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1.0 General Safety

The Criminalistics Laboratory Safety Manual is designed to provide general information and guidelines regarding laboratory safety practices. This Safety Manual complies with the recommended guidelines of Title 8 of the California Code of Regulations, federal and state legislation related to bloodborne and airborne pathogens, hazard communication, and chemical hygiene, and the Los Angeles Police Department Manual, City of Los Angeles policies and guidelines where applicable.
Each laboratory employee is expected to follow safety procedures in all phases of work. The scope of the safety guidelines shall be applied within the laboratory, at satellite sites and while in the field during crime scene investigations.

Safety Program Organization

The Laboratory Director is responsible for the laboratory safety program. The Laboratory Director has designated the Quality Manager to be the Safety Manager. The Quality Manager may designate another qualified individual as the Laboratory Safety Officer. Working under the direction of the Laboratory Director and/or Quality Manager, the Laboratory Safety Officer can be delegated responsibilities involving the laboratory safety program.
Each Supervising Criminalist is responsible for reporting all health and safety hazards to the Safety Officer and ensuring that all employees observe safety procedures.
Each employee is responsible for complying with the safety program, taking all required safety precautions, and immediately notifying supervisory personnel of any safety hazards and/or concerns.

Safety Committee

The Laboratory Safety Committee assists in promoting a safe working environment at all Criminalistics Laboratory facilities. The Safety Committee is chaired by the Quality Manager, and the committee members include: the Laboratory Safety Officer, the Floor Wardens from each of the five floors at the Forensic Science Center.
The Safety Committee Chair presents inspection reports and discusses safety issues with laboratory management. The primary responsibilities of the Safety Committee include: conducting the regular safety inspections as specified in the Laboratory Safety Inspection Program, check for compliance with safety regulations, develop and conduct safety education activities, and keep current with safety regulations.
All written records generated by the Safety Committee are maintained in the Quality Assurance Unit for three years.

Laboratory Safety Inspection Program

The Laboratory Safety inspection complies with the elements of the California Code of Regulations Title 8, Subchapter 7, Section 3203, which details the elements of employer safety inspections.
The Quality Manager is responsible for implementing and maintaining the Criminalistics Laboratory Safety Inspection Program.
The program consists of semiannual inspections of all Criminalistics Section facilities and equipment. The first semiannual inspections are conducted by unit supervisors or designee, and the second semiannual inspections are conducted by the Safety Committee.
The Safety Inspection Checklist is used to guide the inspection activities. The Safety Inspection Checklist includes checks:

- Safety Equipment (e.g. safety shower and eyewash station inspection cards)
- Chemical Storage/Disposal and Waste (e.g. chemical storage, labels)
- Environment (e.g. overhead cabinets appropriately used)
- Radiation Safety
- Fume and Biological Hoods (e.g. flow storage, flow, and certification)

Deficiencies are documented on the checklist, and the Supervising Criminalist responsible for the area must respond with acknowledgement and a corrective strategy. The completed checklists are reviewed by the Safety Officer. The Safety Inspection Checklists are maintained in the Quality Assurance Unit at least one year, per Title 8, Section 3203 of the California Code of Regulations.

1.1 Protection from Hazards

Protective measures against infectious agents which may be encountered in the laboratory should primarily be directed against the main routes of transmission. Measures must also be reinforced by careful attention to laboratory cleanliness, housekeeping, and hygiene. Laboratory supervisors must carefully evaluate potential hazards that may exist in different laboratory procedures, and delineate appropriate safety measures to ensure minimal exposure to hazards.

1 Chemical and Biological Hazards

The Criminalistics Laboratory employees routinely handle physiological fluids and chemicals which are potentially hazardous. Evidence specimens and related materials must be handled appropriately to protect the analyst and co-workers from contamination. The hazard of each sample will vary according to the susceptibility of the individual, the route of exposure, and the nature and concentration of the

contaminant. Chemical and biological contamination can occur through absorption, inhalation, inoculation, vectors, ingestion, or radiation.

Routes of Exposure

Absorption - Breaks in the naturally contiguous skin surface, especially on the hands, are portals of entry for infectious agents. Penetration through the intact surface of the skin is possible by some infectious agents and chemicals, while others may enter through the conjunctiva of the eye or other mucous membranes as a result of contact with contaminated hands or direct contact by the source of contamination/hazard.
Inhalation - Contaminating agents that become airborne pose a hazard if inhaled. Infectious agents may become airborne through accidental spills, dropped glassware, centrifuging, vortexing, sonication, transfer pipetting, sample homogenizing, flaking of dried stains, removal of Vacutainer® caps, and mechanical handling of evidence items.
Direct Inoculation - Broken glassware, needles, scalpels, forceps, biological probes, knives, syringes and staples on evidence packages are potential sources of inoculation through which infectious agents are introduced into the bloodstream. Some types of evidence, e.g., bloody knives and glass fragments, are potential sources of biological infection if not properly handled. The collection of blood standards from laboratory personnel is another potential source of infection.
Vectors - Ticks, fleas, body lice, and other ectoparasites sometimes found in evidence items are potential sources of infection.
Ingestion - Smoking, eating, or drinking after handling evidence specimens may result in ingestion of infectious agents or hazardous chemicals. Actions such as mouth pipetting, placing pens or pencils in one's mouth, fingernail biting, or hand contact with mucous membranes may also result in contamination.
Radiation - Energy from various instruments used in the laboratory and in the field pose a special danger to skin and eyes. LASERs, Alternate Light Sources (ALS), ultra-violet (UV) lamps, etc. all require the use of protective eyewear to guard against radiation damage. Monitoring badges for gamma and alpha radiation must be worn where the possibility of exposure exists.

2 Protective Measures

Chemical exposures related to reagent usage and evidence handling is similar to modes of transmission for biological pathogens. The guidelines are applicable to both chemical and biological risks. The following guidelines are based on the premise that organization, good housekeeping, personal hygiene, proper techniques and discipline can all help avoid contamination, and are a general discussion for basic protection. Specialized equipment for each hazard is discussed in subsequent sections of the Safety Manual. If necessary, utilize a combination of protective measures to achieve maximum level of protection and minimize exposure.

Prudent Laboratory Practice Guidelines

Any employee who detects a possible hazard should immediately report it to a supervisor or designee for appropriate action.

Safety Data Sheets (SDS)

Hazardous chemicals must have an associated Safety Data Sheet. The SDS will be near the area the chemical is used, and it is accessible and available to anyone working with the chemical.

Laboratory Attire

A lab coat or apron should be worn when working with hazardous materials. Always wear clothing that minimizes the amount of skin that can be exposed to potentially harmful chemicals. If legs are bare or exposed, an apron should be worn. Lab coats or aprons, if not disposable, should be laundered on site, or commercially laundered. The laboratory offers both commercial laboratory coat service, and houses laundry amenities on site. Laboratory coats or jumpsuits, or field response clothing, shall be removed prior to entering conference rooms, offices, lunch rooms, or any carpeted area in order to keep these rooms free of chemical and biological contaminants.

Footwear

Shoes that cover the feet, including the toe and heel, are to be worn in laboratory areas at all times. Shoes which do not protect the feet from spilled chemicals and other laboratory hazards are not allowed.

Safety Eyewear

Safety glasses, appropriate to protect against injury, shall be worn whenever the potential for eye injuries, or the eye as a portal of entry exists. Eye protection against UV, IR and LASER radiation will be worn whenever applicable.

Gloves

Gloves shall be worn when handling potentially hazardous or infectious materials. The type of glove used must be impervious to the hazardous material being handled; glove manufacturer specifications should be followed. Consult Section 3.0 Chemical Hygiene Plan for additional information regarding gloves and chemicals.
Personnel with breaks in the skin surface should cover the affected area with a waterproof bandage prior to utilizing gloves. Employees with latex allergies should request an alternative glove type through the unit supervisor.
Gloves may also be necessary for protection against non-chemical or non-biological hazards, such as abrasion, thermal, puncture, and cut protection. Appropriate gloves for the application shall be worn while working with a hazard risk.

Avoid touching unprotected areas of the body while wearing gloves. Hands should be washed frequently, and shall be washed after exposure to contamination and prior to leaving the analytical work area.

Fume Hoods

Fume extraction hoods provide respiratory protection against substances with an inhalation hazard. Hoods must be used properly to be effective. Conduct procedures with the sash pulled down below the maximum recommended height to ensure proper flow rate. Work should be performed at least 6 inches inside the hood to prevent vapors from escaping into the laboratory. Hoods should not be used for storage, and should be free of clutter.

Biosafety Cabinets

The specialized biosafety cabinets use HEPA filters to protect laboratory personnel and the environment from aerosols or droplets that could spread biohazardous materials. Particulate free air is passed down from the top of the hood and across the work surfaces, and is captured before entering the analyst breathing zone. Biosafety cabinets provide biological protection for both the user and the specimen.
The air in biosafety cabinets is re-filtered before being exhausted, back into the laboratory. For this reason, biosafety cabinets cannot be safely used with hazardous gases and vapors.

"Snorkels" or "Elephant Trunks"

Local, movable exhaust systems are available and intended for small work areas or machines.

Spill Kits

Each laboratory area should have a spill kit available. All spills shall be cleaned up promptly, following the spill control procedures, using an appropriate spill kit, and waste disposed of properly. If spill kit materials are consumed, please notify the unit supervisor immediately.

Labware

Equipment or implements used to handle evidence specimens shall be disposed of or decontaminated properly after each use.
Broken or chipped glassware shall only be disposed of in a suitable "sharps" container, or sturdy sided "burn" box if contents of the glassware are potentially infectious.

Lab Hygiene and Housekeeping

No oral pipetting of any substance is permitted.

No eating, drinking, or smoking is permitted in the laboratory work areas or where the hazard of contamination exists. No food will be stored in the analytical areas or in an evidence storage refrigerator or freezer.
Analytical, clerical, and evidence reception areas subject to contamination must be kept clean and shall be decontaminated regularly. Laboratory work spaces should be kept organized and free of clutter. Any benchkote or paper covering work tops should be changed regularly.
If feasible, at least one sink and work area should be designated for biological cleanup and shall be stocked with antibacterial soaps, bleach, and any other appropriate decontaminating agents.

Hazardous Waste

All waste material contaminated with potentially infectious materials shall be discarded into biohazard waste receptacles. The receptacles shall be replaced as needed.
Employees responsible for the disposal of biohazard receptacles shall review Section 2.0 Bloodborne Pathogens Exposure Control Plan, and wear protective clothing and gear as specified.
Chemical waste should not be discarded in the sink, or poured back into stock bottles. Pour reagent and chemical waste into appropriately labeled bottles. Refer to Section 3 Chemical Hygiene Plan for specific disposal policies and procedures.

Laboratory Procedures

Procedures involving hazardous substances shall be performed in fume extraction hoods. All chemical spraying shall be performed in a hood. Disposable or Teflon® coated backdrop materials should be used in fume hoods where chemical spraying occurs.
Residual material should be wiped off of the external surfaces of reagent containers following use. Working solutions of reagents, chemicals, or materials should never be poured back into stock containers.

1.2 Working Alone

Individuals using hazardous chemicals should not work alone. Another individual capable of coming to the aid of the worker should be in visual or audio contact.

- If working alone is necessary, the worker should have a phone immediately available to contact another person (who knows that he or she is being relied upon) in the event of an emergency.
- If no one from the laboratory is available, the worker should coordinate with another person in the building to check in periodically.

The unit supervisor is responsible for determining whether the work requires special precautions, such as having two people in the same room for particular operations.

1.3 General Spill Control Procedures

The following procedures should serve as a guide for planning for spill response. All spills are different, so procedures serve as guidance only. If specialized materials are being used and present a unique spill hazard, a spill response plan shall be documented prior to using the material. The following procedures shall be followed for spill response. Spill kit location and response should be reviewed prior to beginning work with hazardous materials.

3 Large Spills

In the event of a spill which involves the large quantities of chemical or hazardous materials (more than 1 gallon or 5 liters), a material that poses an immediate risk to health, or a material which is flammable or explosive:

- Notify other occupants of the room, and evacuate the area immediately
- Notify a supervisor immediately
- Consult with a Hazchem Team Member
- Call 911 (if large quantities of flammables or explosives are involved)

If the accident involves personal injury or chemical contamination, follow the steps as appropriate and at the same time:

- Move the victim from the immediate area of fire, explosion, or spill (if this can be done without further injury to the victim or you.)
- Locate the nearest emergency eyewash/drench hose or safety shower. Remove any contaminated clothing from the victim and flush all areas of the body contacted by chemicals with copious amount of water for at least 15 minutes
- Administer first aid as appropriate and seek medical attention

4 Small Spills

In the event of a spill which involves small quantities (less than 1 gallon or 5 liters) of chemical or hazardous materials, a material that does not pose an immediate health risk, and does not involve chemical contamination to the body:

1. Notify laboratory personnel near the accident.
2. Isolate the area. Close lab doors and evacuate the immediate area if necessary.

3. Remove ignition sources and unplug nearby electrical equipment.
4. Establish exhaust ventilation. Vent vapors to outside of building only.
5. Locate spill kit.
6. Choose appropriate personal protective equipment. (Only use a respirator if fit testing and training have been completed)
7. Confine and contain spill. Cover with appropriate absorbent material. Acid and base spills should be neutralized prior to cleanup. Sweep solid material into a plastic dust pan and place in an appropriate container.
8. Wet mop the spill area. Be sure to decontaminate broom, dustpan, etc. Place all contaminated items and protective equipment into the appropriate container.
9. Notify the unit supervisor.
10. Consult with a Hazchem Team member if questions arise regarding proper disposal.

Details regarding the response and cleanup of specific chemical spills can be found in Section 3.0 Chemical Hygiene Plan.

5 Spill Control Guidelines

The procedures for large and small spills should be followed, using the specific spill category for additional information.

Acid

Cover the contaminated surface with sodium bicarbonate, or soda ash and slaked lime mixture (50-50). Mix and add water if necessary to form a slurry. Consult with a member of the Hazardous Chemical Team regarding disposal of the slurry.

Caustic Alkali, Ammonia

Solids should be swept up, diluted and neutralized with 6M HCL in a large bucket, then washed down the drain with excess water. Solutions should be neutralized and mopped up, or a wet/dry vacuum may be used, if available.

Hydrocarbons, Alcohols, and Ketones

Eliminate all sources of ignition, and other flammable substances.

1.4 Evidence Handling Precautions

Work in the Criminalistics Laboratory routinely involves materials which pose safety hazards. Evidence resulting from the commission of crimes, and received for analysis should be treated as potentially hazardous; Universal Precautions shall be adhered to strictly.

1 General Handling Guidelines

To avoid unnecessary or inappropriate handling of potentially infectious evidence the following shall be considered:

- Appropriate personal protective equipment and/or specialized protective equipment shall be properly worn when handling any evidence, in the laboratory, in the field, or in the courtroom.
- During the collection, receipt, and examination of biological specimens (body fluids, liquid or stains), care should be taken to prevent exposure of proximal personnel to contamination.
- Evidence stained with biological material should be collected and submitted in appropriate packaging and in secured containers (e.g. envelopes, paper bags, etc.). Any damaged, leaking, or broken samples should be immediately secured and repackaged, or submitted to appropriate personnel for proper handling.
- Contaminated containers shall not be reused for packaging or repackaging of evidence samples.
- Court trials using this type of evidence should be advised of all possible health hazards and be instructed in proper handling techniques.

2 General Firearms Safety

The following are general firearms safety guidelines. Specific instructions and procedures on handling firearms in the laboratory, the field, and the courtroom, consult WI FAU-002 Firearms Safety Method.

- All firearms shall be handled as if loaded and extremely dangerous.
- Firearms shall always be pointed in a safe direction. No firearm will be pointed at another person under any circumstances.
- All firearms, within the laboratory, in the field, or in court, shall undergo a preliminary safety inspection to ensure the weapon is unloaded and in a safe condition.
- The Firearms Analysis Unit Supervisor should be consulted on any problems or concerns of the safety of a particular firearm.
- Firearms shall not be in a loaded condition, except in the designated test-firing areas.
- All personnel who conduct test-firing shall be competency tested and proficient in the proper handling of firearms.
- An observer must be present during test firing any firearms.
- Any unusual occurrence must be reported immediately to the appropriate supervising personnel.

1.5 Crime Scene and Field Response Safety

Crime scenes are a source of contamination from a variety of potentially infectious materials, such as deceased persons, body parts, blood, and other body fluids. In addition, facilities for adequate clean-up, hand washing, and decontamination are often severely limited. Universal Precautions shall be strictly adhered to in the field.

3 Crime Scene Protective Equipment

- Personnel at the crime scene should, when appropriate, wear suitable protective clothing (e.g. labcoat, Tyvek® jumpsuit, boot/shoe covers, caps, etc.).
- Gloves shall be worn when handling blood, physiologically stained materials, and decedents.

- When practicable, decontamination by wiping or washing affected areas with virucidal agents or any appropriate disinfectant (i.e. Vionex®, ethanol, Dispatch®, etc.) should be done.
- In the event of exposure, contaminated clothing and body areas should be cleaned with an appropriate disinfectant, and following the bloodborne pathogens exposure control plan, if necessary.

4 Crime Scene Hygiene

- There shall be no eating, smoking, or drinking within the crime scene.
- Evidence collected for transport back to the laboratory shall be packaged to maintain the integrity as well as to prevent contamination of other items or personnel. Paper bags may not be suitable for transporting bloody items if seepage will occur. Temporary packaging in plastic bags may be necessary for transporting or containing evidence until it can be properly dried and packaged for long-term storage.
- Any tools or utensils which cannot be adequately cleaned in the field should be taken into the Criminalistics Laboratory for subsequent cleaning and disinfection.
- Upon completion of a field examination, protective clothing (if disposable) should be placed into proper containers along with other disposable materials (swabs, tissues, etc.) generated at the scene. The container should be sealed for transport to the laboratory for proper disposal. If non-disposable protective clothing is used, it should be packaged in an appropriate container for decontamination and disinfection at the laboratory.

5 Crime Scene Chemicals

Proper safeguards must be taken whenever spraying chemicals in a field situation. Primary consideration must be given to chemical contamination of personnel present. Clear the crime scene of unnecessary personnel. Restrict access to a minimum number of people and provide those individuals with adequate protective equipment (e.g. mask, jumpsuit, shoe covers, etc.). It is incumbent upon the Criminalist to notify Department personnel (i.e. investigating officer) if chemical residues are left at the scene.

6 Crime Scene Security

The crime scene must be secured and protected for the safety of the analyst. If circumstances require protection by sworn personnel, the analyst should wait for protection to arrive before starting or resuming work.

1.6 Instrument and Equipment Safety

Instrument and equipment used in the Criminalistics Laboratory can present safety hazards if not handled properly. The specific safety concerns regarding the use of any tool or analytical instrument are addressed in the operation manuals provided by the manufacturers. Operating manuals for instrumentation and other equipment are located in the unit where the item is used.

7 Instrument and Equipment Safety Procedures

Personnel shall only be allowed to use equipment after they have been trained and authorized by the laboratory. The training should include instrument/equipment operation, safety features, interlocks, emergency shutdown procedures, and hazards associated with use.
No alteration of manufacturer safety features shall be allowed without express written consent of the Laboratory Director. All equipment maintenance must be performed by qualified personnel.
Safety inspection of all equipment shall be performed if required by the manufacturer to identify any real or potential hazards.

Glassware

Care should be used when using and handling glassware to avoid accidents and injury. Glassware should be inspected for cracks and contamination before use. Cracked items should be disposed of, and contaminated glassware should be cleaned. Safety eyewear should be worn when working with glassware to prevent eye injury from broken glass. Other guidelines for safe handling of glassware are as follows:

- Do not use broken, chipped, or badly scratched glassware.
- Do not pick up broken glass with bare hands. Use appropriate gloves, or sweep up with a broom and dustpan.
- Fine glass particles may be picked up with wet paper towels.
- Discard broken glass in designated, sturdy sided containers. Glass contaminated with biohazardous materials, shall be disposed of in biohazard burn boxes.
- Protect hands with gloves, towel, or tubing holder when inserting tubing into stoppers. Lubricate the tubing with water or glycerin.

- Remove frozen stopper by cutting away or with the aid of a cork borer.
- Handle hot beakers with tongs of the proper size and type.
- Use steam, heating tape, IR lamp or heating mantle when heating a flammable solvent.
- Do not attempt to catch falling glassware.

Vacuum Apparatus Usage

Safety is an important consideration when using glassware as part of the setups. All of the glass components should be carefully examined for scratches and cracks which could result in implosions when a vacuum is applied. Wrapping as much of the glassware with tape as is practical helps to prevent dangerous scattering of glass shards in the event of an implosion.

- Personal protective equipment, such as safety glasses or chemical goggles, face shields, and/or an explosion shield should be used to protect against the hazards of vacuum procedures, and the procedure should be carried out inside a hood.
- Do not allow water, solvents and corrosive gases to be drawn into vacuum systems. Protect pumps with cold traps and vent their exhaust into an exhaust hood.
- Assemble vacuum apparatus in a manner that avoids strain, particularly to the neck of the flask.
- Avoid putting pressure on a vacuum line to prevent stopcocks from popping out or glass apparatus from exploding.
- Place vacuum apparatus in such a way that the possibility of being accidentally hit is minimized. If necessary, place transparent plastic around it to prevent injury from flying glass in case of an explosion.
- When possible, avoid using mechanical vacuum pumps for distillation or concentration operations using large quantities of volatile materials. A water

aspirator or steam aspirator is preferred. This is particularly important when large quantities of volatile materials are involved.

Hydrogen Gas Detector

Selected laboratory units are fitted with hydrogen detectors. Each hydrogen detector has a transmitter display, sensor, and controller/monitor. The controller/monitors are stationed in the hallway wall area of the lab units. The indicated status level reading on the controller/monitor represent the % of the lower explosive limit (LEL). Interpretation placards are posted near each hydrogen detector controller/monitor. If the status level reading rises to 20 (20% of the LEL):

- Evacuate the laboratory work area only,
- Shut off hydrogen gas source,
- Purge laboratory unit area (open doors),
- Notify lab unit supervisor, floor warden, and lab safety officer.

1.7 Compressed Gas Cylinders

Compressed gases can be toxic, flammable, oxidizing, corrosive, inert or a combination of these hazards. In addition to the chemical hazards, compressed gases may be under a great deal of pressure.

The following is an overview of the hazards to be avoided when handling and storing compressed gases:

- Asphyxiation: Simple asphyxiation is the primary hazard associated with inert gases. Because inert gases are colorless and odorless, they can escape into the atmosphere undetected and quickly reduce the concentration of oxygen below the level necessary to support life. The use of oxygen monitoring equipment is strongly recommended for enclosed areas where inert gases are being used.
- Fire and Explosion: Fire and explosion are the primary hazards associated with flammable gases, oxygen and other oxidizing gases. Flammable gases can be ignited by static electricity or by a heat source, such as a flame or a hot object. Oxygen and other oxidizing gases do not burn, but will support combustion of organic materials. Increasing the concentration of an oxidizer accelerates the rate of

combustion. Materials that are nonflammable under normal conditions may burn in an oxygen-enriched atmosphere.

- Chemical Burns: Corrosive gases can chemically attack various materials, including fire-resistant clothing. Some gases are not corrosive in their pure form, but can become extremely destructive if a small amount of moisture is added. Corrosive gases can cause rapid destruction of skin and eye tissue.
- Chemical Poisoning: Chemical poisoning is the primary hazard of toxic gases. Even in very small concentrations, brief exposure to these gases can result in serious poisoning injuries. Symptoms of exposure may be delayed.
- High Pressure: All compressed gases are potentially hazardous because of the high pressure stored inside the cylinder. A sudden release of pressure can cause injuries and property damage by propelling a cylinder or whipping a line.
- Cylinder Weight: A full size cylinder may weigh more than 130 pounds. Moving a cylinder manually may lead to back or muscle injury. Dropping or dragging a cylinder could cause serious injury.

1 Handling Precautions

- Avoid dropping, dragging or sliding cylinders. Use a suitable hand truck or cart equipped with a chain or belt for securing the cylinder to the cart, even for short distances.
- Do not permit cylinders to strike each other violently. Cylinders should not be used as rollers for moving material or other equipment.
- Cylinder caps should be left on each cylinder until it has been secured against a wall or bench or placed in a cylinder stand, and is ready for installation of the regulator. Cylinder caps protect the valve on top of the cylinder from damage if knocked.
- Never tamper with pressure relief devices in valves or cylinders.
- Use only wrenches or tools provided by the cylinder supplier to remove a cylinder cap or to open a valve. Never use a screwdriver or pliers.

- Keep the cylinder valve closed except when in use.
- Position cylinders so that the cylinder valve is accessible at all times.
- Use compressed gases only in a well-ventilated area. Toxic, flammable and corrosive gases should be carefully handled in a hood or gas cabinet. Proper containment systems should be used and minimum quantities of these products should be kept on-site.
- When discharging gas into a liquid, a trap or suitable check valve should be used to prevent liquid from getting back into the cylinder or regulator.
- Where more than one type of gas is in use, label gas lines. This is particularly important when the gas supply is not in the same room or area as the operation using the gases.
- Do not use the cylinder valve itself to control flow by adjusting the pressure.

2 Storage of Compressed Gas Cylinders

- All cylinders must be secured to a wall, bench or fixed support using a chain or strap placed 2/3 of the way up. Cylinder stands are an alternative to straps.
- Cylinders should be strapped individually.
- Cylinders should not be stored with a regulator attached. Secure the proper gas cap to the threaded portion on the top of the cylinder to protect the valve.
- Do not store full and empty cylinders together.
- Oxidizers and flammable gases should be stored in areas separated by at least 20 feet or by a noncombustible wall.
- Cylinders should not be stored near radiators or other heat sources. If storage is outdoors, protect cylinders from weather extremes and damp ground to prevent corrosion.
- No part of a cylinder should be subjected to a temperature higher than 125°F. A flame should never be permitted to come in contact with any part of a compressed gas cylinder.

- Do not place cylinders where they may become part of an electric circuit.
- Keep the number of cylinders in a laboratory to a minimum to reduce the fire and toxicity hazards.
- Small, compressed gas cylinders should be returned to the distributor or manufacturer when no longer needed, or discarded at atmospheric pressure if they are nontoxic.
- Ensure that the cylinder is properly and prominently labeled as to its contents.

3 Using Compressed Gas Cylinders

Before using cylinders, read all label information and safety data sheets (SDSs)[1] associated with the gas being used. The cylinder valve outlet connections are designed to prevent mixing of incompatible gases. The outlet threads vary in diameter; some are internal and some are external; some are right-handed and some are left-handed. Generally, right-handed threads are used for fuel gases.
To set up and use gas cylinders, follow these steps:

- Attach the closed regulator to the cylinder. Never open the cylinder valve unless the regulator is completely closed. Regulators are specific to the gas involved. A regulator should be attached to a cylinder without forcing the threads. Ensure the threads of both the regulator and main valve are clean. If the inlet of a regulator does not fit the cylinder outlet, no effort should be made to try to force the fitting. A poor fit may indicate that the regulator is not intended for use on the gas chosen.
- Turn the delivery pressure adjusting screw counter-clockwise until it turns freely. This prevents unintended gas flow into the regulator.
- Open the cylinder slowly until the inlet gauge on the regulator registers the cylinder pressure. If the cylinder pressure reading is lower than expected, the cylinder valve may be leaking.

1 The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products.

- With the flow control valve at the regulator outlet closed, turn the delivery pressure adjusting screw clockwise until the required delivery pressure is reached.
- Check for leaks using *Snoop* or soap solution. At or below freezing temperatures, use a glycerin and water solution, such as *Snoop*, rather than soap. Never use an open flame to detect leaks.
- When finished with the gas, close the cylinder valve, release the regulator pressure and replace the gas cap if it will not be used in the near future.

4 Leaking Cylinders

Most leaks occur at the valve in the top of the cylinder and may involve the valve threads valve stem, valve outlet, or pressure relief devices. Lab personnel should not attempt to repair leaking cylinders.
Where action can be taken without serious exposure to lab personnel:

- Move the cylinder to an isolated, well-ventilated area (away from combustible materials if the cylinder contains a flammable or oxidizing gas).
- Hearing protection should be considered if a tank is rapidly discharging.

1.8 Vehicle Safety

Occasionally, laboratory personnel must use City vehicles for travel or transport. City vehicles should be inspected prior to operation to ensure safety. If the vehicle is found to be unsuitable and/or unsafe, the employee is responsible for notifying a supervisor or Motor Transport Division of the condition of the vehicle.

- All drivers shall operate City vehicles in compliance with the motor vehicle laws of the State of California and in a manner that reflects concern for safety and courtesy towards the public.
- An authorized driver shall operate a City vehicle in accordance with any license requirements or restrictions, such as corrective lenses, daytime only, etc.
- The driver of a City vehicle should take every precaution to ensure the safety of passengers. No person may ride in a City vehicle unless properly restrained by a

seat belt. The driver is responsible for ensuring that all passengers are properly restrained.

- All traffic and parking laws are to be obeyed. Posted speed limits are not to be exceeded, nor is the vehicle to be operated above safe driving speeds for road conditions.
- Employees driving City vehicles are required to comply with all state and local laws regarding the use of mobile communications devices while driving. If a mobile communications device must be used by an employee while driving a City vehicle, a hands-free device must be used.
- The driver of a City vehicle shall take every precaution to ensure the safety of the vehicle and its contents.
- The driver shall lock the vehicle and take the keys except in those instances when a commercial parking garage requires the keys be left with the vehicle.

Vehicle Safety Kits

Vehicles assigned to the Criminalistics Laboratory shall contain:

- Road flares
- First Aid Kit
- Personal Protective Equipment Kit

Specialized field investigation response vehicles have additional safety equipment as required.

Motor Transport Division (MTD) Full Service Towing and Roadside Assistance

- Central – Main Street Facilities Garage (213) 486-1050
- Van Nuys Garage (818) 756-8387
- Wilshire Garage (213) 473-0564
- Southeast Garage (213) 972-1004

1 Traffic Collisions

City employees shall follow the procedures outlined in the LAPD Manual Volume 4

Section 440.10– *Duties of Employees Involved in Traffic Collisions*.

"When employees, or Specialist Volunteers, Police Cadets and Reserve Officers, become directly involved in or participate in events leading to a City Property Involved (CPI) traffic collision while operating or riding in a City-owned vehicle or acting within the scope of their official duties, they shall:
●Notify their watch commander or officer in charge (OIC) of the traffic collision, who will ensure that a unit and a supervisor are assigned to respond;.
● If unable to notify their watch commander or OIC, immediately request a Communications Division operator to dispatch a collision investigation unit and a supervisor to the scene (Manual Section 3/206).
● Cooperate with the concerned investigative agency dispatched to the scene. When investigating officers are from an agency other than this Department, Department employee's statements concerning their involvement shall only include their personal identification, registration information for the vehicle they are in, and a description of their direction of travel. Information relating to the conduct of Department employees shall be regarded as confidential for the use of the City Attorney. Complete statements as to the identity, actions, and statements of persons other than Department employees may be made.
● Comply with local ordinances and Vehicle Code provisions relating to traffic collisions.
● For traffic collisions that do not involve severe or fatal injuries, complete a Narrative Supplemental CHP Form 556."

1.9 CPR / AED / Basic First Aid

Good Samaritan Law: If you decide to help, you have legal protection as long as you use common sense, don't go beyond your scope of training and don't take anything in return for your help. At minimum, call 911.
Consent: For conscious victims, consent may be verbal or a physical gesture. For unconscious victims, consent is implied.
Note: The following is informational and not intended to take the place of formal training.

2 Life Threatening Emergencies

For a life-threatening or emergency injury or illness, call emergency medical services at 911, and seek the help of first-aid qualified personnel.

3 Cardiopulmonary Resuscitation (CPR)

For personnel that are injured or ill and appear unconscious, call emergency medical services at 911, and CPR may be initiated.

- Check area to ensure safety,

- Check for responsiveness of personnel - if no response, then there is implied consent,
- Tilt head, lift chin to open airway, and check for breathing,
- If no breathing, place two hands in the middle of the chest and give 30 chest compressions (2" deep, 100-120 compressions per minute),
- Tilt head, lift chin and provide two rescue breaths,

4 Automated External Defibrillator (AED)

AEDs are located on each floor for sudden cardiac arrest situations (unresponsive, not breathing normally).

- Pull handle of AED, remove protective cover, and listen to prompts,
- Remove all clothes from victim's chest, and clean and dry skin if needed,
- Attach AED pads to bare, dry chest and let the AED analyze,
- Press flashing orange shock button. Do not touch patient.
- Follow prompt when safe to resume CPR.

5 Non-Emergency Injury or Illness – First Aid

For minor and non-life threatening injury or illness, personnel should administer first aid appropriate for the injury or illness as listed below.

6 Basic First Aid Procedures

Small cuts and Scratches

- Apply direct pressure – place sterile pad over the wound and apply pressure evenly with the opposite hand,
- Elevation – if direct pressure does not control the bleeding, raise the area above the level of the heart,
- Cleanse area with soap and water.

Wounds/Significant Bleeding

- Call Emergency Medical Services (Call 911),
- Apply direct pressure – place sterile pad over wound and apply pressure evenly with the opposite hand,
- Elevation – if direct pressure does not control bleeding, raise the are above the level of the heart.

First Degree Burns

First degree burns, like sunburn or mild steam burn, are characterized by redness or discoloration of the skin, mild swelling and pain.

- Remove from source of heat,
- Apply cold water applications and/or immerse in cold water for at least 10 minutes,
- Seek further medical treatment as needed,
- Do not apply burn ointments/spray to affected areas.

Second and Third Degree Burns

Second and third degree burns are characterized by red or mottled skin with blisters (second degree), white or charred skin (third degree).

- Remove victim from source of heat,
- Gently cool the burned area with cool water,
- Call for Emergency Medical Services (Call 911),
- Loosely wrap affected area in dry sterile dressing.

Chemical Burns - Skin

- Remove victim's clothes and shoes,
- Rinse the area with large quantities of water for at least 15 minutes,
- Do not apply burn ointments or spray to affected areas,
- Call Emergency Medical Services (Call 911).

Chemical Exposure - Eyes

- Call Emergency Medical Services,
- Rinse eyes, eyelids, and face thoroughly with water for at least 15 minutes at the eyewash station.

Ingestion of Chemicals

- Call Emergency Medical Services (Call 911),
- If the victim is unconscious, turn their head or entire body onto their left side,
- Be prepared to start CPR if you are properly trained. Use a CPR mask, if available, to avoid contact with chemicals that may be present on the victim's mouth.

Inhalation of Chemicals

- Call Emergency Medical Services (Call 911),
- If the victim is not breathing, perform CPR if certified until paramedics arrive. Use a CPR mask, if available to avoid contact with chemicals that may be present on the victim's mouth,
- Treat victim for chemical burns on the eyes and skin if necessary.

Accidental Needlestick

- Wash the wound with soap and water,
- If soap and water are not available, use alcohol-based hand rubs or solutions.

During business hours, notify your supervisor immediately. After business hours or on weekends, notify the on-call crime scene manager. Sharps injury log injury log shall be completed within 14 working days of the injury. Also, refer to WI SAF-002 Bloodborne Pathogen Exposure Procedure.

Fentanyl Exposure

Exposure can be through ingestion, skin absorption, or inhalation. Symptoms of fentanyl exposure include slow irregular breathing, non-responsiveness, or cardiac arrest. If a person has symptoms of exposure:

- Call Emergency Medical Services (Call 911) and retrieve NARCAN Nasal Spray (located in the Field Accessioning Room, HazChem Room, and the Narcotics Analysis Unit laboratory),
- Lay victim on their back,
- Administer NARCAN Nasal Spray as indicated in the instructions provided inside the box,
- Move the victim on their side (recovery position) after giving NARCAN Nasal Spray,
- Observe victim closely. If victim does not wake up or respond to voice instructions, or is not breathing normally, an additional dose of NARCAN Nasal Spray can be given by following the instructions provided inside the box.

1.10 Training

Safety training shall be completed upon initial assignment to the Criminalistics Laboratory. The safety training includes bloodborne pathogen training upon initial assignment and annually where occupational exposure takes place. Heat Illness Prevention Program training will be provided for employees who work outdoors, indoors where temperatures exceed 95 degrees F, and to employees who are required to wear or perform work in a full-body personal protective suit. Additional training shall be required when substantial changes to the Laboratory Safety Manual are made, or when necessary based on safety deemed related incidents.

1.11 Records

1 Medical and Occupational Exposure Records

All employee records relating to employee exposure to bloodborne pathogens, hepatitis B vaccinations, results of examinations, and medical testing, are maintained by LAPD – Personnel Division, Medical Liaison Section in compliance with California Code of Regulations, Title 8, Section 3204 – Access to Employee Exposure and Medical Records.

2 Training Records

Safety training records are available for review by employees in the Quality Assurance Unit.