

TA-64, FIELD OPERATIONS BUILDING

Purpose This Water Quality and Hydrology Group (RRES-WQH) procedure assists workers in identifying and controlling hazards associated with their work at TA-64-64, Field Operations Building and with building operational requirements.

Scope This procedure applies to all RRES-WQH personnel, including contract and subcontract employees and students, performing work at this building.



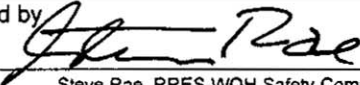
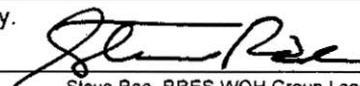
In this procedure This procedure addresses the following major topics:

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Hazard Control Plan The hazard evaluation associated with this work is documented in Attachment 1: Initial risk = Low. Residual risk = Low. Work permits required: Penetration Permit.

First authorization review date is one year from group leader signature below; subsequent authorizations are on file in group office.

Signatures

Prepared by.  Ryan Romero, RRES-WQH	Date: <u>5/20/04</u>
Approved by.  Mike Alexander, Team Leader, RRES-WQH	Date: <u>5/18/04</u>
Approved by  Steve Rae, RRES-WQH Safety Committee Chair	Date: <u>5-19-04</u>
Approved by.  Steve Rae, RRES-WQH Group Leader	Date: <u>5-19-04</u>

CONTROLLED DOCUMENT

This copy is uncontrolled if no signatures are present or if the copy number stamp is black. Users are responsible for ensuring they work to the latest approved revision.

General Information About This Procedure

Attachments This document has the following attachments:

Number	Attachment Title	No. of pages
1	Hazard Control Plan	14
2	Hazard Communication Plan, attachment #2, of the Chemical Management LIR 402-510	4

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description Of Changes
0	4/03	New document.
1	5/04	Annual revision to the procedure and hazard control plan.

Who requires training to this procedure

The following personnel require training before implementing this procedure:

- All RRES-WQH staff, contract personnel, and students who perform work at TA-64-64.

Training method

The training method for this procedure is “self-study” (reading) and is documented in accordance with the procedure for training (RRES-WQH-QP-024, *Training*).

Prerequisites

In addition to training to this procedure, the following training is also required for all personnel who reside in the building:

- [RRES-WQH-SOP-001, Office Work](#)

Only field team personnel trained to R&D Electrical Worker 2.1 shall perform electrical troubleshooting of Sutron and Geomation instruments.

References

The following documents are referenced in this procedure:

- Owners Manual for Power Tools
- [LIR 402-510, Chemical Management](#), Hazard Communication Plan
- Emergency Response Plan, ERP-CFM-64, for TA-64, Buildings 39 and 64

General Information About This Procedure, continued

**Material,
equipment,
conditions**

Material, equipment, and or conditions normally encountered when performing work in the building which may expose the worker to hazards include:

- shelving
- ladders/steps
- roll-up doors
- welding, brazing
- fire pull alarms
- battery charging
- air compressor
- rolling stock
- lead acid/Gell cell batteries
- lifting
- soldering
- hand tools
- grinding
- vehicle operation

Note

Actions specified within this procedure, unless preceded with “should” or “may,” are to be considered mandatory guidance (i.e., “shall”).

Operational Requirements

Responsibilities

Team Leader and building personnel must recognize those factors in the workplace with accident potential. The Team Leader and building personnel shall provide frequent assessments of job sites, work areas, work methods, and materials/equipment used. Any unsafe equipment/material shall be tagged and rendered inoperative or physically removed from its place of operation. Only authorized personnel shall operate equipment and machinery according to safe work practices.

Team Leader and building personnel are responsible for:

- Ensuring safe working conditions.
- Providing and wearing the necessary protective equipment.
- Ensuring that required guards and protective equipment are provided, used, and properly maintained.
- Ensuring that tools and equipment are properly maintained and used.
- Planning the workload and assigning employees to jobs, which they are authorized to perform. Ensuring that the employees understand the work to be done, the hazards that may be encountered, and the proper procedure for doing the work safely.
- Taking immediate action to correct any violation of safety rules observed or reported to them.
- Ensuring workers exposed or potentially exposed to hazardous chemicals/materials have access to appropriate Material Safety Data Sheets (MSDS).

Prior to conducting work

Prior to conducting any work in building TA-64-64, the primary building contacts will be notified in the order listed below.

Contact	Phone	Cellular Phone	Pager
Ryan Romero	665-9735	699-4796	664-4552
Greg Helland	665-8875	699-2170	664-5038
Jeff Walterscheid	667-3643	699-0936	664-4640
Mike Alexander	665-4752	699-1336	664-1060

All work will be reviewed by one of the personnel listed above to ensure that a hazard control plan or 5-step review has been completed and that work authorizations are current prior to the start of any work.

Operational Requirements, continued

**Maintaining
building and
work areas**

Building TA-64-64 and work areas within the building shall be kept clean. Persons conducting work are responsible for good housekeeping in and around the work they are working. As a minimum, the following requirements shall be adhered to:

- Material shall not be placed where anyone might stumble over it, where it might fall on someone, or on or against any support unless the support can withstand the additional weight.
- Aisles and passageways shall be kept clear of tripping hazards.
- Nails shall be removed from loose lumber or the points turned down.
- Trash and other waste materials shall be kept in approved receptacles. Trash shall not be allowed to accumulate and shall be removed and disposed of as soon as practicable
- Disconnect switches, distribution panels, or alarm supply boxes shall not be blocked by any obstruction, which may prevent ready access.
- Machinery and equipment shall be kept clean of excess grease and oil and (operating conditions permitting) free of excessive dust.

**Maintaining
inventory**

The inventory of significant equipment and materials will be kept and updated by the primary building contacts and updated as material is removed.

Checking trailers in and out of the facility will be completed and documented by the primary building contacts and documented in a notebook titled "Trailers".

Maintenance pending or needed will be conducted prior to the trailer's next use. The primary building contracts will ensure that this maintenance is performed before the trailer is used.

Operational Requirements, continued

PPE

While working in building TA-64-64, personal protective equipment (PPE) is required whenever there are hazards that can do bodily harm through absorption, inhalation, or physical contact. This equipment includes hearing protective devices, special clothing, and protective devices for the eyes, face, head, and extremities. All PPE shall be of a safe design and constructed for the work to be performed and shall be maintained in a sanitary and reliable condition. It is the responsibility of personnel to keep their PPE in a clean, sanitary state of repair and use the equipment when required. Refer to Attachment 1.

Personnel shall keep hands and face clean, change clothes when contaminated with solvents, lubricants, or fuels, and keep hands and soiled objects out of mouth.

Workers shall not:

- wear rings, earrings, bracelets, wristwatches, or necklaces in the vicinity of operating machinery and power tools.
 - have unrestrained long full beards, long hair, and loose clothing that can become caught in tools or machinery and cause serious personal injury.
 - wear highly combustible garments or coveralls made of material such as nylon in or around high temperature equipment or operations such as welding, and any other work with open flame devices.
 - have food or drink in areas exposed to toxic materials, chemicals, or shop contaminants. Workers shall wash hands before eating or smoking after exposure to any contaminant.
-

Proper shop layout

Proper layout, spacing, and arrangement of equipment, machinery, passageways, and aisles are essential to orderly operations and to avoid congestion.

Fire prevention

Supervisors and personnel in charge of operations where fuels, solvents, or other flammable liquids are used shall be constantly alert for hazards and unsafe acts.

Emergency Readiness

Emergency readiness

- All residents must read and acknowledge that they have read the Emergency Response Plan, ERP-CFM-64, for TA-64, Buildings 39 and 64 (plan).
- Staff shall be familiar with emergency signals, procedures, and location of emergency equipment (pull box, fire extinguisher, first aid kit, etc.) in building as specified in the plan.
- Emergency numbers from the plan shall be prominently posted.
- Employees shall be knowledgeable of muster areas designated for their organization(s) following evacuation as specified in the plan.
- Employees shall be familiar with emergency and notification procedures as specified in the plan.
- A copy of the plan is posted immediately by the front entrance.

[Click here to record self study training to this procedure.](#)

HAZARD CONTROL PLAN

Scope

This RRES-WQH procedure and Hazard Control Plan assists workers in identifying and controlling hazards associated with their work in TA-64, Field Operations Building.

Potential hazards

Material, equipment, and/or conditions in the building setting which may expose the worker to hazards include:

- A. Slipping/falling: slippery, icy, or uneven walking surfaces; obstacles; ice or snow; inappropriate footwear; poor housekeeping; or inattention
- B. Repetitive stress: intensive work activities or poorly positioned or adjusted furniture at a computer terminal
- C. Struck-by injury: improper storage of materials, shelving, falling objects, roll up doors,
- D. Injuries from hand tools: cuts, bruised, pinches, or scrapes
- E. Stress/strains: lifting heavy objects
- F. Chemical burns/inhalation injuries: improper use of chemicals such as lubricants, WD-40, paints, oils, gasoline, grease
- G. Electrical burns/shock: faulty electrical equipment, power tools, small portable generators
- H. Ignition sources: spark or flame producing activities
- I. Working alone hazards: inability to receive immediate medical attention
- J. Indoor pollutant contamination: contaminants introduced for sources outside and inside the building; motor vehicle exhaust; building/office furnishings; and rodents, droppings, or other pest control issues
- K. Motor vehicle accidents: backing and parking, driving in building
- L. Pressure system accidents: improper use of air compressor, welding tank
- M. Hearing injury: hazardous noise areas with operating noise sources, or use of tools and equipment
- N. Harmful objects or materials: handling sharp or jagged objects, wood, or similar hazard-producing materials
- O. Fire hazards: working with fuels, solvents, or other flammable liquids
- P. Improper work area layout: improper layout, spacing, and arrangement of equipment, machinery, passageways, and aisles
- Q. Welding: burns

HAZARD CONTROL PLAN, continued

Initial risk level

For each hazard, list the likelihood and severity, and the resulting initial risk level (before any work controls are applied, a determined according to [LIR300-00-01](#), section 7.2)

- A. Slipping/falling: improbable/ critical = low
- B. Repetitive stress: occasional / moderate = low
- C. Struck-by injury: occasional / critical = medium
- D. Injuries from hand tools: occasional / moderate = low
- E. Stress/strains: occasional / moderate = low
- F. Chemical burns/inhalation injuries: occasional / moderate = low
- G. Electrical burns/fire: improbable / moderate = minimal
- H. Ignition sources: improbable/moderate = minimal
- I. Working alone hazards: occasional / moderate = low
- J. Indoor pollutant contamination: occasional / moderate = low.
- K. Motor vehicle accidents: occasional / moderate = low
- L. Pressure system accidents: improbable/ critical = low
- M. Hearing injury: occasional / moderate = low
- N. Harmful objects or materials: occasional / moderate = low
- O. Fire hazards: occasional / moderate = low
- P. Improper work area layout: occasional / moderate = low
- Q. Welding hazards: occasional / moderate = low

Overall *initial* risk: Minimal Low Medium High

HAZARD CONTROL PLAN, continued

Operational requirements List applicable Laboratory, facility, or activity operation requirements directly related to the work:

None List: Work Permits required? No List:

- [LIR 402-1200, Pressure, Vacuum, and Cryogenics Systems](#)
- [LIR 402-880-02.1, Penetration Permit](#)
- Occupational Safety and Health Administration (OSHA)
- Facility Management Procedures and Protocols
- LIR201-00-04, *LANL Incident Reporting Process*
- LIR402-150-01, *Working Alone*
- [LIR402-600-01, Electrical Safety](#)
- [LIR402-840, Welding, Cutting, and Other Spark - or Flame-Producing Operations, Spark and Flame Permit](#)
- [LIR402-860-02, Locking and Tagging Equipment, Machinery, and Systems](#)
- LIR402-1310-01, *Field Work Safety*
- [LIR402-1320-01, Vehicular and Pedestrian Safety](#)
- [LIR404-00-02, General Waste Management Requirements](#)
- [LIR404-00-04, Managing Solid Waste](#)
- ERP-CFM-64, *Emergency Response Plan for TA-64, Buildings 39 and 64*

- Spark and Flame Producing Operations Permit

HAZARD CONTROL PLAN, continued

Mitigating hazards

Describe how the hazards listed above will be mitigated (e.g., safety equipment, administrative controls, etc.):

A. Slipping/falling

- Walk, do not run in offices, hallways, sidewalks, or parking lots.
- Wear proper footwear.
- Wear appropriate footwear on ice and snow.
- Use salt available to de-ice sidewalks.
- When using stairs, hold onto the handrail. Climb one stair at a time.
- Clean up spills immediately or mark the area and notify appropriate personnel as indicated in the Emergency Response Plan, ERP-CFM-64, for TA-64, Buildings 39 and 64.
- Keep work areas, walkways and aisles neat, clean, unobstructed, and dry; housekeeping
- Slow down when approaching blind corners.
- Avoid carrying a load that obstructs your vision.
- All equipment and material stored on shelving must fit within the bounds on the shelving, no equipment shall stick out into the aisle.
- Only access material and equipment on shelving through the use of a ladder or rolling stairs. **(DO NOT CLIMB ON THE SHELVING)**
- Use only ladders, rolling stairs, or other appropriate equipment to access shelving or material stored high, do not use chairs, rolling table or dollies.

B. Repetitive stress

- Take breaks every hour or so, stand up and move around to restore circulation and stretch your muscles.
- If possible, alternate activities so that work at the workbench or computer terminal is not done in continual long time blocks.
- The chair and/or keyboard and mouse pad should be adjusted so the forearms and thighs are horizontal. Feet should be flat on the floor. A footrest or wrist rest may be needed to provide support.
- The monitor should be eye level and a copy stand should be used to keep the work at the same height as the monitor. Avoid glare on the screen.
- If uncomfortable, contact HSR-5 for an ergonomics evaluation. See [LIR 402-870-01, Ergonomics](#).

HAZARD CONTROL PLAN, continued

**Mitigating
hazards
(cont'd)**

C. Struck-by injury:

Shelving -

- Secure all pallet type and large shelving units to the building to prevent tipping. Penetration Permit required.
- Store all rolling stock on the lowest shelves (cable spools, pipe, casing) and block to prevent from rolling.
- All equipment and material stored on shelving must fit within the bounds on the shelving; no equipment shall stick out into the aisle.
- Do not use the tops of tall cabinets to store heavy objects.
- Store materials in stacked, strapped, blocked, or interlocked tiers and in limited height to ensure stability and security against sliding or collapse.
- Storage racks shall have sufficient capacity to bear the loads.

Roll-up doors -

- Open and close slowly while always keeping a handhold on the chain. Do not allow the chain to free wheel.
- Do not stand or work under the roll up doors during operation or while fully open.
- Only open the door to their fullest height and secure the chain; do not open halfway and egress or drive in a vehicle.
- Ensure that there is maintenance schedule for the roll up doors.
- Review manufactures instructions on door operation and maintenance.

Overhead obstructions -

- Wear hardhat if working below other workers and/or in areas where sharp projections or other overhead hazards exist.

HAZARD CONTROL PLAN, continued

**Mitigating
hazards
(cont'd)**

- D. Injuries from hand tools: Cuts, bruised, pinches, scrapes.
- Review and read manufactures instructions on tool operation and maintenance.
 - Wear work gloves and eye protection while working with hand tools.
 - Be aware of surroundings, think about what would happen if a tool slips.
 - Only use the proper tool for a task. If the proper tool is not available, get it!
 - Keep all work surfaces and floors clean and swept (no metal shavings, chips, or dirt); clean up after yourself.
- E. Stress/strains: lifting heavy objects
- Use dollies and hand trucks for moving heavy materials. Make arrangements with KSL to move furniture and other heavy objects.
 - Use proper lifting techniques.
 - Use good judgment when gauging the weight you can lift, and stay within your limits. Do not lift bulky materials or those weighing more than 30 pounds without assistance or the use of a mechanical lifting device.
 - DO NOT lift any object greater that 50 lbs above eye level without the use of a lift.
 - Space feet apart for good balance, and position yourself close to the object you are lifting.
 - Keep spine straight as you squat or kneel next to the object to be lifted.
 - Flex legs as you lift, using them to do most of the work, and keep the objects close to your body.
- F. Chemical burns/inhalation injuries: improper use of chemicals
- Due to the limited amount of chemicals in use, the facility, operations, and personnel follow the Hazard Communication Plan, attachment #2, of the LIR 402-510, *Chemical Management*.

HAZARD CONTROL PLAN, continued

**Mitigating
hazards
(cont'd)**

G. Electrical burns/shock: Power hand tools and electrical troubleshooting of instruments.

- Follow all manuals for equipment operation.
- Inspect all extension cords and power tools for signs of aging (frayed or broken cords, scorched contacts, etc). If a cord is found in disrepair:
 - Remove from service,
 - Cutup extension cord and discard,
 - Repair cord on power tool.
- Observe lockout/tag out processes.
- Use GFI protected circuits or extension cords for all outdoor and shops area uses.
- Assure that the temporary wiring equipment is rated for its intended use (wet/ dry, indoors/outdoors, flammable or explosive etc.)
- Assure that the load rating of the temporary wiring is not exceeded.
- Assure there is a firm connection when plugging equipment into a receptacle outlet or an extension cord.
- Badges and jewelry must be removed; long hair and clothing must be kept clear of moving parts or powered equipment.
- Do not overload electrical outlets. Do not “daisy chain” extension cords and “Fat Phoebe’s” together.
- Unplug any equipment that sparks, smokes, or delivers an electrical shock. Have it inspected by appropriate repair personnel.
- Use only UL-listed equipment or components.

H. Ignition sources: spark or flame producing activities

- Follow LIR 402-840, *Welding, Cutting, and Other Spark - or Flame-Producing Operations*, and obtain a Spark and Flame permit for all covered work.
- Keep fire extinguishers and fire pull boxes clear of obstructions, tools, and cabinets.
- Maintain a minimum of 18” clearance from sprinkler heads to any material or equipment.
- Keep all fire alarms (audible and strobe lights) clear of any obstructions.

HAZARD CONTROL PLAN, continued

Mitigating hazards (cont'd)

- I. Working alone hazards: Inability to receive immediate medical attention.
 - When only one individual occupies the building, a radio/cell phone must be available on the person to conduct work. Use enhanced communication protocol ([RRES-WQH-SOP-004, Radio and Cellular Phone Use](#))
 - Working with power tools, while alone, is prohibited.

- J. Indoor pollutant contamination:
 - Keep the doors between the work bays and the center work area closed; do not block open doors.
 - Vehicles may be parked in the south bay to load and unload and for overnight.
 - Idling of vehicles in either work bay is prohibited.
 - Use exhaust fans in work bays to bring fresh air into the building.
 - Gasoline powered equipment cannot be stored in the building. All gasoline powered equipment will stored in a separate transportainer or under the shelter.

- K. Motor vehicle operation:
 - Two person ruled is required for the following:
 - Pulling or backing a trailer into or out of the building, within the yard, or covered shelter.
 - Backing of any vehicle into or out of the building or covered shelter.
 - It is highly recommended that the use of a two-person ruled is followed for all vehicle entry into the building.
 - Do not idle vehicle within the building or in front of access or entry doors.
 - Vehicles with any noticeable leaks or fumes cannot be parked within the building.

HAZARD CONTROL PLAN, continued

**Mitigating
hazards
(cont'd)**

L. Pressure system accidents:

- Compressed air shall not be used for cleaning purposes except where reduced to less than 30 psi. and then only with effective chip guarding and personal protective equipment.
- The maximum air pressure approved for general use in the shop is 30 psi (pounds per square inch). This pressure is sufficient for most shop operations and is not significantly hazardous. Use discretion and good judgment when using compressed air, even at this low pressure.
- The following rules and practices are suggested to avoid personal injury, equipment damage, and potential environmental impact:
 - All personnel assigned to shops with air compressors shall be familiar with compressor operating and maintenance instructions.
 - Compressed air is not to be used to blow dirt, chips, or dust from clothing.
 - Never apply compressed air to any part of a person's body.
 - Air compressors shall be maintained strictly in accordance with the manufacturer's instructions.
 - Never use compressed air where particles can be accelerated by the air stream.
 - Do not use compressed air to clean machinery or parts unless absolutely necessary. Where possible, use a brush. If necessary, use a minimum pressure and provide barriers or clean the area of personnel. Wear goggles to protect your eyes.
 - Do not use a compressed air line that does not have a pressure regulator for reducing the line pressure.
 - Keep the hose length between tool housing and the air source as short as possible.
 - Where possible, attach a short length of light chain between the hose and the housing on air-operated tools. This keeps the hose from whipping should the hose-tool coupling separate.
 - Inspect air supply and tool hoses before using. Discard and label unfit hoses. Repair hoses where applicable.

HAZARD CONTROL PLAN, continued

**Mitigating
hazards
(cont'd)**

L. Pressure system accidents: (continued)

- Turn valve off and vent pressure from a line before connecting or disconnecting it. Never work on a pressurized line.
- Do not use compressed air to transfer materials from containers when there is a possibility of exceeding the safe maximum allowable working pressure of the container.
- The maximum working pressure of compressed air lines shall be identified in psi. Pipeline outlets shall be tagged or marked showing maximum working pressure immediately adjacent to the outlet.

WARNING: It is dangerous to pressurize any container not designed for that purpose.

M. Hearing injury:

- Use appropriate hearing protection in designated hazardous noise areas.
- Contact HSR-5 for noise level survey and guidance on type of hearing protection required.

N. Harmful objects or materials:

- Multi-use gloves shall be worn to protect the hands from injuries caused by handling sharp or jagged objects, wood, or similar hazard-producing materials. These gloves are usually made of cloth material with chrome leather palms and fingers or synthetic coating. All-leather gloves are also acceptable.
- Personnel working in battery areas or where acids, alkalis, organic solvents, and other harmful chemicals are handled shall wear rubber protective gloves.

HAZARD CONTROL PLAN, continued

**Mitigating
hazards
(cont'd)**

O. Fire hazards:

- Fuels such as gasoline shall never be used to clean floors or clothing, and open solvent or gasoline containers shall not be kept near electrical equipment.
- The use of low flashpoint petroleum solvents shall be avoided whenever possible.
- Open flames, open element heaters, equipment not properly grounded, and nonexplosion-proof electrical equipment used in the presence of flammable or combustible liquids shall be avoided.
- Fire extinguishers of at least 20 BC or greater rating shall be installed in building areas. Fire extinguishers shall meet the following requirements:
 - Be kept fully charged and in their designated area.
 - Be located along normal paths of travel.
 - Not be obstructed or obscured from view.
 - Be visually inspected at least monthly by the Facility Coordinator to ensure that they:
 - Are in their designated places.
 - Have not been tampered with or actuated.
 - Do not have corrosion or other impairments.
 - Are accessible and not obstructed.
 - Be examined at least yearly and/or recharged or repaired to ensure operability and safety by the KSL Fire Inspectors.
 - Be placed so the maximum travel distance, unless there are extremely hazardous conditions, does not exceed 75 feet for Class A or 50 feet for Class B locations.
- Ensure that construction debris and rubbish is removed from the work area upon completion of the job, or daily if needed.
- Hazardous materials shall not be left at out unless properly stored.

HAZARD CONTROL PLAN, continued

**Mitigating
hazards
(cont'd)**

P. Improper work area layout:

Equipment and machinery -

- Arrange equipment and machinery to permit an even flow of materials.
- Provide sufficient space to handle the material with the least possible interference from or to workers or other work being performed.
- Place machines so it is not necessary for an operator to stand in a passageway or aisle. Additionally, machine positioning should allow for easy maintenance, cleaning, and removal of scrap.
- Establish clear zones of sufficient dimensions to accommodate typical work. Mark machine clear zones using yellow or yellow and black hash-marked lines, 2 to 3 inches wide.
- Securely anchor machines designed for fixed locations .
- Use rope/stanchions to temporarily extend the workplace if pieces of stock to be worked exceed workplace/clear zone floor markings.
- Securely anchor and install accord to manufacturer's instructions machines with shock mounting pads shall be securely anchored and installed
- Store equipment and machines low and close to the ground or floor to reduce possibility of injury.

Passageways and aisles -

- Provide and mark passageways and aisles to permit the free movement of employees bringing and removing material from the shop.

Illumination -

- Provide adequate illumination ensure safe working conditions.
- Portable lamps shall have UL approved plugs, handles, sockets, guards, and cords for normal working conditions.
- Provide at least 50 foot-candles of illumination at all workstations. However, fine work may require 100 foot-candles or more. This can be obtained with a combination of general lighting plus supplemental lighting.

HAZARD CONTROL PLAN, continued

**Mitigating
hazards
(cont'd)**

Q. Welding:

- Establish a designated area in which routine and repetitive welding, cutting and other spark producing operations are conducted.
- Keep combustible material at least 35 feet horizontally or covered with fire resistant covers when spark or flame producing operations are underway
- Maintain a fire watch whenever spark or flame producing operations are performed in locations where other than a minor fire might develop.
- Maintain fire extinguisher equipment accessible.
- Welder must have training course “Fire Extinguisher: Designated Worker and Fire Watch”
- Use personal protective equipment (PPE) that is required during the operation. See Section 4.3 of ANSI Z49.1 for flame resistant clothing and OSHA 1910. 252 for PPE requirements specific to welding, cutting, and brazing.
- Ensure that pipes or containers are emptied, cleaned, and/or purged
- Contact qualified HSR personnel:
 - if the work will be conducted in a confined space, near a chlorinated solvent, cleaning compounds, cadmium, fluorine, zinc, lead, beryllium, or mercury.
 - the operation involves drums, barrels, tanks, pipes, or other containers that have contained or cleaned with flammable materials or substances when subjected to heat, produce flammable or toxic vapors.
 - hot work on stainless steel, lead materials or lead painted surfaces.
- Place welding cable and other equipment so that it is clear of passageways, ladders and stairways.
- Operators shall be qualified and/or certified on the welding, cutting, burning, brazing, grinding and other spark or flame producing equipment
- Have FWO FIRE remove smoke detector system from service if needed.
- Control ventilation by keeping doors open and/or turn on building ventilation system.
- Don respiratory protection, head, eye, face, foot, and glove protection
- Ensure combustible gases are clear of work area.

HAZARD CONTROL PLAN, continued

Training List knowledge, skills, ability, and training necessary to safely perform this work (check one or both):

- Group-level orientation and training to this procedure.
- Other → See training prerequisites on this procedure, page 2.

Wastes, residual materials Are there any wastes and/or residual materials? (check one) None List:

- Card board
 - Recycle paper
 - Salvage items
-

Residual risk Consider the administrative and engineering controls to be used, the residual risk level (as determined according to LIR 300-00-01, section 7.3.3) is (check one):

Minimal Low Medium (requires approval by Division Director)

Emergency actions Emergency actions to take in event of control failures or abnormal operation:

Follow the Emergency Procedures in the Emergency Response Plan, ERP-CFM-64, for TA-64, Buildings 39 and 64.

Work will be performed to controlled copies only. This plan and procedure will be revised according to RRES-WQH-QP-QP-023, *Preparation, Review, and Approval of Procedures*, and distributed according to RRES-WQH-QP-021, *Document Distribution*.

Chemical Management

Los Alamos National Laboratory
Laboratory Implementation Requirements LIR 402-510-01.0
Issue Date: 12/23/99

Mandatory Document

ATTACHMENT 2

HAZARD COMMUNICATION PLAN

1.0 Introduction

This attachment states the requirements that shall be implemented for the Laboratory's "Hazard Communication Plan" (HAZCOM Plan). It defines the minimum set of requirements that shall be adhered to for implementing the Hazard Communication Standard (29 CFR 1910.1200, "General Industry," or 29 CFR 1926.59, "Construction").

2.0 Scope and Applicability

This HAZCOM Plan shall apply to any chemical that is known to be present in the workplace to an extent that employees or subcontractors may be exposed under normal conditions of use or in a predictable emergency. It shall apply to production facilities and to locations in which

- commercial products are made;
- routine operations are conducted (such as solvent cleaning);
- chemicals are used for product preparation (such as a dip tank or painting operation);
- personnel are engaged in construction, facility work, or maintenance; and/or
- chemical residues are present (such as those being cleaned up under the Environmental Restoration and Decontamination and Decommissioning programs).

Any routine operations in which more than 50% of the work (e.g., detonator production, pit production, maintenance and construction, photographic development, and mechanical shops) involves a finite list of hazardous compounds must meet the provisions of this attachment. This plan covers the requirements that shall be implemented for maintaining material safety data sheets (MSDSs), lists of hazardous chemicals, medical surveillance, and requirements for training workers on the hazards of the chemicals with which they work.

"Occupational Exposures to Hazardous Chemicals in Laboratories," 29 CFR 1910.1450, shall apply to (1) laboratories engaged in laboratory-scale work when multiple chemical procedures or chemicals are used, (2) the analytic procedures are not part of a production process nor in any way simulate a production process, and (3) "protective laboratory practices and equipment" are available and in common use to minimize the potential for exposure to hazardous chemicals. (See Attachment 1, "Chemical Hygiene Plan.")

3.0 Definitions

3.1 Acronyms

ACIS	Automated Chemical Inventory System
AHA	Activity hazard analysis
ESH	Environment, Safety, and Health (Division)
FOM	Field Operations Manual (Industrial Hygiene and Safety Group)
HAZCOM	Hazard communication
HCP	Hazard control plan
MSDS	Material data safety sheet
OSHA	Occupational Safety and Health Administration
PPE	Personal protective equipment

3.2 Terms

Hazard control plan—A document that records the review of an operation that (1) identifies hazards present in the operation, (2) develops solutions that eliminate unacceptable risks, and (3) describes how an operation is to be safely performed in accordance with integrated safety management.

Original container—A chemical container bearing the original label as received from a manufacturer or distributor.

Portable container—Any chemical container that will be used only by the person who puts chemicals into the container and the contents of which will be used entirely in a single workday.

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Secondary container—Any chemical container other than an original container that will be used by more than one person or will be used beyond a single workday.

4.0 Responsibilities

The elements of the HAZCOM Plan that shall be implemented and the responsible individual or organization are described in Table 2-1.

TABLE 2-1

RESPONSIBILITIES INVOLVED IN MANAGING HAZARDOUS CHEMICALS

Individual or Organization	Shall
<p>Safety- and Environment-Responsible Line Managers</p>	<ul style="list-style-type: none"> • Ensure that the inventory of tracked chemicals purchased or produced is current on ACIS and that a hard copy is available to workers by operation/location. (ACIS fulfills this requirement.) • Maintain MSDSs in an accessible form for all hazardous chemicals present in the workplace. (Electronic MSDSs are available at http://www.esh.lanl.gov/~esh5/) • Ensure that procedures are in place to inform employees of the hazards of nonroutine tasks. • Prepare MSDSs for chemicals that are produced for use by other facilities or organizations (see Table 2-2). • Ensure that containers meet labeling requirements and that the labeling system is explained to workers (see Attachment 4). • Determine (with assistance from an ESH qualified person) the control measures that are to be implemented and the PPE that is to be used for operations involving hazardous chemicals. • Ensure adherence to prescribed restrictions for use of conditionally approved engineering controls (see Attachment 10). • Ensure that required PPE is available and used when required (see Attachment 9). • Ensure that workers have received site-specific or job-specific training as needed and that employees are authorized to work with all of the chemicals they handle. • If carcinogens are used, shall ensure the Carcinogen Management Program (Attachment 3) is implemented. • Ensure that chemicals do not exceed storage limits (see Attachments 6 and 7). • Determine a disposal plan for shock-sensitive and peroxide-forming compounds and document in the HCP (see Attachment 5). • Segregate incompatible chemicals (see Attachment 5).
<p>Qualified Chemical Worker</p>	<ul style="list-style-type: none"> • Follow the HAZCOM Plan and the required HCP, AHA, or equivalent manuals or procedures for the chemicals to be used. • Report immediately to the safety-and-environmentally-responsible line managers and FMs all accidents, spills, and leaks that could result in occupational exposure, illness, or injury. • Maintain PPE in a clean and ready-to-use condition and wear PPE when required. • Identify containers requiring labeling and implement Attachment 4 requirements. • Attend required training.

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Occupational Medicine Group	<ul style="list-style-type: none"> Provide annual medical surveillance for participating chemical workers. Report to safety-and-environmentally-responsible managers and to the Industrial Hygiene and Safety Group all cases of employee exposure.
ESH Qualified Person	<ul style="list-style-type: none"> Conduct workplace evaluations using calibrated and maintained equipment in accordance with Industrial Hygiene and Safety Group's FOM procedures (http://www.esh.lanl.gov/~esh5/). If exposure is monitored, report sampling data results to the safety-and-environmentally-responsible line managers, to Occupational Medicine, and to Industrial Hygiene and Safety. Assist operating groups in evaluating the effectiveness of control measures.
ESH Division Training Group	<ul style="list-style-type: none"> Provide introductory HAZCOM training.

5.0 LANL Hazard Communication Standard Requirements

Many of the general requirements shall be covered by ACIS, the on-line MSDS database, and training supplied by ESH Division's Training Group. Each organization to which the above OSHA standard applies must implement the activity-specific requirements below, which may exist in either facility-level or activity-level documents, such as AHAs, HCPs, and operating procedures. Table 2-2 lists the topics that shall be included in the HAZCOM Plan, as well as the minimum requirements of the Chemical Management Program under each topic.

TABLE 2-2

MINIMUM FACILITY-SPECIFIC HAZARD COMMUNICATION REQUIREMENTS

Topic	Minimum Requirements Shall Be
Written Program	<ul style="list-style-type: none"> Identification of how labeling, MSDS, and employee information and training requirements shall be met (see Attachment 4). Maintenance of chemical inventory on ACIS. A list of specific information and training requirements for workers. A maintained list of hazardous chemicals known to be present at the work location, including laboratory-produced chemicals. Identification of the methods that shall be used to inform employees of the chemical hazards of nonroutine tasks. An explanation of how workers of other employers will be informed of precautions and labeling and how the workers will have access to MSDSs.
Labels and Other Forms of Warning	<ul style="list-style-type: none"> Marking each container of hazardous chemicals leaving the workplace with the identity of the hazardous chemicals, appropriate hazard warnings, and the name and address of the chemical manufacturer (see Attachment 4 and LIR 405-10-01, "Packaging and Transportation"). Immediately replacing any manufacturer's labels that have been removed or defaced. Ensuring that labels remain legible and displayed in a prominent place. Labeling secondary containers, (not the same as secondary containment) as required, unless they are used immediately by the employee performing the transfer (see Attachment 4). Changing labels to reflect new hazard data, if the data are available to the owner.
Material Safety Data Sheets	<ul style="list-style-type: none"> Keeping a copy of the MSDS for each hazardous chemical in a workplace location that is readily available to employees during each work shift. (Electronic copies of MSDSs are available at http://www.esh.lanl.gov/~esh5/). Generating MSDSs for laboratory-produced materials used by other facilities or organizations whenever the composition of the chemical substance contains a hazardous chemical. Whenever a mixture is formed, the MSDSs developed must include the chemical composition when a hazardous chemical exceeds 1% (0.1% for carcinogens). The Industrial Hygiene and Safety Group's Toxicology Team shall be contacted for assistance in generating an MSDS.
Information and Training	<ul style="list-style-type: none"> Informing employees of the

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	<ul style="list-style-type: none"> - requirements of the HAZCOM Plan, - operations in their areas when hazardous chemicals are present, and - location and availability of the written program, including chemical lists and MSDS files. <ul style="list-style-type: none"> • Training employees on <ul style="list-style-type: none"> - hazardous chemicals in their workplaces at the time of initial assignment and whenever new hazards are introduced, - methods that shall be used to detect the presence or release of hazardous chemicals, - physical and health hazards of chemicals in the workplace, measures employees can implement to protect themselves from these hazards, and - details of the Laboratory's HAZCOM Program, including an explanation of the labeling system, MSDSs, and how employees obtain hazard information. <p>Note: HAZCOM training provided by the ESH Division Training Group covers the general requirements for training. Each group need only supply training on workplace-specific hazardous chemicals.</p>
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6.0 Required Records

Official record and document maintenance shall be the responsibility of the parties identified in Table 2-3.

TABLE 2-3

RECORD-KEEPING REQUIREMENTS

Individual or Organization	Shall
Safety and Environment-Responsible Line Managers	<ul style="list-style-type: none"> • Maintain current chemical inventory on ACIS. • Implement current hazard analysis documentation such as AHAs, SOPs, or HCP(s) that are referenced by the HAZCOM Plan.
Occupational Medicine Group	<ul style="list-style-type: none"> • Maintain medical consultation, medical examination, and medical surveillance records.
Industrial Hygiene and Safety Group	<ul style="list-style-type: none"> • Keep performance testing records for control measures (e.g., tests performed on hoods and respirators). • Maintain LANL's "Hazard Communication Plan."

7.0 References

ANSI 1998. "American National Standard Material Safety Data Sheets—Preparation," ANSI Z400.1, New York, New York.

OSHA (Occupational Safety and Health Administration). "Hazard Communication Standard," 29 CFR 1910.1200, most recent edition, Washington, DC.

OSHA (Occupational Safety and Health Administration). "Hazard Communication Standard," 29 CFR 1926.59, Construction, most recent edition, Washington, DC.