergency assistance if required. Be prepared to provide the necessary information (name, employee number, location, nature of emergency). If possible, the individual reporting the accident should immediately send another employee to the main gate to meet the security guard and escort the emergency vehicle to the accident site. At this time the Institute security officer will dispatch a security guard to the main gate and proceed to make appropriate notifications to provide residence numbers of the safety department, buildings and grounds, communications, and security. After an employee has been dispatched to the main gate (if possible), the individual reporting the accident should notify the appropriate supervisor/manager. The supervisor/manager will then make any remaining notifications.

After normal hours and on weekends or holidays if an emergency vehicle is not required and an injured employee needing medical attention can be safely transported, the individual transporting the injured employee should exit through the main gate and relay to the gate guard the following information:

- Injured employee's name and employee number
- Building number where the accident occurred and specify if the building is unattended
- Location where the injured employee is being taken

In case of an injury, the employee can be taken to the Alamo City Group Riverwalk Medical Clinic located at 408 Navarro Street, (Nix Medical Center Building) open 24 hours a day. The phone number 272-1741. For more urgent emergencies, the employee can be taken to the Methodist Hospital Emergency Room at 7700 Floyd Curl Drive also open 24 hours a day. The phone number is 575-4444. The individual reporting the accident should notify the appropriate supervisor/manager and the SwRI Clinic should be contacted the next workday for follow-up.

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In the event of an extended power failure and telephones are inoperable and emergency assistance is needed, the individual reporting the accident should go to the main gate and notify the security of the circumstances and call 911 from the nearest operable phone or report the incident to the fire station located near the intersection of Loop 410 and Culebra. After reporting the incident, the individual should escort the emergency vehicle(s) from the main gate to the accident site.

3.4 Personal Protective Equipment

- (i) Lab coats, gloves, safety goggles, face shields, and half-mask respirators will be available for working with acids or fuming chemicals.
- (ii) ANSI approved safety glasses with side shields are required for any laboratory activity where there is a possibility of flying objects striking laboratory personnel. Prescription safety glasses are available to employees through the Department of Safety and Industrial Hygiene.
- (iii) Safety goggles are required for handling chemicals that may splash.
- (iv) Shoes must have closed toes and preferably have rubber soles.
- (v) Ear plugs are available if needed.
- (vi) Chemical resistant gloves are required when a barrier is needed for handling chemicals.
- (vii) Insulated thermal gloves are available when handling hot materials such as hot glassware and test specimens which are placed in an oven. The employee should have knowledge of the glove's performance and limitations.
- (viii) Dust masks are available if needed.
- (ix) Respirators may be used by personnel who have been properly fitted by the safety department.

3.5 Use of special equipment and controls

- (i) Annual inspections are conducted by the safety department to assure proper operation of the fume hoods.

3.6 Inspection and cleanup

- (i) Safety inspections are conducted by the Division safety-point-of-contact on a monthly basis. An SwRI self inspection form is completed and filed for each monthly inspection.

Corrective actions are listed on the back of the self inspection form. Formal safety inspections are performed by the SwRI safety department annually.

- (ii) All Division laboratories will be kept in a neat and orderly manner by all laboratory personnel.

3.7 Chemical waste disposal procedures

- (i) Chemical waste including spent, excess, and out-of-date chemicals from laboratory activities will be placed in appropriate containers and stored according to the recommendations provided in the material safety data sheets until the containers are transported to the SwRI chemical waste facility.
- (ii) All chemical waste containers will be properly marked and will include the contents of the containers. For mixed chemical waste the container label will indicate the percentages of each chemical component.
- (iii) A waste data sheet, will be completed and provided to the SwRI safety department upon delivery of the chemical waste to the Institute chemical waste facility.
- (iv) Employees will not use private vehicles for the transportation of chemical waste.

3.8 HAZCOM—A copy of the HAZCOM Program (CNWRA AP-016) must be read by all personnel who are actively involved in laboratory activities where chemicals are used.

4. LIMITATIONS OF THIS DOCUMENT

This document is designed to provide general safety guidelines. For specific guidelines regarding general policies or safety procedures, employees can consult the Safety Policies and Procedures Manual, the Division safety committee representative, or the Division safety point of contact.

5. ENFORCEMENT AND LABORATORY SUPERVISION RESPONSIBILITIES

The responsibility to enforce all aspects of the Chemical Hygiene Plan for each laboratory in Building 51 and 57 is assigned to the following Division staff.

Xihua He—Building 57 laboratories: L101, L104, L105, L111, and L113.

Bradley Werling—Building 57 laboratories: L102, and L106.

Don Bannon—Building 51 Laboratories: All.

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6. REVIEW AND REVISION OF THIS DOCUMENT

The Laboratory Chemical Hygiene Plan is reviewed, revised and updated annually and resubmitted to the safety office for approval and authorization. Any significant change in the scope of laboratory operation or designation of a new Chemical Hygiene Officer requires submittal of a revised Chemical Hygiene Plan. The scope of the Chemical Hygiene Plan on file with the safety office must reflect current operations and staff assignments.

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**LABORATORY CHEMICAL HYGIENE PLAN
AND STANDARD OPERATING PROCEDURES**

for the Division 20 Laboratories in Buildings 51 and 57.

The Division 20 Chemical Hygiene Officer is Bradley Werling.

REFERENCE: 29 CFR 1910.1450, the current SwRI Chemical Hygiene Plan, and the current SwRI Safety Manual.

APPLICABILITY: Procedure specified in this document and in the above referenced documents are applicable to all staff working in this laboratory when work involves the use of hazardous chemicals. A copy of the SwRI Chemical Hygiene Plan and this standard operating procedures will be readily available to all staff in this laboratory.

Prepared by: Bruce Mabrito, Safety Committee Representative

Approved by: _____
Director

Division Vice President

SwRI Chemical Hygiene Officer

SwRI Radiation Safety Officer

Date approved _____

*This includes temporary, permanent, custodial workers, and contractors.