

BOISE POLICE DEPARTMENT

CRIME LABORATORY



HEALTH AND SAFETY PROCEDURES MANUAL VERSION 1.0

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Authority: Special Services Manager, Crime Lab Supervisor, Safety Officer

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1. SCOPE

The purpose of this manual is to promote safety in the laboratory. The goal of this manual is to ensure that procedures are set in place to allow employees to work in a safe environment where recognized hazards are common.

2. REFERENCES

Material Safety Data Sheets (MSDS) are available online at the following website:
<http://hazard.com/msds/>

3. TERMS & DEFINITIONS

Acid:

A chemical substance that neutralizes alkalis, dissolves some metals, and having a pH of less than 7.

Airborne Substances:

Airborne substances include dusts, sprays, mists, smokes, and fumes. Airborne substances are associated with classical widespread occupational lung diseases.

Alternate Light Source:

A device that provides monochromatic light at specific wavelengths to locate biological fluids, fibers, latent prints, etc. by enhancing their luminescent properties.

Analytical Areas:

Any area in the lab that is concrete will be considered an analytical area, with the exception of areas clearly marked as "non-analytical areas". See appendix "A".

Biological Materials:

- Human blood, human blood components, and products made from human blood.
- Semen, vaginal secretions, cerebrospinal fluid, synovial fluids, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, and concentrated HIV and HBV viruses. Care should also be taken with other biological materials such as body parts, tissues, saliva, urine, feces, and blood typing reagents.

Blood Borne Pathogens:

Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immuno-deficiency virus (HIV).

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Carcinogen:

Any substance or agent that tends to produce a cancer.

Caustic:

Caustics have the ability to chemically burn or corrode organic tissue upon exposure.

Chemical Exposure:

To come into contact with, or be exposed to, a chemical by one of the following routes: inhalation, ingestion, contact with skin and/or eyes, or injection.

Corrosive:

A chemical or substance capable of deterioration or consummation of organic or inorganic material on contact.

Decontamination:

The use of physical or chemical means to remove, inactivate, or destroy blood borne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles, and the surface or item is rendered safe for handling, use, or disposal.

Embryotoxins:

A noxious or poisonous substance adversely affecting normal embryonic development; in humans this usually occurs during the first trimester or prenatal life.

Emergency:

A sudden, urgent, usually unexpected occurrence or occasion requiring immediate action.

Engineering Controls:

Controls (e.g., cabinets, fume hoods, sharps disposal containers, etc.) that isolate or remove the blood borne pathogen hazards from the workplace by physical or mechanical means.

Flammable:

Capable of being easily ignited and of burning with extreme rapidity.

Fume Hood:

A device located in a laboratory enclosed on five sides with a moveable sash or fixed partial enclosed on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory; and allows chemical manipulations to be conducted in the enclosure without insertion of any portion of the employee's body other than hands and arms.

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Hazardous Material:

A chemical for which acute or chronic health effects may occur in exposed employees. The term “health hazard” includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes.

HBV:

Hepatitis B virus.

HIV:

Human immunodeficiency virus.

Infectious Materials:

The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, body fluids that are visibly contaminated with blood, and/or body fluids in situations where it is difficult or impossible to differentiate between body fluids.

- Any unfixed tissue or organ (other than intact skin) from a human (living or dead).
- HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissue from experimental animals infected with HIV or HBV.

Inorganics:

Compounds or substances that do not contain carbon.

Irritant:

A substance that causes physical irritation (i.e., roughening, reddening, or inflammation).

[Material Safety Data Sheets \(MSDS\):](#)

See also Safety Data Sheets (SDS).

Mutagen:

An agent or substance that tends to increase the frequency or extent of genetic mutation.

Neutralize:

Applying an opposite force or effect to render something ineffective or harmless.

Organic Compound:

Gaseous, liquid, or solid chemical compounds whose molecular structure contains carbon.

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Oxidizer:

A chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Peroxide:

The oxide of any element that contains more oxygen than any other, or compounds whose chemical structure contains the peroxide group, O-O.

Personal Protective Equipment:

Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

Physical Hazard:

A substance for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

Poison:

Any substance which, when ingested, inhaled or absorbed, or when applied to, injected into, or developed within the body, in relatively small amounts, by its chemical action, may cause damage to structure or disturbance of function.

Reproductive Toxins:

Chemicals which affect reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis).

Safety Data Sheets (SDS):

Summary sheets developed by the product's manufacturer or distributor to provide fundamental information about the identity of the product's constituents. Provides employees with procedures for handling or working with chemicals in a safe manner, and includes information such as physical data, toxicity, health effects, first aid, reactivity, storage, proper disposal, protective equipment, and spill-handling procedures. See also Material Safety Data Sheets (MSDS).

Safety Officer:

An employee who assists in the evaluation of employee complaints, suggestions, and concerns regarding possible hazards and in helping to maintain a safe laboratory working environment.

Sensitizer:

A substance that makes a person more sensitive or hypersensitive (as to an allergen).

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Target Organ Systemic Toxicity:

Toxic/systemic effects due to absorption and distribution of a toxicant to a site distant from its entry point, at which point effects are produced. Most chemicals that produce systemic toxicity do not cause a similar degree of toxicity in all organs, but usually demonstrate major toxicity to one or two organs.

Teratogens:

A substance or agent capable of causing developmental malformations and monstrosities.

Toxic:

Relating to or caused by poison.

Universal Precautions:

An approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens.

Work Place Controls:

Controls that reduce the likelihood of exposure by altering the way a task is performed (e.g., use of personal protective equipment).

4. RESPONSIBILITIES

Various levels of responsibilities exist for the implementation, oversight, and continuous improvement to laboratory safety.

4.1. LAB SUPERVISOR

- 4.1.1. Responsible for the ultimate safety within the Boise City Crime Lab and will, with other administrators, provide continuing support for safety training, inspections, equipment and audits. This manual will be reviewed annually by the staff and documented.
- 4.1.2. Ensure that the laboratory complies with departmental standards relating to health and safety and the use, storage, and disposal of chemicals.
- 4.1.3. Appoint a lab Safety Officer to oversee and monitor health and safety in the laboratory.
- 4.1.4. Ensure that all staff members have completed appropriate safety training; including annual training in blood borne pathogens and chemical hygiene.
- 4.1.5. Oversee the provision of vaccinations and provide post-exposure follow-up for work-related accident and illness reporting. Ensure that the "Employee Injury and Exposure Reporting" form, found at <https://apps.cityofboise.org/HR/OIRForm/>, is filled out and submitted by the appropriate designee, should an incident occur related to accidents and injuries, exposure to carcinogens, embryo toxins, mutagens, teratogens, and spills (either chemical or biological).

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4.2. **SAFETY OFFICER**

- 4.2.1. Responsible for the safety in the laboratory.
- 4.2.2. Ensure employees know and follow all health and safety policies.
- 4.2.3. Ensure that protective apparel and safety equipment are available and in working order, and that appropriate training is provided (i.e. location and use of spill equipment).
- 4.2.4. Conduct regular, formal laboratory safety inspections.
- 4.2.5. Provide training to other employees on safe laboratory practices related to non-chemical hazards.
- 4.2.6. Assist with employee complaints, suggestions, and concerns regarding possible hazards.
- 4.2.7. Monitor the laboratory's purchase, storage, and disposal of chemicals.
- 4.2.8. Ensures that all laboratory hoods, eyewash stations, and fire extinguishers are functioning properly and are tested on a regular basis.
- 4.2.9. Ensure that up-to-date Safety Data Sheets (SDS)/Material Safety Data Sheets (MSDS) are available in a location accessible to all employees. The Internet is an acceptable media.

4.3. **ALL LABORATORY EMPLOYEES**

- 4.3.1. Conduct work in a safe manner within the limits of their scientific knowledge, training, and experience.
- 4.3.2. Prepare for actions that will be taken in the event of an accidental spill or other emergency situations.
- 4.3.3. Develop good personal hygiene habits and use appropriate personal protective and safety equipment.
- 4.3.4. Use universal precautions by treating all blood and body fluids as infectious for Human Immunodeficiency Virus (HIV), Hepatitis B virus (HBV), or other blood borne pathogens.
- 4.3.5. Treat all chemicals as potentially hazardous.
- 4.3.6. Report unsafe work conditions and other safety concerns to the Safety Officer and/or Supervisor.
- 4.3.7. Know when personal protective equipment is required and wear it. Warn other personnel if they are entering a hazardous area and provide them with appropriate protective equipment if needed.
- 4.3.8. Know the physical properties and potential health hazards of the chemical(s) and biological materials being used.

5. **TECHNICAL REQUIREMENTS**

5.1. **GENERAL LAB SAFETY PROCEDURES**

- 5.1.1. Eating and drinking shall not be permitted in the analytical areas or evidence handling areas of the laboratory. Food shall not be stored in the analytical areas or in evidence storage refrigerators and freezers.

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- 5.1.2. When dealing with any biological or chemical materials, the analyst shall use universal precautions and avoid skin contact, use adequate ventilation, and treat all unknowns with extreme care to reduce the risk of injury.
 - 5.1.3. All glassware shall be disposed of in glass waste. All biological hazardous waste shall be disposed of in red trash bags clearly marked as hazardous. See [5.9 for chemical waste disposal procedures](#).
 - 5.1.4. Work areas should be kept free from chemicals and any equipment/instruments not being used. Chemicals, equipment, and instruments should be returned to their proper storage area, cleaned and ready for the next user.
 - 5.1.5. All items of evidence must be safely packaged in the appropriate packaging/containers before submission to the laboratory. Repackaging may be done by original booking officer or analyst, at the analyst's discretion.
 - 5.1.6. Report all accidents and injuries to the lab supervisor as soon as possible.
 - 5.1.7. Wash hands frequently. Hands should be washed before leaving the laboratory. Protective apparel shall be removed prior to leaving areas where evidence is analyzed.
 - 5.1.8. All laboratory areas should be maintained in a clean and sanitary condition.
 - 5.1.9. Eyewash stations and a safety shower shall be available. It is recommended that all passageways to the eyewash station and safety shower are clear of any obstacles. Eyewashes and shower shall be checked weekly to ensure that water flows through them and to eliminate bacterial growth. This is conducted and documented by Facilities Services & Operations.
 - 5.1.10. For proper ventilation, hood design and function shall be compatible with the materials in it. Work should be done as far inside the hood as possible and shall be used to prevent exposure to airborne substances. Fume hoods should be cleaned periodically. Fume hood air flow will be checked prior to use with an anemometer. Fume hoods should be capable of providing approximately 60 - 120 linear feet per minute of airflow. Air flow shall be tested annually by an authorized company.
 - 5.1.11. The following are acceptable areas for evidence: evidence intake area, packaging room, evidence lockers, refrigerator/freezers designated for evidence, and laboratory analysis areas where evidence is being analyzed. *Exceptions: Latent lift cards, known exemplars, photographic evidence may be compared at the analyst's desk provided they are not biologically or chemically contaminated. Also, areas clearly designated as "non-analytical areas". See appendix "A".*
 - 5.1.12. Promptly wash if skin contact is made with any chemical or biological hazard.
- 5.2. **SAFETY TRAINING**
- 5.2.1. This manual will be reviewed annually to ensure knowledge of chemical hazards and blood borne pathogens.
 - 5.2.2. Training on blood borne pathogens or chemical hygiene shall be completed annually. Documentation of the completion of these trainings will be maintained in iLearn.

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5.2.3. The Safety Officer shall provide safety briefings to the staff on topics such as the location and use of all protective apparel and safety equipment in the laboratory.

5.3. **PERSONAL PROTECTIVE EQUIPMENT/SAFETY EQUIPMENT**

5.3.1. The laboratory will provide and maintain a first aid kit, spill clean-up equipment, fire extinguisher, emergency eye wash station, emergency shower, lab coats, gloves, safety glasses, and particulate masks.

5.3.2. Wear adequate protective equipment (gloves, goggles, face shield, chemical aprons, chemical sleeves, etc.) when working with corrosive/hazardous chemicals, potentially infectious materials or deadly materials (such as fentanyl). For this procedure, hazardous chemicals are defined as having a NFR/NFPA hazard warning of health and/or reactivity of 3 or greater. This is not intended to include final reagents/buffers that pose little or no health risk.

5.3.3. Eye and/or face protection must be worn at all times while handling corrosive/hazardous chemicals and/or forensic evidence that pose a splash or projectile hazard, or when near others performing similar analyses. Eyeglasses with side shields shall be worn at a minimum. Safety glasses and full-face shields will be available for use. Splash goggles or full-face shields are highly recommended when handling/transporting corrosive/hazardous liquids over 100 mL in breakable containers. Eye protection may be removed to perform visual analysis (i.e. when using a microscope) or while work is being conducted in a fume hood.

- Gloves shall be worn when analyzing evidence. When dealing with evidence being processed and/or collected for DNA or trace evidence, gloves shall be changed between handling each item. Face masks shall also be worn when handling DNA or trace evidence.
- Lab coats or other protective apparel shall be worn while working in the laboratory analysis areas. In certain cases, disposable clothing, crime scene outerwear and/or specialized eye, ear and body protection area also available.

5.3.4. Keep chemicals and potentially infectious materials off desks and out of non-laboratory analysis areas, such as where food is consumed.

5.3.5. All chemical spraying will be done in fume hoods.

5.3.6. Avoid inhalation of chemicals. Do not "sniff" test chemicals or evidence samples.

5.4. **CHEMICAL STORAGE AND HANDLING**

5.4.1. Hazard and precautionary statements are included on all chemical labels from manufacturers. These statements provide the hazard class and information on prevention, response in cases of accidental spillage or exposure, storage, and disposal.

5.4.2. Identifiers shall be listed if the chemical contains ingredients that contribute to acute toxicity, skin corrosion or serious eye damage, germ cell mutagenicity, carcinogenicity, reproductive toxicity, skin or respiratory sensitization, or Target Organ Systemic Toxicity.

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- 5.4.3. Be aware of chemical hazards as determined from the SDS/MSDS or other appropriate references.










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The nine pictograms used for hazards are given below:

GHS PICTOGRAMS & HAZARDS

As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

		
CORROSION <ul style="list-style-type: none">• Skin Corrosion/Burns• Eye Damage• Corrosive to Metals	EXCLAMATION MARK <ul style="list-style-type: none">• Irritant (skin and eye)• Skin Sensitizer• Acute Toxicity• Narcotic Effects• Respiratory Tract Irritant• Hazardous to Ozone Layer (Non-Mandatory)	EXPLODING BOMB <ul style="list-style-type: none">• Explosives• Self-Reactives• Organic Peroxides
		
SKULLS & CROSSBONES <ul style="list-style-type: none">• Acute Toxicity (fatal or toxic)	FLAME <ul style="list-style-type: none">• Flammables• Pyrophorics• Self-Heating• Emits Flammable Gas• Self-Reactives• Organic Peroxides	GAS CYLINDER <ul style="list-style-type: none">• Gases Under Pressure
		
ENVIRONMENT <ul style="list-style-type: none">• Aquatic Toxicity	HEALTH HAZARDS <ul style="list-style-type: none">• Carcinogen• Mutagenicity• Reproductive Toxicity• Respiratory Sensitizer• Target Organ Toxicity• Aspiration Toxicity	FLAME OVER CIRCLE <ul style="list-style-type: none">• Oxidizers

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- 5.4.4. The Safety Officer is responsible for ensuring that an up-to-date version of the SDS or MSDS is readily available on the MSDSOnline database and hard-copy binder for every chemical found in the laboratory.
- 5.4.5. SDS's or MSDS's may contain the following information:
- Identity of product used on the label
 - The chemical and physical characteristics
 - Physical hazards (fire, explosion, and reactivity)
 - Health hazards
 - Permissible Exposure Limit or Threshold Limit Value
 - Carcinogenicity
 - Safe handling procedures
 - Control measures
 - Emergency and first aid procedures
 - Date of preparation or last change
- 5.4.6. Intake of Chemicals or Reagents
- 5.4.6.1. Individual containers will be checked for content, for breakage or leaks, and for intact labels. Do not retain containers that are broken, leaking, unlabeled, have unreadable labels, or that contain chemicals that were not ordered. Contact the supplier to have these items picked up. If possible, do not take responsibility for the disposal of rejected chemicals and/or containers.
- 5.4.6.2. Chemical containers shall be marked with the date they were received and/or made.
- 5.4.6.3. The Safety Officer shall ensure that the appropriate hazard warning information is on the container and that the container is properly stored.
- 5.4.6.4. Chemicals or reagents transferred to a secondary container shall be labeled with the identity of the chemical, the appropriate hazard warning, the preparation date and lot number (if applicable), and the expiration date. In that case that there is no expiration date, indicate as so.
- 5.4.6.5. Update the MSDSOnline & binders in the lab with the most current MSDS/SDS if a new one is available.
- 5.4.6.6. Log chemicals in the Chemical Log and reagents on the Reagent Log, found at the following location: I:\CID\CrimeLab\Equipment and Maintenance Logs\Chemicals and Reagents.
- 5.4.7. Chemicals shall be stored in properly labeled, closed containers in a cool (if possible) and dry location. Follow SDS guidelines.
- 5.4.7.1. Utmost care must be exercised to ensure that incompatible chemicals cannot come in contact with each other. Chemicals in Column A are incompatible with the chemical directly across in Column B (table below) and shall be kept separate.

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CLASSES OF INCOMPATIBLE CHEMICALS

Column A (incompatible with)	Column B
Acids	Bases
Alkali and alkali earth metals (i.e. sodium)	Water
Carbides	Acids
Hydrides	Halogenated organics
Hydroxides, oxides and peroxides	Oxidizing agents *
Inorganic azides	Acids
Heavy metals and their salts	Oxidizing agents *
Inorganic cyanides	Acids, strong bases
Inorganic nitrates	Acids, metals, nitrites, sulfur
Inorganic nitrites	Acids, oxidizing agents *
Inorganic sulfides	Acids
Organic compounds	Oxidizing agents *
Organic acyl halides	Bases, organic hydroxy compounds
Organic anhydrides	Bases, organic hydroxy compounds
Organic halogen compounds	Aluminum metal
Organic nitro compounds	Strong bases
Powdered metals	Acids, oxidizing agents *

(*Oxidizing agents: Chromates, dichromates, halogens, halogenating agents peroxides, hydrogen peroxide, nitric acid, nitrates, chlorates, perchlorates, permanganates, persulfates).

- 5.4.7.1. Flammable liquids shall be stored in the specified flammable liquid cabinet.
- 5.4.7.2. Hydrofluoric acid shall be stored in plastic. All other strong acids or strongly acidic solutions shall be stored in glass or stored in the container in which the chemical was received. Dilute acid solutions may be stored in plastic.
- 5.4.7.3. Corroded or leaking chemical containers shall be repackaged in a proper container with appropriate chemical labeling.
- 5.4.7.4. Chemicals no longer utilized shall be disposed of.
- 5.4.7.5. Containers for immediate use, such as test tubes, beakers, graduated cylinders, do not need to be labeled, so long as they are not used to store chemicals for longer than one day.
- 5.4.8. An updated inventory of all current chemicals shall be maintained. This will be accessible to all employees. The Safety Officer is responsible for adding new chemicals and removing consumed or expired chemicals from the inventory list (located in the Chemical Log).
- 5.4.9. Inventory should be completed by the Safety Officer annually.
- 5.4.10. Before use of an unfamiliar chemical, the user shall read the MSDS/SDS to be advised of the chemical hazard and its proper disposal.
- 5.4.11. The use of chemicals should always be performed in a fume hood or chamber. Treat any mixture of chemicals as if it is more hazardous than the most dangerous component.

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5.5. ADDITIONAL CHEMICAL PRECAUTIONS

5.5.1. ACIDS

Acids are known to be very corrosive. Corrosiveness may affect containers, cabinets, equipment, and personnel.

- Check equipment compatibility before working with acids (i.e., gloves, pumps, containers, etc.).
- Always add acid to water when making dilutions.
- Corrosive vapors can cause severe eye irritation or damage.
- Acids shall be segregated from strong bases, active metals, and from chemicals which could generate toxic gases upon contact (e.g., sodium, cyanide, etc.).
- Acids shall be maintained in acid storage cabinets. Store away from sunlight and rapid temperature changes.

5.5.2. CAUSTICS

Caustics are extremely corrosive to human tissue.

- When exposed skin comes into contact with caustics, the skin will develop a slippery feel. The skin should be flushed with a large quantity of water.
- Inorganic hydroxides shall be stored in polyethylene containers.
- Caustics shall be segregated from acids.

5.5.3. FLAMMABLES

Flammable liquids are hazardous because of the vapors involved. If these vapors are allowed to combine with air, there is the possibility of ignition and burning.

- Flammable liquids shall be handled only in areas free of ignition sources.
- Flammable liquids shall never be heated using an open flame.
- If possible, substitute solvents that are not as flammable or toxic.
- Flammable solvents, in excess of daily needs, shall be kept in flammable cabinets, safety cans, or storage rooms.
- Flammables shall be stored with compatible materials and away from oxidizers and oxidizing acids.

5.5.4. TOXIC SUBSTANCES

Toxic hazards include carcinogens, mutagens, teratogens, poisons, and embryotoxins. Exposure to toxic chemicals can be via skin or mucous membrane absorption, ingestion, injection and inhalation.

- Toxic chemical containers shall be properly labeled or color-coded to denote the toxic hazards.
- Chemical containers containing toxins shall be opened for a minimum amount of time to limit exposure.
- Clean work area when work is complete to remove possible trace amounts of toxic substances.

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- Dispose of hazardous waste in appropriate hazardous waste receptacle(s).
- Store cancer-causing chemicals in a vented and secured location.
- The following are tables of known toxic substances that may be encountered in the laboratory:

Antimony compounds	Ethylene dibromide
Arsenic compounds	Formaldehyde
Benzene	Hydrazine
Benzidine	b-Naphthylamine
Beryllium	Nickel carbonyl
Cadmium compounds	Nickel compounds
Chloroform	Chromates (salts of)
Dioxane	

Teratogens	
Aniline	Mercury
Benzene	Nitrobenzene
Carbon disulfide	Phosphorous
Carbon monoxide	Radioactive substances
Chlorinated hydrocarbons	Toluene
Lead	Turpentine
Formamide	

5.5.5. OXIDIZERS

Oxidizers are chemical compounds that may react violently with organic compounds and other oxidizable compounds.

- Water should be easily accessible from point of use.
- Oxidizers shall be labeled or color-coded to bring notice to this hazard.
- Store oxidizers as a class together and away from other chemicals.

Peroxide formation

- Exposure to air, as occurs in opened and partially emptied containers, accelerates formation of peroxides.
- Exposure to light encourages peroxide formation. Recommend storing in dark-colored containers. Glass containers of any size should be avoided whenever possible.
- Store away from heat sources in airtight containers.
- No attempt should be made to open containers of uncertain age or condition, or with caps or stoppers tightly stuck (since peroxides have been known to form in the cap threads).
- Isolate from other reactive compounds.

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Peroxide-forming chemicals that may be encountered in the laboratory include:	
Acetaldehyde	Ethyl ether
Cyclohexane	Potassium
p-Dioxane	Tetrahydrofuran

5.6. EMERGENCY PROCEDURES

5.6.1. CHEMICAL SPILLS

- 5.6.1.1. If necessary, use the safety shower or eyewash station to decontaminate eyes and skin.
- 5.6.1.2. Clear other employees from the area. Be sure to remove all sources of ignition if chemical is flammable.
- 5.6.1.3. Clean liquid spills using absorbent material. Prevent any liquids from traveling into sewage systems.
- 5.6.1.4. Place spilled waste and absorbent material into a leak-proof closable container. Double, heavy duty plastic bags are sufficient for most spills.
- 5.6.1.5. Decontaminate area where spill occurred. Neutralize acid and base spills.
- 5.6.1.6. Notify Lab Supervisor and Safety Officer as soon as possible.

5.6.2. EVACUATION

- 5.6.2.1. An evacuation plan will be posted in the laboratory for fires, bomb threats, hazardous materials, and other emergencies. Building evacuation plans are posted in the hallway outside of the laboratory.
- 5.6.2.2. In the event of an emergency involving highly toxic materials, only trained clandestine responders shall take action to contain or clean the spill.
- 5.6.2.3. No employee shall return to the evacuated area until the Lab Supervisor or Safety Officer has established that it is safe to return to the area.

5.7. HANDLING AND USE OF ALTERNATE LIGHT SOURCES

- 5.7.1. Goggles or other appropriate filters will be used to minimize radiation exposure from alternate light sources that may cause eye or skin damage. The operator and any observers must be provided with adequate protection.
- 5.7.2. Only individuals trained in their use will operate alternate light sources.
- 5.7.3. Never look directly into the light source aperture when the unit is emitting light. Care must be taken to protect the operator and observers from direct and reflected light.
- 5.7.4. Do not move optical elements or shiny objects into or out of the light beam while the alternate light source is operating unless barrier filters are being used. Potentially blinding stray reflections may occur.
- 5.7.5. Follow recommended safety procedures as outlined by the various alternate light source manuals utilized by the laboratory.

5.8. MEDICAL MONITORING

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- 5.8.1. Emergency contact information is maintained by the Chief's designated employee in the personnel database. Human Resources maintains records of any vaccinations covered by the department. The training division shall maintain a list of training provided by the city to include first aid, CPR, and blood borne pathogen training for all employees.
- 5.8.2. The Hepatitis B vaccination series and tetanus vaccination are available for employees. Obtain a voucher from HR to get vaccinations at no cost to the employee.
- 5.8.3. Narcan (naloxone HCl) will be available at no cost to the employee in cases of accidental contact with suspected or known fentanyl, which is a powerful synthetic opioid analgesic.

5.9. **HAZARDOUS WASTE DISPOSAL**

- 5.9.1. Many chemicals cannot be disposed of by drain disposal.
- 5.9.2. Small quantities (not more than a few hundred milliliters) of organic chemicals can be disposed of by drain disposal (examples of organic chemicals include: alcohols, aldehydes, amides, amines, carboxylic acids, esters, ketones, nitriles and sulfonic acids). *One sink has been designated for acid waste in the chemical processing area, which has an acid neutralizer tank installed. This sink must be clearly marked.
- 5.9.3. Flush any hazardous waste disposed of in the drain by neutralizing it with at least a 100-fold excess of water.
- 5.9.4. Chemicals which evaporate are left to do so under vent hoods. Sludge, which is created as a result, is disposed of as needed through the City of Boise's Environmental Division of Public Works.
- 5.9.5. Waste shall be placed in the appropriate waste storage containers daily or when generated.
- 5.9.6. Waste containers shall have an operable lid which remains closed except when adding or removing hazardous wastes.
- 5.9.7. Waste shall be stored only in designated containers and may be soaked up via materials designated to contain/absorb liquids.
- 5.9.8. Incompatible chemicals shall not be mixed or stored together.
- 5.9.9. Waste containers shall be labeled as to components and date started.
- 5.9.10. Any waste generated will be disposed of by the City of Boise's Environmental Division of Public Works, which is coordinated through the Hazardous Materials Coordinator. Per the Federal Resource Conservation Recovery Act, the laboratory cannot have more than 2.2 lbs. of acute hazardous waste and no more than 220 lbs. of hazardous waste generated in a month (to qualify for conditionally exempt small quantity generators).

5.10. **HANDLING AND STORAGE OF INFECTIOUS MATERIALS**

- 5.10.1. "Universal Precautions" is an approach to infection control. According to the concept of Universal Precautions, all human blood and bodily fluids are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens. As a part of Universal Precautions, engineering controls and workplace practice controls are designed to minimize worker exposure to infectious material and potentially infectious materials.

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- 5.10.2. “Engineering Controls” are controls (e.g., cabinets, fume hoods, sharps disposal containers, etc.) that isolate or remove the blood borne pathogen hazards from the workplace by physical or mechanical means.
 - 5.10.2.1. Hand washing facilities are located throughout the lab and are readily accessible to employees. When the provision of hand washing facilities is not feasible (i.e. crime scenes, evidence receiving areas, etc.) either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels, or antiseptic wipe will be provided.
 - 5.10.2.2. Ventilation: fume hoods offer protection for the laboratory worker from contamination by bodily fluids and other potentially infectious materials.
 - 5.10.2.3. Waste containers used for the collection of contaminated infectious waste material for disposal will be leak proof, closeable, sealable, and marked as a biohazard.
- 5.10.3. “Work Practice Controls” are controls that reduce the likelihood of exposure by altering the way a task is performed (e.g., use of personal protective equipment).
 - 5.10.3.1. Handling: Specimens of blood or other potentially infectious material must be placed in a container that prevents leakage during handling, processing, storage, transport, and shipping.
 - 5.10.3.2. Apparel: Cover and bandage all cuts, wounds and abrasions prior to gloving or covering with protective clothing and before performing any work-related duties involving infectious materials. Analysts will wear gloves, lab coats, or other protective clothing when handling items containing body fluids or other potentially infectious materials. [See 5.3 for additional requirements](#). Supervisors may determine additional precautions to be used.
- 5.10.4. Decontamination: Employees will wash their hands and any other exposed skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body area with blood or other potentially infectious material. It is recommended that hands be washed before leaving the laboratory.
 - 5.10.4.1. Contaminated work areas and equipment shall be cleaned using freshly prepared 10% bleach solution or a comparable substitute.
- 5.10.5. Sharps for disposal must be placed in containers that are:
 - 5.10.5.1. Puncture resistant.
 - 5.10.5.2. Marked either “Biohazard” or “Sharps”.
 - 5.10.5.3. Leak-proof on the sides and bottom.
 - 5.10.5.4. Easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found.
 - 5.10.5.5. Maintained upright throughout use.
 - 5.10.5.6. Replaced routinely and not allowed to overflow.

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- 5.10.6. Broken glassware that may be contaminated shall not be picked up directly with the hands. It shall be cleaned up using mechanical means such as a brush and dustpan, tongs, or forceps.
- 5.10.7. Contaminated laundry shall be handled as little as possible with a minimum of agitation.
 - 5.10.7.1. Laundry contaminated with excessive amounts of blood or other potentially infectious materials will be placed into a leak proof “biohazard” bag and the bag tied closed.
 - 5.10.7.2. Employees who have contact with contaminated laundry must wear protective gloves and other appropriate personal protective equipment.
- 5.10.8. Warning labels (i.e. “Biohazard” stickers) shall be affixed to containers used to store, transport, or ship blood or other potentially infectious materials. Warning labels shall also be affixed to containers of regulated waste and refrigerators and freezers containing blood or other potentially infectious material.

5.11. INFECTIOUS WASTE DISPOSAL

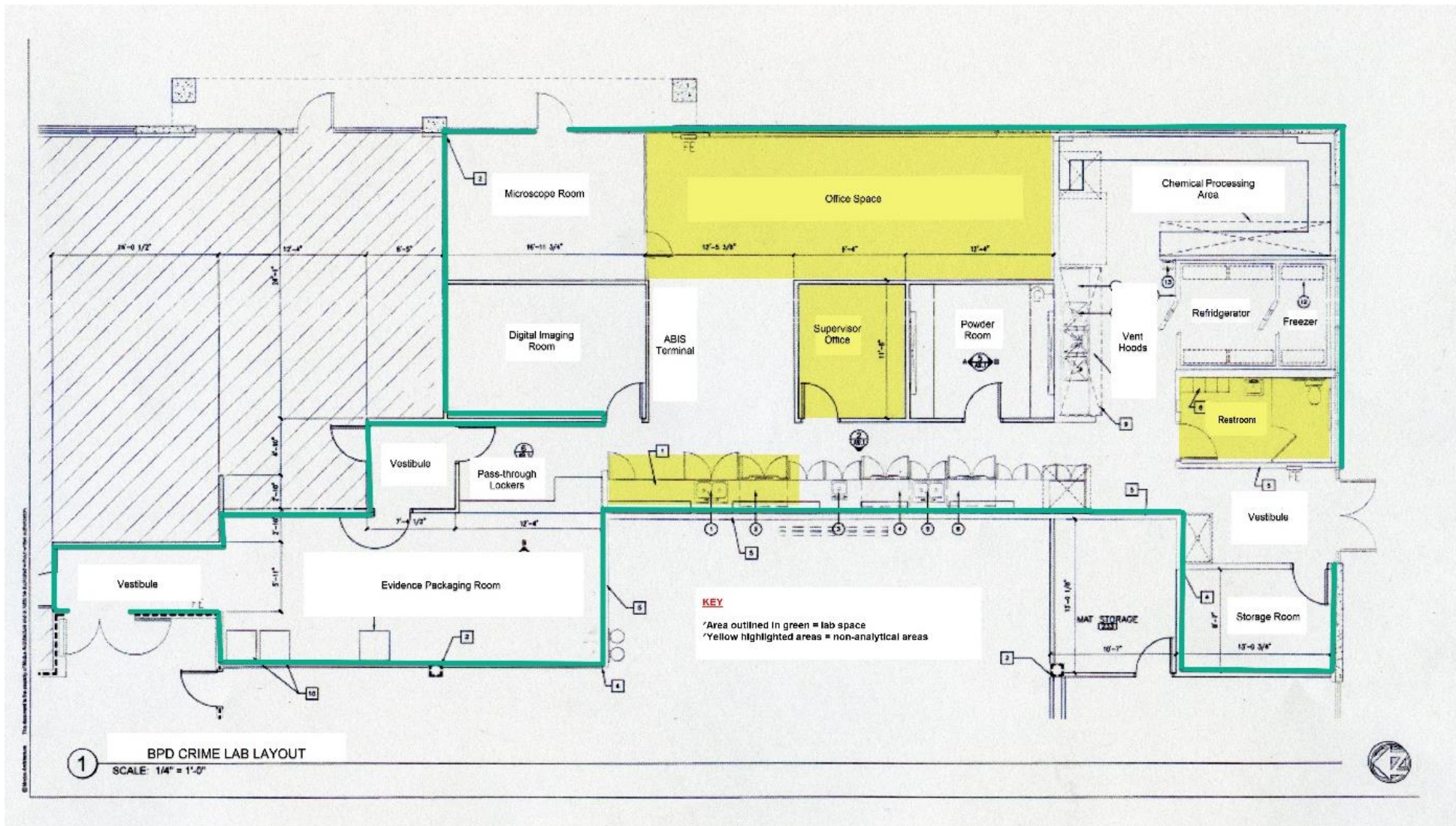
- 5.11.1. Liquid blood may be discharged to the sewer system only after autoclaving or by adding 10 ml undiluted bleach per 100 ml of blood.
- 5.11.2. Infectious waste may also be removed by a controlled hazardous waste handler.
- 5.11.3. Decontaminate sinks and other work surfaces as soon as feasible. Decontaminate reusable containers and equipment (such as measurement devices) prior to reuse.

5.12. FIREARMS

- 5.12.1. All firearms being submitted or handled shall be treated as if they are loaded and shall assume that it is loaded until verified otherwise.
- 5.12.2. A safety inspection shall be performed after the weapon is received into the laboratory to ensure it is unloaded.
- 5.12.3. Safety training shall be provided to any individual who handles firearm evidence.

HEALTH AND SAFETY PROCEDURES MANUAL HISTORY		
ISSUING AUTHORITY: Special Services Manager/ Crime Lab Supervisor/ Safety Officer		
SECTION AND COMMENTS	DATE	AUTHOR/REVIEWER
Current Manual 2019	07/03/19	Delaney/ Crum & Leung

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Authority: Special Services Manager, Crime Lab Supervisor, Safety Officer