



**SAFETY HANDBOOK
FOR
OUTSIDE CONTRACTORS**



**Prepared by
HRL Laboratories, LLC
Environmental Health & Safety**

2007

THE CONTRACTOR CAN AVOID UNNECESSARY DELAY AND EXPENSE IN PROCEEDING WITH THIS WORK BY ASSURING THAT ALL PERSONNEL REPORT TO WORK WITH THE NECESSARY PERSONAL PROTECTIVE EQUIPMENT REQUIRED FOR THE JOB.

TELEPHONE NUMBERS FOR YOUR USE:

All Emergencies 3333

Be ready to provide information including the location of the emergency and assistance required.

Environmental, Health & Safety (EH&S) 5252

Security 5583

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23656 Pacific Coast Hwy
Malibu, CA 90265
(9:00 a.m. to 7:00 p.m.).....9+456-7551

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FOREWORD

There may be a number of requirements in this booklet that may not be applicable to the job you will be doing. Look through the table of contents and read those sections that pertain to you and your job. You will be responsible for operating in the manner prescribed in this booklet. If you have any questions regarding any part of this booklet contact HRL Project Coordinator.

In addition, there may be specific area checklists that you may be required to sign along with the Project Coordinator. These checklists, if applicable, will be provided by the Project Coordinator.

When working near our employees please consider that they are obligated to accommodate you but they are also required to continue their work. See the Project Coordinator if you think your work may interfere with them or when you believe our products may be damaged by sparks, dust, or the materials you are using. Remember, all of our products are of great value and have scientific importance.

I. INTRODUCTION

Personnel safety and environmental protection are vital considerations to any viable business. There are humanitarian as well as economic advantages to fulfilling the legal obligations for achieving accident-free work imposed by the various regulatory agencies.

HRL recognizes that many hazards are inherent in heavy industrial work and construction. This handbook is intended as a guide to assist the contractor in understanding HRL's commitment to safety and environmental protection. Through the use of sound, reasonable safety requirements the potential for injuries can be minimized and our environment protected.

The contractor is required to follow applicable Federal, State, and Local regulations as well as HRL Environmental Health & Safety (EH&S) requirements controlling safety and environmental protection on the work site. Contractors are to follow the rules while on site. If you are uncertain about your obligations, contact your Project Coordinator.

II. DEFINITIONS

Outside Contractor — Anyone who by contract (Purchase Order) provides services for HRL within a Company facility under varying degrees of HRL supervision. This includes all general contractors and subcontractors.

EH&S Office — HRL Laboratories, Environmental Health & Safety Office (EH&S).

Requester Organization — The HRL Organization requesting the services of the outside contractor.

Project Coordinator — HRL employee(s) assigned to monitor the progress of the contract and act as interface between HRL and the outside contractor. May or may not be a member of requester organization.

Outside Contractor Safety Representative — Contractor employee, designated by name and title, in charge of safety for the contractor.

Qualified person — A person designated by the contractor and qualified by training and experience to properly and safely perform a particular task or function.

Authorized Operator — A person authorized by the contractor to operate a given piece of equipment or tool.

Warning Barricades — Barricades that alert personnel to a hazard but offer no physical protection (e.g., high-visibility synthetic tape).

Protective Barricades — Barricades that warn as well as protect personnel (e.g., wood posts and rails, cable or posts with a chain rail).

III. EMERGENCY INFORMATION

A. Injury/First Aid

All injuries must be reported to the Project Coordinator. Injuries may be treated at one of the facilities listed at the front of this Handbook.

B. Chemical Spill or Release

In the event of a spill or release of hazardous materials (including asbestos), all outside contractor employees must follow the procedures listed below:

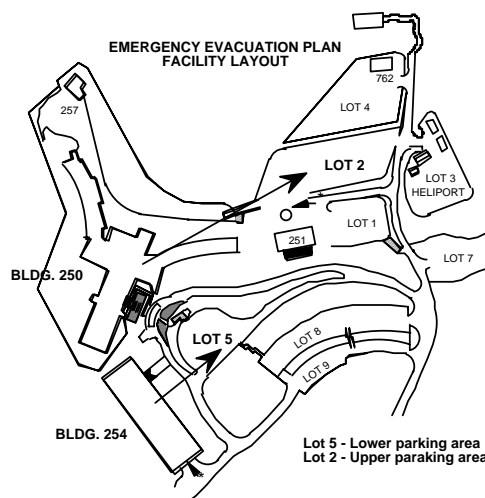
1. Evacuate the spill area immediately.
2. Call the HRL Emergency number, extension 3333.
3. Ensure that no one reenters the spill area until the EH&S Representative arrives and allows reentry.
4. Notify the HRL Project Coordinator.

C. Fire

The HRL Emergency phone number (Ext. 3333) must be called immediately in case of fire.

D. Evacuation

Any order to evacuate will be made over the public address (PA) systems. Other means may be used if the PA is disabled. In Building 254 an automatic building evacuation siren will sound in case of a hazardous gas leak, smoke detection or fire sprinkler discharge. This will be followed by further instructions over the PA.



All personnel will evacuate to the locations indicated on the map below. During off-hours Lot 2 is closed so all personnel must evacuate to Lot 5.

IV. GENERAL INFORMATION

A. Notifications

Prior to commencing work, the outside contractor must notify the Project Coordinator of the name and title of his safety representative.

B. Personal Protective Equipment

Personal protective equipment must be provided by the outside contractor. Its use is mandatory and is the responsibility of the contractor.

C. Vehicles on Plant Roads

All HRL traffic and parking regulations must be observed. Clear access must be maintained for emergency vehicles at all times. Check with our Project Coordinator for appropriate parking places.

D. Conduct

Horse play, fighting, gambling, drinking alcoholic beverages, using unauthorized drugs, failure to follow HRL Contract Requirements or any other undesirable conduct at HRL's discretion, may bar those involved from HRL.

Weapons, narcotics, alcoholic beverages, radios, cameras, tape recorders, and explosive materials are prohibited on HRL property.

E. Equipment

The Contractor must provide the equipment necessary for the safe performance of his work. All tools and equipment brought onto the Site for use must be in good repair and are subject to inspection and approval by the HRL Project Coordinator and/or SHEA Representative; however, any such inspection or approval does not relieve the contractor of responsibility for the safety of the item(s).

F. Authority to Proceed

Contractor's personnel may start work only after receiving the necessary permission, instruction and identification from the Project Coordinator for the types of work described below.

1. Hot Work — Any open flame such as welding, oxy-acetylene burning, tar kettles, etc., and the use of portable spark or heat producing equipment. (Burn Permit issued by HRL Security; a 24 hour notice is requested.)

NOTE: This does not include electrical hand tools unless used in an explosive or other hazardous area.

2. Electrical and mechanical lockouts (provided by contractor).
3. Entrance into confined spaces, i.e., operating vessels, holding tanks, or pits (EH&S approval required). Prior to entering any confined space the contractor must take sufficient atmospheric readings to ensure that the air is suitable for human occupancy. The oxygen level must be between 19.5 and 24 percent.
4. Any excavation on HRL property or underground utility service installations (EH&S approval required).
5. Exposure to corrosive or toxic materials or to high pressures or high/low temperatures (EH&S concurrence required).
6. Any unusual movement of heavy equipment, i.e., over building floors and roofs, into and on elevators, or over plant roads must coordinate with the Project Coordinator prior to going onto or doing any work on the roof of Building 250.
7. Blasting and the use of explosive actuated tools. (Present license to the Project Coordinator who will obtain EH&S concurrence).
8. Construction work on idle or abandoned pipelines and tanks which were used for transmission or storage of flammable gases (such as natural or propane gases) must be inspected and approved by the Project Coordinator before start of work.
9. The use of any equipment which produces sound levels greater than 85 dB (A). Inform the Project Coordinator who will ask EH&S to determine if a noise survey is required.
10. Work in close proximity to underground or above-ground utilities.
11. Painting operations within the facility, especially if occupied, require the coordination of the Project Coordinator with SHEA prior to the operation.
12. Any other work which the requesting organization, Project Coordinator, or SHEA representative feels may prove hazardous to personnel, property, product or equipment.

G. Safety Instructions

The contractor's supervisor is responsible for explaining safety precautions and actions that must be taken to contractor employees while performing the task.

H. Housekeeping

Work areas must be cleaned up continually as the job progresses. Cords and hoses routed across walkways must be maintained in a manner that will not present a tripping hazard. All materials, tools and equipment must be stored in a stable position (tied, stacked or chocked) to prevent rolling or falling. A safe accessway to all work areas must be maintained. All trash and debris is to be removed by contractor as prescribed in *Trash, Waste, and Scrap Disposal*, Section VIII, K. Scrap, trash, and other wastes (including hazardous wastes) should only be removed by the HRL contracted disposal company (coordinate with EH&S).

I. Inspections

A work area inspection by the contractor safety representative is to be made daily at the beginning of each shift and periodically throughout the day as necessary to ensure safe conditions (stable shoring, safe access and egress, etc.); and at the end of each shift to be sure that all flames are extinguished and that no safety hazards exist.

An EH&S representative may inspect the job site to assure the safety of contractor and HRL employees. Any such inspection shall not relieve the contractor of his responsibility for the safety of the project. In situations presenting imminent jeopardy to the health or safety of personnel or environment, or loss of property, HRL Project Coordinator and/or EH&S have/has authority to cause immediate cessation of operations.

J. Asbestos-Containing Materials

Until the last several years, asbestos was used in many building materials. Examples of materials suspected of containing asbestos are fireproofing, pipe insulation, floor tiles, sprayed-on decorative ceilings, and adhesives.

Activities involving asbestos-containing materials (ACMs), are closely controlled by federal, state, and local regulations. Contractors are responsible for ensuring that projects are conducted in accordance with these requirements.

Contractors are expected to be knowledgeable about the types of materials that may contain asbestos and to recognize when they suspect material is encountered.

Because ACMs may be encountered prior to or during construction projects, the Project Coordinator will inform the contractor of all ACMs known to be present in the areas where the contractor employees may be exposed. It is the contractor's responsibility to notify affected employees if additional

material suspected to contain asbestos is found. The contractor has a duty to question whether or not a material contains asbestos and halt work until an accurate determination is made. If suspect material is encountered, work must be stopped immediately and the Project Coordinator notified. The Project Coordinator will contact EH&S who will determine the action to be taken.

Contractors are prohibited from using any asbestos-containing materials on any construction project HRL.

K. Hazard Communication

Outside contractor employees must understand the hazards and precautions associated with the hazardous substances they use or to which they may be exposed in the course of their work. The Project Coordinator must ensure that the outside contractor has been informed of areas where hazardous substances from HRL operations may be present. Outside contractors must provide the Project Coordinator with Material Safety Data Sheets for all hazardous substances they plan to use on HRL property before beginning work.

Labels must be affixed to all containers of hazardous substances. Labels must include the product trade name as well as appropriate physical and health hazard information. Non-hazardous material containers must also indicate their contents.

L. Environmental Compliance/Hazardous Waste

Outside contractors are expected to understand and follow all applicable environmental regulations (e.g., hazardous waste, air quality, wastewater discharge, etc.). The outside contractor must handle any hazardous waste generated in accordance with all applicable regulations. No chemicals may be washed to or put into storm drains.

Approval by the EH&S Office must be obtained when the work requires use of any hazardous chemical.

V. PERSONNEL PROTECTION

It is contractor's responsibility to have available the proper type of PPE.

A. Head Protection

Hard hats meeting ANSI standards are required at all construction sites, as well as other designated hard hat areas. "Bump" caps and metal hard hats are acceptable in areas where allowable by law.

B. Eye Protection

Types of eye protection:

1. Industrial safety glasses with side shields are required to be worn at all construction sites and designated eye hazard areas.
2. Burners goggles are required for all gas welding and burning.
3. Goggles or full face shields over safety glasses with side shields are required for power chipping, grinding, and sawing.
4. Full face shields over safety glasses with side shields are required when handling molten materials, such as lead or tar.
5. Special purpose protection is required when handling acids, caustics, sandblasting — check with the Project Coordinator and EH&S.

C. Hearing Protection

Hearing protection will be required in areas where the noise level is in excess of a time weighted average of 8 hours at 90 dB (A).

D. Hand Protection

1. Plastic or rubber-coated gloves specifically designed for use with the particular chemicals are required when handling solvents, acids, or chemically-treated material.
2. Dielectrically tested rubber gloves must be worn on all power line work or whenever contact is possible with energized circuits (per National Electric Code).

E. Foot Protection

Contractor employees performing work which exposes their feet to injury from falling material or objects must wear adequate foot protection.

F. Respiratory (Breathing) Protection

Ventilators, fans, air movers, respirators or a combination of these must be used when necessary to protect personnel from breathing hazardous atmospheres. Respirators must be in good condition and be approved by the National Institute for Occupational Safety and Health. EH&S must be notified prior to beginning any job requiring respiratory protection.

VI. TOOLS

Tools must be tied off when in use above personnel and equipment. Electric tools must be U.L. approved.

A. Hand Tools

1. Specific Safety Considerations:

Impact tools (chisels, star drills, and caulking irons) tend to “mushroom” and create flying spall unless dressed. Tools may be used only for the purpose for which they are designed. Never use “cheaters” to increase capacity.

B. Power Tools

1. Power tools should not be operated without instructions from the contractor’s supervision.
2. Portable electric equipment and tools must be grounded or double insulated.
3. Air supply to pneumatic tools must be shut off and “bled down” before disconnecting.
4. The electric cord must be unplugged before adjusting electric tools.
5. Proper guards or shields must be installed on all power tools.
6. Machines must be shut down before adjusting, servicing, or repairing to prevent accidental starting. This will require the complete “Lock, Block and Tag” procedure. (See *Lockout/Tagout*, Section IX B.)
Before starting up, all guards must be replaced and all cranks, keys, or wrenches used in the service work must be removed. Be sure replacement parts meet the tool specifications, for example: grinder wheels must be approved for maximum RPM of the machine; wood cutting bits must be approved for wood work; blades must have proper arbor shape; etc.
7. Tools must never be suspended over personnel or high value equipment.

8. Machines must be shut off and brought to a complete stop before removing waste.
9. Tools must be inspected daily before starting up.
10. Interlocking devices must be in working order and never bypassed.

C. Rigging Equipment

1. Use a shackle to hold two or more eyes of a choker in a hook.
2. Ensure that all hooks have a safety latch or are moused, except during steel erection or when shake-out hooks are properly used.
3. Do not rig from a structural member until it has been ascertained that the member will support the load being raised. (Check with the Project Coordinator.)
4. Use only rigging equipment designed for the intended use.
5. Visually inspect hooks, shackles, chain hoists, and beam clamps before use.
6. Never use chain hoists for loads beyond their rated capacity.
7. Do not leave unsecured loads suspended or unattended.
8. Allow no part of the body below a suspended load.
9. Do not wrap the load chain around the load.
10. Use softeners where possible, to obtain a “bite” on the material being rigged.
11. Do not use fiber ropes (manila and synthetic) in or near operations involving the use of corrosive substances. In all cases they should be inspected visually before each use for excessive broken fibers, wear, and deteriorated strands.
12. Visible proof load tags must be attached to all lifting devices.
13. Do not use wire rope on hoisting equipment after it has been exposed to fire or extreme heat, or burned from contact with electricity, or when visual inspection shows damaged strands, corrosion, or more than 10% of the wires broken in one lay.

VII. EQUIPMENT

A. General

Use equipment only for its intended purpose. No work is to be done on equipment, belts, drives, conveyors, or vehicles while in operation — they must be shut down, locked, and tagged or otherwise immobilized. (See *Lockout/Tagout*, Section VIII, B.)

B. Safety Harnesses

1. Generally, safety harnesses must be worn and tied-off to independent life-lines when working from elevated areas under the following conditions:
 - a. The roof pitch equals or exceeds 4 on 12.
 - b. The work requires men to work closer than 6 feet from the roof edge without parapets.
 - c. Two-point suspension scaffolds or stages are in use.
 - d. Boatswain's (Bos'n's) chairs are in use.
 - e. Scaffolds with incomplete handrails and decking are used.
 - f. Ladders are placed near the opening.
 - g. Elevated work is being conducted where no protection is available to prevent the worker from falling.
2. Every employee issued a safety harness must be instructed by a qualified person in the proper method of wearing, using, and securing it to a stable source of lifeline.
3. Every safety harness and lifeline must be inspected by a qualified person upon issue, and by the wearer before each use.

C. Ladders

1. General information
 - a. Ladders must be inspected by a qualified person and approved for use before being put into service. Each user must inspect ladders visually before using.
 - b. Painted ladders should not be used.
 - c. If it is necessary to place a ladder in or over a doorway, the door must be barricaded and warning signs posted.
 - d. While ascending or descending a ladder, nothing should be carried that will prevent holding on with both hands. Use a handline if necessary to raise or lower materials.

- e. Both feet must be kept on the ladder rungs.
 - f. User must always face the ladder. A safety harness is required if it is necessary to work backwards from the ladder.
 - g. Only one person is allowed on a ladder, unless two-person stepladders are in use.
 - h. Metal ladders are not permitted without express written permission from Project Coordinator.
 - i. Special approval of the Project Coordinator is required in order to use a ladder on top of a scaffold, in which case, the ladder must be tied-off, with the user wearing a safety harness properly secured.
2. Straight and Extension Ladders
- a. Ladders are to be placed so that the base is out one-fourth the vertical distance from the ground to the object against which the ladder is leaning.
 - b. Ladders must be adequately tied off or held while in use.
 - c. Top of a ladder must extend at least 3 feet beyond supporting object when used as access to an elevated work area.
 - d. After extension section has been raised to desired height, the safety dogs or latches must be engaged and the extension ropes secure to a rung on the base section of the ladder before use.
 - e. Extension ladder sections are not to be used separately.
 - f. Nonskid safety feet are required on all straight and extension ladders.
3. Stepladders
- a. Stepladders must be set level on all four feet, with spreaders locked in place. Do not use as straight ladders.
 - b. Never stand on the top of a stepladder. Do not climb higher than the next to the last step, excluding the top of the ladder as a step.
 - c. Stepladders must be tied-off when in use close to the edge of an elevated platform, roof, or roof opening.

D. Scaffolding

1. All scaffold platforms must be equipped with standard 42-inch high handrails and midrail, rigidly secured and completely decked with safety plank or manufactured scaffold decking. Exceptions will require prior approval of the Project Coordinator and personnel must wear properly

secured safety harnesses unless the scaffold is low and encompasses an entire room.

2. No one is allowed to ride a rolling scaffold while it is being moved. All tools and materials must be either removed or secured on the deck before moving.
3. Scaffold handrails, midrails or brace members should not be used for climbing. Use ladders for access.
4. All scaffolds must be erected level and plumb, on a firm base.
5. Scaffolds must be tied-off or stabilized with outriggers when the height is over three times the smaller base dimension.
6. Rigidly secured 4 inch high toeboards must be used on all scaffolding.
7. Scaffolds, under which personnel are required to pass, shall be provided with 1/2 inch mesh #18 gauge wire screen between toeboard and rail.
8. Adjusting or leveling screws shall not be used on scaffolds equipped with wheels. Adjusting screws, where permitted, shall not be extended more than 12 inches of thread.
9. User must never exceed safe working loads on scaffolds.
10. Rolling scaffolds shall be used only on smooth, level surfaces, or the wheels must be contained in wooden or channel iron runners that are level and stabilized. Check overhead clearances before moving. The wheel brakes must be set prior to usage.
11. No alteration is permitted to any scaffold member by welding, burning, cutting, drilling, or bending.
12. Brick, tile, block, or similar material may not be stacked higher than 24 inches on a scaffold deck.
13. Generally, parts and sections of patented metal scaffolding from different manufacturers are not interchangeable.
14. Swinging stages, toothpicks, boatswain (bos'n) chairs, floats and needle beams must be approved by Project Coordinator and inspected by a contractor provided qualified person before use.
Safety harnesses are required on these scaffolds and must be secured before wearers step onto the scaffold and they must not be removed until personnel are clear of the scaffold. Harnesses must be tied-off to independent lifelines or building structure — one lifeline per person.
15. Scaffold (or safety) planks should not be used for skids, ramps, runways, workbenches, or purposes other than scaffold decking.

16. Before moving special scaffold materials to the site for uses other than above, user should determine the restrictions with Project Coordinator.

E. Barricades

1. Barricades are required around excavations, holes, or openings in floors or roofs, elevated platforms, around certain types of overhead work, and wherever necessary to warn people against falling or falling objects.
2. Barricades must be 42 inches high, square and level.
3. Barricades must be kept at least 4 feet back from the edge of excavations, holes, platforms, and roofs unless a protective barricade is used. Four inch high toeboards are required on protective barricades around floor openings.
4. Barricades must be erected before the hole is cut and extended as the excavation progresses.
5. Barricades must be removed when no longer needed.
6. Numerous excavations in one area may be barricaded effectively by erecting a barricade around the general use area.
7. Barricades on roadways or walkways must be equipped with blinker lights.
8. An access opening or gate should be provided to the work area where practical.

F. Hole Protection

1. All holes or openings through floors or decking at all elevations must be covered immediately with hole covers or barricades. Materials or equipment must never be stored on a hole cover.
2. Covers must be secured or cleated so they cannot slip, and must extend adequately beyond the edge of the hole.
3. Covers may be fabricated from 3/4 inch plywood, provided that one dimension of the opening is less than 18 inches; otherwise, 2 inch lumber is required. Metal covers are required over holes in roadways.

G. Signs

Legible warning signs should be placed on barricade stands, posts, or other suitable stanchions before work starts, and be removed promptly upon completion. Tape with pre-printed warning signs (e.g., "banner-guard tape") may be used.

H. Material Hoists

1. Material hoists are to be operated only by an “authorized operator.”
2. Material hoists are not to be used for lifting personnel.
3. The weight of material and capacity of the elevator or hoist must be known before using. Material must be positioned so it cannot shift or extend beyond cage limits.
4. The signal system must be posted at each landing.
5. All signal devices must be protected against unauthorized use, unintentional use, breakage or interference.
6. Exposure of hands and bodies shall be prevented at all landings and openings.
7. Hoists must comply with Federal and State standards.
8. The operator of a hoisting engine must have overhead protection of 2-inch unfinished planking or its equivalent, supported to develop its full strength.
9. Gears, belts, sprockets, drums, sheaves and contact points between moving parts of power-driven machines, when not guarded by location, must be enclosed in substantial guards or suitable guardrails.
10. Engines must be stopped before refueling.
11. Hoist brakes must be capable of stopping and holding 105% of the rated hoisting capacity. In addition, a ratchet and pawl must be provided on the drum to hold the load.

I. Welding and Burning

1. General
 - a. A hot work permit must be obtained from HRL Security prior to any welding, cutting, or similar work taking place on the premises. A 24 hour notice is requested.
 - b. All exposed combustible materials below welding and burning areas must be removed to a safe location. In addition, an approved spark catcher must be used for overhead welding. Passers-by must be shielded from welding flashes.
 - c. A 5 lb. or larger, dry chemical fire extinguisher must be within 30 feet of any welding, burning, or open-flame work. (All personnel must know how to operate the fire extinguisher. All extinguishers are supplied by the outside contractor.)

- d. Hoses and welding leads should not be run through doorways. If there is no alternative, the door must be braced open, and the hoses and leads protected from damage.
 - e. No welding or burning is to be done on a closed vessel or tank or an any vessel previously in use unless it has been decontaminated and is certified "gas free." Check with the Project Coordinator, who will obtain concurrence from EH&S.
 - f. Welding leads and burning hose must be bridged-over or supported a minimum of 7 feet above passageways and not hung from conduit or process lines, sprinkler lines, etc.
 - g. The user must inspect all leads, grounds, clamps, welding machines, hoses, gauges, torches, and cylinders for leaks and proper condition before they are put into operation.
 - h. All fittings, couplings, and connections are to be "lead-free."
 - i. Special attention to adequate ventilation must be provided while working on material which is galvanized, cadmium plated or contains chromium or nickel (such as stainless steels). Local exhaust ventilation must be provided for all inside welding operations and must meet the requirements prescribed by Cal-OSHA. EH&S must be notified when welding in confined areas is to take place.
 - j. Protective clothing appropriate to the type of welding done must be worn.
 - k. A fire watch must be conducted during welding operations.
2. Welding—Electric
- a. All work must have a separate and adequate ground, pulled from the machine to the work location in all operating areas.
 - b. The rod from the electrode holder must be removed before laying it down, the stub end discarded in an appropriate container.
 - c. All arcs are to be shielded in operating areas by fire retardant material.
 - d. The machine must be turned off at the end of each shift or when not in use for extended periods.
 - e. Welding helmets with appropriate lens shade and meeting ANSI standards must be worn.
 - f. Electric welding is prohibited from a metal ladder.

3. Welding and Burning—Gas

- a. All compressed gas welding and burning equipment must be broken down at the completion of work, with regulators removed and protective caps screwed down handtight. This is not necessary if the tanks are secured to a welding cart. Any exception requires EH&S approval.
- b. Compressed gas cylinders must be secured vertically to an adequate support while in storage, transit or use. The protective cap must be on during storage and transit.
- c. Oil and grease must be kept away from oxygen regulators, hose and fittings. Do not store wrenches, dies, cutters or other grease-covered tools in the same compartment with oxygen equipment.
- d. All hoses, gauges and torches should be inspected for leaks and proper condition before use.
- e. burning goggles with appropriate lens shade and meeting ANSI standards must be worn.
- f. Torches must never be left in a vessel, tank or other closed container because of the potential hazard of leakage.
- g. Oxygen must never be used to operate pneumatic tools, pressurize a container, blow out lines, or as a substitute for compressed air or other gases. Oxygen cylinders must be stored at least 20 feet away from fuel gas (Acetylene) cylinders unless they are combined into a regulated welding/brazing system on a welding cart.
- h. Cylinders and hoses should be placed where they are not exposed to sparks and slag from a burning operation.
- i. Cylinders should be raised to upper levels with approved rigging equipment. Do not lift them with slings or by the protective cap.
- j. Users must not strike an arc on cylinders or use them as rollers.
- k. All compressed gas welding units must be equipped with back flow check valves.

J. Compressed Air

1. Operators should only use hoses and couplings designed to handle compressed air, and inspect them before each use.
2. Operators should never crimp, couple or uncouple pressurized hose. SHUT OFF VALVE AND BLEED DOWN HOSE.
3. Compressed air must not be used for cleaning clothing.

4. Hoses should not be supported from conduit.
5. Compressed air used for blowing off surfaces must be regulated down to a maximum of 30 psi pressure or the lines must be outfitted with an approved restricting nozzle. If this type of activity is conducted, protective equipment is required.

K. Compressed Gas Cylinders

1. Compressed gas cylinders must be securely chained at all times.
2. The protective cap must be on the cylinder during storage and transit.

L. Melting Pots and Kettles

The potential for fire and serious burns is ever present when heating tar, pitch, Vitrabond, lead and similar materials.

1. Keep equipment away from any combustible structure, building, or other material and erect a barricade around the kettle. Lead pots may not be used inside a building without approval from the Project Coordinator and the EH&S office.
2. Obtain authorization from the Project Coordinator before firing the vessel.
3. Be sure the melting chamber is vented; and inspect hoses, clamps, gauges, tools, fuel tank and bucket handles before starting.
4. Keep the area around the vessel free of tools and material to eliminate tripping hazards.
5. Place two 10 lb, dry chemical fire extinguishers within 30 feet of the vessel. One 4 lb dry chemical fire extinguisher is adequate for lead pots. All extinguishers are to be supplied by the contractor.
6. Maintain careful temperature control with molten material to prevent accidental ignition.
7. Be sure all equipment, tools, and buckets are free of moisture to prevent "spattering" of the hot liquid. Never store any liquid in the vicinity of molten liquids, especially flammable liquids.
8. Wear long sleeves, gloves tucked under sleeve cuffs, and a full face shield when charging and tending kettles and handling molten liquid in buckets.
9. Use protective cream to prevent vapor "burns" if skin is sensitive.
10. Erect barricades around any area where hot molten liquids are heated and transferred.
11. Adequate ventilation must be provided in enclosed areas.

M. Motor Vehicles and Power Equipment

1. The driver is responsible for the safety of all passengers and the stability of materials being hauled or handled by his equipment.
2. All speed limits and other regulatory signs must be obeyed, and pedestrians given the right-of-way.
3. The operator must shut off the motor and set the brakes before leaving the operator's cab. In case of deliveries or pickups (i.e., LN2, compressed gases, hazardous waste, etc.) the vehicles' wheels must be chocked.
4. Personnel may not ride in the bed of a dump truck or any other vehicle hauling equipment or material.
5. All construction vehicles and earth-moving equipment, including forklifts, must be equipped with backup alarms (except pickup trucks).
6. Forklifts must be equipped with overhead guards.
7. Tractors and other construction material handling equipment must be equipped with roll-over protection (ROP) in accordance with Cal-OSHA standards.
8. Drivers must dismount from the cab and remain clear while trucks are being loaded by power equipment.
9. Dozer blades, endloader buckets, forklift forks, or like equipment parts must be lowered to the ground before the operator may leave his rig.
10. The riding of crane hooks and/or "headache" balls by any personnel is prohibited.

N. Paint and Epoxy Sealants

The application of paints and epoxy sealants of any kind is to be reviewed by the EH&S office before use. Many of these present health hazards to employees working nearby. Some paints are extremely flammable when sprayed on and special precautions must be taken. The South Coast Air Quality Management District (SCAQMD) requires records to be kept for many painting activities.

VIII. FIRE PROTECTION

The HRL Emergency phone number (Ext. 3333) must be called immediately in case of fire.

A. Alarms

All contractor personnel should know how to turn in an alarm and recognize the alarm and know the evacuation route for each work area. Consult Project Coordinator.

B. Extinguishers

Contractors must supply their own extinguishers but if in an emergency they have to use an HRL extinguisher in addition to theirs, the following steps must be followed:

1. The contractor's supervisors should instruct each workman of the location of the nearest fire extinguisher, how it operates, and the type of fire on which it should be used.
2. Fire extinguishers of the proper type and size must be within 30 feet of each open-flame operation.
3. Extinguishers must be recharged or replaced promptly after each use. Immediately notify HRL Security when any extinguishers are used (Ext. 5583).

C. Flammables/Combustibles (Burnable Materials)

Combustible material must be kept away from steam lines, radiators, heaters and hot process and service lines. All exposed combustible materials below welding and burning areas must be removed to a safe location. All flammables must be removed from the aforementioned areas.

IX. JOB REQUIREMENTS

A. Electrical

1. Electrical work must comply with the National Electric Code.
2. Barriers must be erected where employees may be exposed to open boxes or live conductors.
3. Covers must be replaced every night or when work is suspended for a day or more.
4. Unused conductors must be properly identified and terminated.

5. All circuit breaker boxes must have each circuit identified. Disconnects must identify the branch circuit or equipment that they control.

B. Lockout/Tagout

1. Lockout/Tagout tags must be provided by the contractor.
2. Tags and locks are to be used to prevent operation of a switch, valve or piece of equipment to prevent injury or damage.
3. Electrical switches and other electrical devices must have fuses or heating elements removed, and be locked, tagged and tried by an electrician to make sure the correct device is locked out or that an interlock is not backfeeding. Following this, tags and locks must be attached to the same device by every other person involved. The electrician must not remove his tag or operate the device until all other tags and locks have been removed.
4. Where several mechanics are working on tagged equipment, each shall attach his own tag and lock with his signature and date (except as outlined in 5 below).
5. Sectionalizing valves on headers, main entrance switches, or substation main switches on outside power lines must be locked as well as tagged when work may extend over several weeks or months. This will be done by an HRL Representative designated by the Project Coordinator.
6. If danger tags and locks are required beyond one shift, the first shift must remove their tags at the end of the shift, and the second shift must attach their own tags and locks. The same would apply to the third shift.
7. Tags required for longer than twenty-four hours must be signed by an HRL Representative designated by the Project Coordinator.
8. Lines carrying corrosives, flammable liquids, high pressure steam and all electrical lines (regardless of voltage), must be locked as well as tagged; and any deviation from this rule must be approved by the EH&S Representative.
9. Only the person whose signature is on a Danger tag may remove it.
10. Only one person may sign a Lockout tag. Any number of Lockout tags and locks may be attached to a valve, switch or device to properly protect persons or crafts involved. Operation is prohibited under all circumstances until all tags and locks have been removed. In the case of an electrical device, the electrician's tag and lock are the last removed. Persons who remove tags are responsible for satisfactory completion of

the work, including the reinstallation of guards and the warning of all persons affected that the tag and lock is being removed. No work is to be done until equipment operation is prevented by the Danger tag and lock.

11. WARNING—Anyone who operates a valve, switch or device with a Lockout tag attached is subject to immediate dismissal from the facility. The foregoing applies likewise to unauthorized removal of Lockout tags or locks.
12. Request permission from the Project Coordinator 48 hours prior to lockout of equipment or circuits.

C. “Hot Work” on Electrical Circuitry and Apparatus

This means working on or near energized electric lines or equipment, and is to be done only when approved in writing by the Project Coordinator. When working on energized equipment the contractor must utilize the “Buddy System,” two people working together, and CPR training is recommended.

D. Material Handling

1. Any HRL owned material handling equipment that is required for the completion of the Outside Contractor’s job must be operated by qualified Hughes Personnel *only*. The only exception is when designated maintenance personnel or state recertification personnel operate the equipment.
2. The weights to be handled must be known before proceeding.
3. Those who rig must know the capacity and proper use of handling devices (crane, forklift, chain fall, come-a-longs, clamps, chokers, and shackles) before proceeding.
4. Tag lines should be used to control loads.
5. A qualified person must provide the necessary rigging instructions before work proceeds.
6. Mechanical handling equipment should be inspected by a qualified person before using.
7. Material handlers should never raise or swing a load over people or equipment.
8. All protruding nails and wires must be removed or bent over flush and ragged metal edges protected before material is handled.

E. Stability Control

Every effort should be made to ensure that personnel, materials and equipment are safe from unexpected movement such as falling, slipping, rolling, tipping, blowing over, or any other uncontrolled motion.

F. Access

1. Access routes to and from work locations must be maintained free and clear of obstruction and must be adequately lighted. Consult with the Project Coordinator as to access routes for excavations, roofs, process areas and for special activities such as Confined Space Entry.
2. Emergency equipment or electric disconnect switches must not be blocked; nor may temporary construction cables, hose or leads be attached to such equipment.
3. Material must be stacked, stored or spotted so it can be reached readily by personnel and by material handling equipment.

G. Excavations

1. Excavations must be shored or sloped before entering, with safe accessways provided.
2. All excavations must have a safe accessway and be properly barricaded.
3. Spoil dirt may be used to barricade one side of a ditch or similar excavation. All dirt must be piled at least 2 feet back from edge of the excavation (and must be at least 4 feet high when used as a barricade).
4. Excavation areas must be barricaded before a hole is opened or before work progresses.
5. All excavation walls must be checked before entering an excavation and after a heavy rain.
6. No one is permitted in an excavation while equipment is working next to the edge.
7. Cal OSHA permits must be acquired before trenching if required.

H. Confined Space Entry

Entering a confined space (i.e., vessel, tank, pit, etc.) is allowed only with permission of a SHEA Representative. To perform electrical work within a confined space, use a ground-fault circuit interrupter.

I. Flammable Liquids

1. Flammable liquids, in quantities smaller than 55 gallon drums, are to be in safety cans which are labeled according to their contents and hazards.
2. Drums and tanks of 55 gallons or more must be labeled, grounded, equipped with self-venting bungs, top dispensing, and must be placed inside a barricade at least 25 feet away from smoking, welding, burning or other heat sources.
3. All flammable liquids must be removed from the work area at the end of the day unless arrangements are made with the area occupants to store these liquids in flammable cabinets or designated flammable storage areas.
4. All flammable liquid areas must be posted with "No smoking, welding, burning, or heat producing devices allowed in this area."

J. Corrosive Liquids

Corrosive liquids must be transported, stored, applied, handled and identified in accordance with federal, state, and HRL regulations.

K. Trash, Waste, and Scrap Disposal

All trash, waste, and scrap must be placed in proper containers and disposed of in a manner that meets the requirements of all governing authorities. Never dump any chemical or hazardous waste into sinks or drains. Disposal of all waste chemicals or wastes contaminated with hazardous materials is regulated by California law, which requires stringent compliance. Should your work generate hazardous wastes, contact your Project Coordinator who will arrange for proper disposal. (EH&S concurrence is required).

L. Operating Machinery and Equipment Near Electric Power Lines

Machinery or equipment cannot be operated within 15 feet of electric power lines except where the electrical distribution or transmission lines have been deenergized at the point of work, or where insulating barriers not a part of, or an attachment to, machinery or equipment have been erected to prevent physical contact with the lines.

All cranes, backhoes and similar lifting or excavating equipment to be used at HRL must be effectively grounded where there is a possibility of such equipment coming into contact with an electric power line or power facility located overhead or underground.

To be effectively grounded a ground conductor cable should carry at least 200 amperes and be connected to a grounding electrode having a resistance of not more than 25 ohms as measured by a “ground megger.”

Where possible, an established measured existing ground system should be used. These are located at certain designated substations, buildings and similar locations.

The equipment must be provided with a permanent clamp or other means for convenient and effective attachment of a grounding conductor. This ground conductor should be 4/0 stranded, copper wire and be bonded to the equipment at a point and in a manner which will provide ground path resistance of 5 ohms or less.

**HRL SAFETY BOOK
CERTIFICATE OF COMPLIANCE**

(Name of Company) acknowledges receipt of the HRL Laboratories' booklet, Safety Handbook for Outside Contractors.

The booklet has been read and I/we understood my/our duties and responsibilities as so identified in the booklet.

I/We will inform any and all of our employees of these duties and responsibilities.

Authorized Signature

Date

Remove and return to HRL Purchasing Representative.

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