

POLICY AND PROCEDURE	
SUBJECT/TITLE:	Laboratory Safety Plan
APPLICABILITY:	Laboratory
CONTACT PERSON & DIVISION:	Christina R Henning Laboratory
ORIGINAL DATE ADOPTED:	03/31/2010
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REFERENCE NUMBER:	400-003-P

A. PURPOSE

The purpose of the Laboratory Safety Plan is to provide a framework for recognizing, evaluating, and controlling hazards associated with laboratory operations in the Canton City Public Health (CCPH).

B. POLICY

All Canton City Public Health employees will work safely in the laboratory with the proper containment equipment and engineering controls, wearing appropriate personal protective equipment, using proper work practices, knowing safety information for the materials and equipment used, and following safety instructions and laboratory protocols.

C. BACKGROUND

A Laboratory Safety Plan and Chemical Hygiene Plan are required by the Occupational Safety and Health Administration (OSHA) Laboratory Standard 29 CFR 1910.1450.

Although the information in this document is compiled from sources believed to be reliable, it is not all-encompassing and is intended only to serve as a starting point for good laboratory practice.

D. GLOSSARY OF TERMS

N/A

E. PROCEDURES & STANDARD OPERATING GUIDELINES

1. General information

a. RESPONSIBILITIES:

All personnel who use, store, and handle hazardous materials are required to abide by the minimum requirements set forth in the Laboratory Safety Plan as well as any specific requirements unique to their department or division and the City of Canton. Employees, students, and visitors shall also:

- i. Follow all safety and health procedures specified in the Laboratory Safety Plan.
- ii. Complete required health and safety training sessions.
- iii. Report accidents, unhealthy and unsafe conditions to the supervisor and/or the Departmental Safety Committee Representative.
- iv. Notify the supervisor of any health conditions that could lead to serious health situations in the laboratory.

b. SAFETY COMMITTEE:

CCPH has established a Safety Committee. The members of this safety committee are appointed by the Health Commissioner to improve conditions specific to the operations of CCPH. It shall be the responsibility of the committee to establish safety and health policies in accordance with federal, state, and local regulations.

c. AMERICANS WITH DISABILITIES ACT / REASONABLE ACCOMMODATIONS

The Americans with Disabilities Act (ADA) requires the Canton City Public Health to make reasonable accommodations for staff and visitors with disabilities as defined by the ADA.

2. Laboratory Practices and Safety Equipment

a. GENERAL LABORATORY SAFETY PROCEDURES

The following general safety practices must be followed in the laboratory:

- i. Report all safety related anomalies on the 400-003-04-F_Safety Anomaly Log, this includes spills, concerns, etc.
- ii. Know the hazardous properties of the materials you are working with (e.g., chemical, biological, or electrical): Refer to the written laboratory protocols and review the Safety Data Sheets (SDS) for chemicals. Consider the toxicity of materials, the health and safety hazards of each procedure, the knowledge and experience of laboratory personnel and the safety equipment that is available.
- iii. Know the location of safety equipment and emergency and exit procedures.
- iv. Always wear appropriate clothing (e.g., pants, shirts, shoes) and personal protective equipment (e.g., safety glasses, lab coats, gloves) in the laboratory. Open sandals, clogs, crocs, and similar footwear are prohibited; skirts are not recommended.
- v. Remove personal protective equipment (PPE) before leaving the laboratory.

- vi. If hazardous operations are conducted in the laboratory, arrangements should be made to have another person present (see 5, "Working Alone in the Laboratory," for additional information).
- vii. Use a properly operating fume hood when working with hazardous chemicals.
- viii. Do not eat, smoke, drink, prepare food, or apply cosmetics in active laboratory settings.
- ix. Keep work areas clean and uncluttered at all times.
 - x. Do not leave reactions unattended.
 - xi. Unauthorized individuals are prohibited from entering the laboratory.
 - xii. Persons under 14 years of age are prohibited from entering certain high hazard/ high-risk areas (e.g., laboratories with hazardous chemicals, or infectious organisms).
- xiii. Exceptions to this policy require prior written approval from the Health Commissioner.
- xiv. Employees under 18 years of age are subject to the Ohio Youth Employment Law. Contact Human Resources for more information.
- xv. Refer to *Biosafety in Microbiological and Biomedical Laboratories* (ISBN: 017-040-00547-4) at <https://www.cdc.gov/labs/BMBL.html> in addition to this manual for other safety procedures to follow in the laboratory.

b. Food and Beverages in the Laboratory

To reduce potential exposures and to ensure compliance with prudent laboratory operations, regulations, and other best management practices, CCPH prohibits the storage and consumption of food and drink in all working laboratory areas. (this does not apply to personal desk space and the storage room)

- Do not eat, drink, smoke, chew gum, apply cosmetics, or take medicine in laboratories where hazardous materials are being handled.
- Do not store food, beverages, cups, or other drinking and eating utensils in areas where hazardous materials are handled or stored.
- Do not use glassware for laboratory operations to prepare or consume food or beverages.
- Do not use laboratory clinic or EPA refrigerators, ice chests, and ovens for food storage or preparation.

c. Security

Laboratory security is an integral part of an effective safety program. Follow these steps to ensure a secure working environment in your laboratory:

- i. Keep laboratory exit doors closed when unoccupied.
- ii. Keep the fire cabinet room locked when the laboratory is unoccupied.
- iii. Keep the clinical records file cabinet locked when the laboratory is unoccupied.
- iv. Keep an accurate record of chemicals, stocks, cultures, project materials, growth media, and those items that support project activities.

- v. Notify the Supervisor if materials are damaged or missing from laboratories.
- vi. Inspect all packages arriving at the laboratory.
- vii. At the end of each work shift, ensure that chemicals and biological materials have been stored properly and securely.
- viii. Ask strangers (someone you do not recognize as a co-worker or support staff person) to exit the room if they are not authorized to be there.
- ix. Discuss other security-specific requirements with your supervisor and colleagues.

d. Laboratory Design and Equipment

The following safety devices/equipment should be available for laboratory personnel working with hazardous materials.

i. Drench Showers

Drench showers and other emergency wash systems are used in an emergency to flush chemicals that have accidentally come in contact with laboratory personnel. To wash the body properly, clothing should be removed as water is applied. The drench shower *can* be used to extinguish a clothing fire, but this is *not* recommended if the shower is more than a couple of feet away. The best method of extinguishing a clothing fire is to “Stop, Drop, and Roll,” and then remove clothing. Drench showers are inspected annually for proper flow and operation. A “DO NOT USE” notice must be placed on the unit if the shower is not properly functioning.

ii. Eye and Face Washes

The best treatment for chemical splashes of the eye and face is immediate flushing with copious amounts of water for 15 minutes. All plumbed eye and face washes should be flushed by laboratory occupants on a regular basis. For details refer to the Haws Services Safety Equipment Checklist. Plastic eye wash bottles are secondary to the eye wash station and are available next to the sink in the clinic room. In general, emergency eyewash equipment should be installed within 10 seconds walking time from the location of a hazard. The equipment must be installed on the same level as the hazard (accessing the equipment should not require going up or down stairs or ramps). In addition, the path of travel from the hazard to the equipment should be free of obstructions and as straight as possible.

iii. Fire Extinguishers

A dry chemical (e.g., BC, ABC) type extinguisher is in the laboratory. Staff members who plan to attempt extinguishing small fires should be trained in extinguisher operation.

iv. Open Floor Drains and Sink Traps

To reduce odors in buildings, sink traps and floor drains should be filled. If an odor is noticed flush the drain and ensure one to two liters of water are added on a regular basis to prevent a dry trap. No equipment should be placed over floor drains.

E. Door Postings and Other Signs

A hazard and emergency information sign is posted on the laboratory main door, facing the corridor. Response personnel will use the hazard and emergency information sign during an emergency. The sign identifies hazards within the facility, the responsible employee, and other personnel to be contacted in the event of an emergency. In the event of an accident, chemical spill, fire, or personal injury, assistance from a person familiar with the laboratory may be requested. Employees should review signs at least annually or if pertinent information changes.

F. Laboratory Safety Information

Safety Data Sheets (SDS), emergency procedures, safety manuals, and other references must be readily available for all laboratory personnel.

G. First Aid Kits

First aid kits should be available in each laboratory. First aid kits should *not* have topical creams, liquids or ointments that can cause further discomfort and/or hinder medical treatment.

H. Sharp Containers and Glass Only Can

Sharps containers are used for the disposal of hypodermic needles and syringes, razor blades and other sharp items. When three-quarters full, sharps containers should be sealed containers placed into a biological or infectious waste box.

“Glass Only” cans are used for the disposal of “clean” broken glass only. When no more than three-quarters full, the contents should be properly sealed, labeled and disposed.

Sharps Containers can be obtained from the nursing stockroom.

I. Mechanical Pipetting Aids

Mechanical pipetting aids should be used. *Mouth pipetting is prohibited.*

J. Placement of Safety Equipment

In newly constructed and renovated laboratories, drench showers, eyewashes, and fire extinguishers are located next to the main door of the facility for occupant safety. A hazard (i.e., chemical, fire or personal injury) should not come between you and your safe egress from the room. In addition to the aforementioned safety equipment, emergency gas shut offs is located in the basement immediately below the laboratory. The shut off is in the ceiling space and is marked by a hanging tag labeled “Lab Gas”. The electric panel is in a closet immediately outside the main laboratory door towards the rear of the building. Depending on the work, additional controls and equipment may be needed for the protection of laboratory workers.

K. Laboratory Vision Panel

The Laboratory Vision Panel is the window space in the main door of the laboratory, used by emergency response personnel to identify internal problems (e.g., an injured person, a small fire, a chemical spill). The Fire Department requests that the vision panel in the door not be blocked, unless it is necessary to maintain darkness for optical work.

The Laboratory Vision Panel should be a 100 square-inch wire glass window panel in the door to the laboratory.

2.5 - WORKING ALONE IN THE LABORATORY

All staff and visitors working in a laboratory where hazardous conditions exist must have knowledge of the following:

- Emergency Contacts.
- Emergency Response Procedures.
- Evacuation Routes.
- First Aid Procedures.
- Health and Safety Training Requirements.
- Personal Protective Equipment Requirements.
- Procedures to Report Unhealthy and Unsafe Conditions.
- Safety Policies and Procedures; and
- Spill Response Equipment and Procedures.

All personnel working **alone**‡ in a laboratory where hazardous conditions exist shall:

- Obtain permission from the Laboratory Supervisor to work alone in the laboratory; and
- Ensure that a means to contact emergency response personnel is available when working alone in the laboratory.

‡According to the National Safety Council, the term “alone” means that a person is beyond the visual or auditory range of any other individual for more than a few minutes at a time.

SECTION 3: PERSONAL PROTECTIVE EQUIPMENT

3.1 - PERSONAL PROTECTIVE EQUIPMENT POLICY

Personal protective equipment must be made available to laboratory personnel who are working with hazardous materials. PPE must be provided to all paid staff members at no cost. Laboratories must provide personal protective equipment (i.e., safety glasses, protective gloves, laboratory coat, hearing protection, respiratory protection) for visitors.

3.2 - EYE AND FACE PROTECTION

Eye and face protection must be worn in the laboratory when there is a potential for contact with hazardous chemicals or other agents (e.g., non-ionizing radiation, biohazardous materials, aerosolized material, flying objects.). Please note that all protective eye and face wear should meet ANSI Z87.1 and ANSI Z136.1 standards.

The type of protection needed depends on the hazard (e.g., chemical, ultraviolet light, biohazard, impact). For instance, when laboratory chemicals are used, approved eye protection is mandatory and chemical

splash goggles are recommended. Goggles should be worn over eyeglasses or prescription safety glasses with side shields should be worn. Face shields should be worn when working with an agent that may adversely affect the skin on the face and/or when proper eye protection is not enough. Eye, skin, and face protection are required when working with severely corrosive or strongly reactive chemicals, with glassware under extreme pressures, in combustion and other high temperature operations and whenever there is a possibility of an explosion or implosion.

3.3 - LABORATORY COATS, GLOVES, AND OTHER PROTECTIVE CLOTHING

Laboratory coats and shoes must be worn as appropriate for the work being performed. When performing laboratory work; open-toed-shoes, sandals, flip-flops, clogs, crocs, etc. are prohibited. Depending on the type of work, additional personal protective equipment, such as gloves and aprons may be necessary. Coats, aprons, and gloves should be removed when leaving the work area. Gloves should be carefully selected for their degradation and permeation characteristics to provide proper protection. The thin, latex, vinyl, or nitrile gloves, popular for their dexterity, are not appropriate for highly toxic chemicals or solvents. When using chemicals, consult the chemical compatibility information that is provided in the Safety Data Sheet (SDS) and manufacturer's catalogs to help select proper personal protective equipment, including gloves and respirators.

3.4 - RESPIRATORY PROTECTION

The use of air-purifying respirators for routine laboratory work is not recommended. Respirators are discouraged because they protect only the wearer and require periodic medical monitoring, specific training, and fit testing before they can be worn effectively. Properly operating laboratory fume hoods provide the best overall protection from chemical hazards in the laboratory.

3.5 - PROTECTIVE CLOTHING OUTSIDE THE LABORATORY

CCPH policy requires the use of appropriate gloves, safety glasses, lab coats, and other personal protective equipment within the laboratory as needed for work being performed. The following guidelines state that all contaminated, potentially contaminated, or the perception of potentially contaminated protective clothing and equipment beyond the lab may create a hazard or project a careless image to both colleagues and visitors.

- Wearing gloves outside the lab is not acceptable. Instead, transport chemicals from place to place on a cart, in a clean secondary container, or in a bottle carrier with secure handles. Transport biohazardous materials in an approved properly labeled container.
- Gloves should never come in contact with door handles, elevator buttons, telephones, lavatory faucets, vending machines, bottled-water dispensers, or other surfaces outside the laboratory.
- For the sake of safety, appearances, and courtesy, do not wear contaminated, stained, or potentially contaminated lab coats and other clothing and equipment outside of the laboratory.
- Do not carry specimens in a private vehicle unless they are properly prepared for transport and meet the strict federal and state regulations that address the transport of hazardous (i.e., biological, chemical, radiological) materials on public roads.

3.6 - LAUNDERING LABORATORY CLOTHING

Contaminated clothing (including laboratory coats and gowns) with mild chemical or biological contamination should be laundered separately from other clothes using one of the following methods:

Contaminated Clothing

- Clothing that is overtly contaminated with chemicals must be disposed of as hazardous waste.
- Clothing that is contaminated with blood, blood products, or other bodily fluids must be removed and containerized in leak-proof bags or boxes at the location where it was used. Containers or bags must be marked with the biohazard symbol. Contaminated clothing may not be sorted or rinsed in the location of use and may never be sent home for personal laundering. Contaminated clothing must be laundered by a professional laundry service. The Laboratory manager shall ensure that all laundry sent off-site is containerized in leak-proof bags or boxes marked with the biohazard symbol and shall advise the vendor that the laundry is contaminated with blood and/or potentially infectious bodily fluids.

SECTION 4 - LABORATORY VENTILATION POLICY

General room ventilation does not provide adequate protection against hazardous gases, vapors, and aerosols. All work with corrosive, flammable, odoriferous, toxic, or other dangerous materials shall be conducted only in a properly operating chemical fume hood.

PROCEDURES FOR PROPER USE OF FUME HOODS

Before using the hood, make sure air is entering the hood and hood is exhausting the air. Do not block baffle openings or place bulky items in the hood that will prevent air from entering the baffle opening.

1. Ensure that air is entering the unit.
2. Ensure the baffle openings are not blocked and air is flowing properly.
3. Conduct work at least six inches from the edge of the hood.
4. Lower the sash to protect yourself from dangerous reactions.
5. Keep the hood clean and uncluttered. Wipe up spills immediately.
6. Be aware that drafts from open doors, fans, air conditioners, high traffic walkways may interfere with normal hood exhaust.

SECTION 5 – EMERGENCIES & ACCIDENTS

5.1 – EMERGENCY ASSISTANCE

Dial **9- 911** to request emergency assistance (e.g., fire, police, ambulance). In all emergencies and accidents, the first consideration is your safety and the safety of those around you. Nursing staff are present during normal working hours and, if needed, can be called upon to provide medical support until emergency assistance arrives.

5.2 – PREPARATION

In order to be prepared for an emergency, know the hazards of each compound you work with. Assess the risks before using any chemical and have a laboratory emergency plan for all procedures with hazardous

materials on file and posted in a conspicuous area for employees and emergency responders. Consider the following criteria before working with any hazardous agent:

- Toxicity, reactivity, and flammability of the compound.
- The amounts involved.
- The expected duration of your exposure to the compound.
- Potential routes of entry for the chemical (i.e., inhalation, ingestion, injection, skin contact).

5.3: CHEMICAL SPILLS

Controlling the extent of a chemical spill requires planning and a prompt response. Ensure all personnel who will be working with chemicals are familiar with and knowledgeable of the Chemical Hygiene Plan (CHP). The CHP is attached to this plan as appendix [400-003-01-A Chemical Hygiene Plan](#).

5.4: MERCURY SPILLS

Mercury has been typically found in thermometers, thermostats, and certain laboratory devices. From time-to-time accidents may occur which require the cleanup of liquid mercury.

A. Mercury Spill Kits

Rooms containing liquid mercury or mercury-containing devices must have a special spill kit in an easily accessible location in the room or nearby room.

At a minimum, the spill kit should contain the following:

- Gloves
- Safety glasses
- Plastic shovel
- Mercury absorption sponges
- Hg Vacuum
- Water suction device
- Sealable plastic bags
- Spray bottle
- Hg Absorb™ powder (or other commercially available product)

B. Preparing to Clean a Mercury Spill

Before cleaning a mercury spill:

- Do not use a standard vacuum cleaner to clean up mercury. The vacuum filter is not capable of containing mercury and will spray small droplets and vapor into the air. Once a vacuum has been used to clean up mercury it is permanently contaminated and must be discarded.
- Do not use a broom to clean up mercury. The broom will break the mercury into smaller droplets and spread the contamination.
- Do not pour liquid mercury down the drain. Mercury will contaminate the drain and the local water treatment plant. Mercury is highly hazardous to the environment.
- Do not attempt to clean mercury from fabric, upholstery, or carpet. It is impossible to remove all mercury contamination from these materials. In general, CCPH recommends discarding fabrics and carpets contaminated with mercury.

- Do not wash mercury-contaminated clothing in a washing machine or dryer. All contaminated clothing must be disposed of as hazardous waste.

C. Cleaning a Small Mercury Spill

Follow these procedures when cleaning up a small amount of mercury (e.g., thermometer spill).

1. Evacuate the spill area. Make sure anyone with contaminated clothing or shoes leaves these articles behind before they leave. These items should be placed in a sealable plastic bag for disposal.
2. Lower the temperature in the area, whenever possible. Mercury is a liquid at room temperature but at higher temperature can easily become a vapor which may then be inhaled.
3. Isolate the ventilation in the affected area. Turn off the air conditioning and heating units immediately. Ventilation grates in the spill area should be covered with plastic to prevent mercury vapors from traveling to other parts of the building.
4. Turn on the fume hood. Allow any mercury vapors to escape outside.
5. Protect yourself. Make sure you are dressed in clothing which completely covers your arms and legs. Put on gloves, shoe covers, and safety glasses. Remove all metal jewelry before attempting to clean up mercury. Mercury will bond to metal jewelry.
6. Contain the spill. Protect environmental receptors such as sinks or floor drains.
 - a. Spills on Hard, Smooth Surfaces
 - a. Use Hg Spill kit contents to push debris and beads of mercury together and then scoop them up. Place the collected material in the plastic container.
 - b. Pick up pieces of broken glass with tweezers and place in the plastic container.
 - c. Use the suction device or Hg sponges to suck up small beads of mercury that cannot be gathered using the cardboard. If you need to expel the suction device, gently do so onto a wet paper towel placed inside the plastic container. Discard the suction device in the plastic container when finished. Alternatively, you can use the duct tape to pick up very small droplets of mercury only. Discard the tape in the plastic container.
 - d. Turn on a flashlight and shine it over the spill area. Light will reflect off broken glass and beads of mercury. This will help in locating any remaining spilled materials.
 - b. Spills on Carpets, Rugs, or Fabric
 - a. If the spill is on an area rug, roll the area rug up. Wrap the rug in two layers of plastic sheeting and proceed to the disposal section of this document.
 - b. If the spill is on wall-to-wall carpeting, do not attempt to cut out the affected area yourself. Cutting and tugging actions can disperse additional mercury into the indoor environment.
 - c. Isolate the affected room and contact a supervisor for assistance.
 - d. If the spill is on upholstery, contact a supervisor for disposal instructions.
 - c. Mercury Spilled in Water
 - c. If the liquid mercury fell into a sink full of water, recover the mercury beads using the Hg spill kit supplied bottle labeled “water”.
 - d. Expel the contents into a sealable container.
 - d. Mercury Spilled Down the Drain

If the liquid mercury went down a sink drain, contact your Supervisor and the Canton City Water Department immediately for assistance.

7. Sprinkle the Hg Absorb™ powder over the spill site. This material will bind any remaining mercury from the spill. Hg Absorb™ powder may be sprinkled on wall-to-wall carpeting or upholstery in anticipation of disposal to prevent further mercury vapor generation.
8. Lightly mist the area with water to prevent dust generation during cleanup.
9. Collect the powder with a moist paper towel and dispose it in the plastic bucket.
10. Dispose of all materials used in the spill cleanup as mercury waste. If any clothing came into contact with mercury, dispose of this clothing as mercury-contaminated waste.
11. Seal all bags and containers of waste. The plastic bucket should be taped around the seal. Label the material as hazardous waste and dispose of it in accordance with local, state, and federal regulations.
12. Wash your hands when finished.

5.5: ENVIRONMENTAL CHEMICAL RELEASES

If a spill reaches the environment (e.g., floor drain, sink drain), immediately contact your supervisor. Attempt to stop or contain the spill/release at the source without endangering yourself and others by following these procedures:

1. Extinguish all sources of ignition.
2. Isolate all potential environmental receptors (e.g. drains, sumps, soil, air handling system).
3. Immediately report the spill.
4. Wait for appropriate assistance to arrive on the scene.

5.6: BIOLOGICAL SPILLS

Refer to attachment: [400-003-03-A Infectious Waste Containment Plan](#).

5.7: FIRES OR EXPLOSIONS

All building occupants must exit the building during all fire alarms. Whenever a fire alarm is activated:

- Shut off all open flames.
- Safely store hazardous materials.
- Leave the work area.
- Shut all doors on the way out of the laboratory.
- Evacuate through the nearest fire exit.
- Do not use elevators.

5.8: ACCIDENTS AND INJURIES

There are several steps that must be taken following an accident or injury. Follow these procedures immediately after an accident or injury:

1. Call 9-911 if the incident requires an ambulance or other form of emergency response.
2. Alert your supervisor of the incident.

A medical care provider should assess all injuries. During regular business hours noncritical injuries may be evaluated by a contracted Occupational Health Specialist. Currently Aultworks, at (330) 491-9675, is used for initial testing and follow-up testing.

Accidents and injuries should be reported as soon as possible. For a chemical exposure, medical personnel should be given the following information:

- Identity of chemical(s).
- Conditions under which exposures occurred.
- Signs and symptoms of exposure.

Whenever possible, an SDS should be provided.

3. If there is any injury, no matter how slight, the employee shall complete an [400-003-08-F Employee Injury Report Form](#), and as appropriate these forms may also be completed: [400-003-09-F Employee Injury Report-Supervisor](#) and [400-003-10-F Employee Injury Report-Witness](#).

5.9: POWER OUTAGES OR SERVICE INTERRUPTIONS

Although some of the buildings have emergency power, it is only designed for essential services, and not for continued operations in the laboratory. If the power should be interrupted:

- Immediately stop all work,
- Close all chemical containers,
- Shut-off or unplug equipment, and
- Refer to Continuity of Operations Plan for additional information.

SECTION 6 – MONITORING AND EXAMINATION

6.1: EXPOSURE MONITORING

Regular environmental or employee exposure monitoring of airborne concentrations is not warranted or practical in laboratories because the chemicals are used for relatively short periods of time and in small quantities. All procedures are designed to minimize possible exposure.

Laboratory employees who suspect that they have been overexposed to a toxic chemical should notify their supervisor immediately. If any adverse health effect is experienced, anticipated, or suspected and the employee is physically able, the employee should be evaluated by the contracted Occupational Health Provider.

If the employee is physically incapable of transporting him/herself due to exposure to a chemical, or if the incident is after regular business hours, call 9-911. Notify a supervisor of the exposure and file an Accident Report Form.

6.2: REPRODUCTIVE HAZARDS, TERATOGENIC AGENTS, AND PREGNANCY

Substances or agents that affect the reproductive health of women or men or the ability of couples to have healthy children are called reproductive hazards. A teratogen is a substance which interferes with embryonic or fetal development and women of childbearing potential should take care to avoid exposure. A fetotoxin is a substance that can poison or cause degenerative effects in a developing fetus or embryo. Radiation, some chemicals, certain drugs (legal and illegal), cigarettes, some viruses, and alcohol are other examples of reproductive hazards.

A reproductive hazard may cause one or more health effects, depending on the time and duration of the exposure. For example, exposure to harmful substances during the first 3 months of pregnancy may cause a birth defect or a miscarriage. During the last 6 months of pregnancy, exposure to reproductive hazards could slow the growth of the fetus, affect the development of its brain, or cause premature labor. Reproductive hazards may not affect every person or every pregnancy in the same way. Whether a woman or fetus is harmed depends on how much of the hazard they are exposed to, when they are exposed, how long they are exposed, and how they are exposed.

A. Reproductive Health in the Laboratory

State and federal laws protect employees from discrimination based on pregnancy. These protections are described in the following state and federal laws:

- Pregnancy Discrimination Act, an amendment to Title VII of the Civil Rights Act of 1964; and
- Title IX of the Education Amendments of 1972.

Pregnancy may raise concerns for the safety of the mother or the health of the child. Likewise, there may be particular concerns about the effects of workplace hazards on reproductive health. Resources are available to assist in addressing concerns related to pregnancy or reproductive health in the laboratory while maintaining an environment free from discrimination.

B. Employee Rights

Listed below is an overview of employee rights as they relate to pregnancy and reproductive health in the laboratory. Each person's situation is different and must be handled appropriately for the individual circumstances. Questions about fairness and rights of employees can be addressed on an individual basis by the City of Canton Human Resources Department

- Employees are not required to identify themselves as pregnant; privacy is respected regarding pregnancy.
- Employees may not be discriminated against because of pregnancy or reproductive health concerns.
- Employees may not be excluded from any course or workplace because they are pregnant or have reproductive health concerns.
- Employees may request accommodation that would provide them an opportunity to engage in an interactive process to identify the barriers to job or academic performance and to further identify and make accommodation that is reasonable and effective.

C. Managing Risk in the Laboratory

Health risks posed in laboratories vary according to the materials and processes used. Safety in laboratories is managed by administrative and engineering controls as well as using personal protective equipment. Established methods of protection are designed to offer a high level of protection to employees. However, while there is no comprehensive list, certain chemical, physical, and disease-causing agents may present risks to pregnant women, pregnancy, the child, or persons with reproductive health concerns. Educating yourself about these risks by reading Safety Data Sheets (SDS) for chemicals you may be exposed to can help you make informed decisions about how you would like to manage these risks. If you are planning to become pregnant, are pregnant, have reproductive health concerns, work, or study in CCPH laboratories, and have safety concerns related to pregnancy or reproductive health, be aware of the following:

- You are urged to review and understand the hazards of your workplace or courses. Review SDSs for chemicals used and stored in your laboratory. Understand and follow all safety procedures related to your work. This is required for all employees working in CCPH laboratories.
- Review guidance from the National Institute for Occupational Safety and Health (NIOSH):
 - The Effects of Workplace Hazards on Male Reproductive Health or - The Effects of Workplace Hazards on Female Reproductive Health.
- If you would like to discuss the possibility of modifying your work assignments, or to discuss fair access to work because of your planned pregnancy, or pregnancy, or reproductive health concerns, you may contact the Laboratory Director and/or Administrator, the Health Commissioner or the City of Canton Human Resources Department.

D. Reproductive Health in the Laboratory: Questions and Answers

Questions and answers regarding reproductive health for Employees

Q. I am pregnant or am planning on becoming pregnant or have reproductive health concerns and feel unsafe in the laboratory. What do I do?

A. You can request a review of your workplace or courses.

The Lab Manager, Health Commissioner or the City of Canton Human Resource Department will review chemical, physical, and disease-causing agents that you may encounter and share this information with you. You are encouraged to share this information with your health care provider to help you decide what level of participation you feel comfortable with.

Q. How do I know if chemicals I am working with in the laboratory pose reproductive hazards?

A. Review the Safety Data Sheet for the chemicals. Manufacturers are required to provide SDSs for all hazardous chemicals including information about toxicity. SDSs for materials at CCPH are provided in paper format.

Q. I have concerns about pregnancy or reproductive health, but I am not comfortable discussing this with my supervisor. What do I do?

A. You are not required to disclose your pregnancy or reproductive health concerns. You may request a confidential consultation with the Health Commissioner or Human Resources Department to discuss your concerns.

Q: I have general concerns about potential effects of laboratory chemicals on my reproductive health. What rights do I have as a male and who do I speak to?

A: CCPH will respond to concerns about reproductive health without regard to gender. For more information regarding reproductive health as it relates to chemical safety, refer to the Manufacturers SDSs, the Lab Manager, Health Commissioner, or the City of Canton Human Resource Department.

Questions and answers regarding reproductive health for Supervisor

Q. An employee raised concerns about her safety because she is pregnant or has reproductive health concerns. What do I tell her?

A. Refer her to the Pregnancy and Reproductive Health section in the Laboratory Safety Plan; it explains her rights and resources available to her. Immediate safety concerns should be addressed as soon as possible.

SECTION 7 – TRAINING & INFORMATION

7.1: TRAINING AND INFORMATION POLICY

Supervisors are responsible for ensuring that their employees receive proper training as stipulated in this Laboratory Safety Plan.

The primary sources for training are Ohio Train, Public Entities Pool (PEP) and in house.

Based on employee needs CCPH provides many other training programs including:

- Back Injury Training
- Biological Safety, Bloodborne Pathogens and Sharps Training
- Chemical Safety Training
- Fall Protection and Ladder Safety Training
- Hazardous Materials Shipping and Transport Training
- Hazardous Waste Management Training
- HIPAA

Descriptions of each of the above training programs are available on the following pages for more information.

7.2: BACK INJURY PREVENTION TRAINING

The *Back Injury Prevention Training* addresses the basics of safe lifting and exercises that one can do to reduce the likelihood of a back injury. The training is available from the PEP catalog.

7.3: BIOLOGICAL SAFETY, BLOODBORNE PATHOGENS AND SHARPS TRAINING

All employees who have occupational exposure to bloodborne pathogens receive initial and annual training conducted by the Communicable Disease Nurse. All employees who have occupational exposure to bloodborne pathogens receive training on the epidemiology, symptoms, and transmission of bloodborne pathogen diseases. In addition, the training program covers, at a minimum, the following elements:

- a copy and explanation of the OSHA bloodborne pathogen standard
- an explanation of our ECP (Exposure Control Plan) and how to obtain a copy.
- an explanation of methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident.
- an explanation of the use and limitations of engineering controls, work practices, and PPE
- an explanation of the types, uses, location, removal, handling, decontamination, and disposal of PPE
- an explanation of the basis for PPE selection
- information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine will be offered free of charge.
- information on the appropriate actions to take and people to contact in an emergency involving blood or OPIM.
- an explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident.
- an explanation of the signs and labels and/or color coding required by the standard and used at this facility.

- an opportunity for interactive questions and answers with the person conducting the training session

This training lasts approximately 1 hour.

7.4: CHEMICAL SAFETY TRAINING

This training is required for all incoming employees who will be working with hazardous chemicals. Any individual working with hazardous chemicals that have not previously had this training must also attend.

Chemical Safety Training will include:

General information on physical and health hazards of hazardous chemicals, signs, and symptoms of exposure and measures employees can take to protect themselves.

- Proper use of chemical fume hoods,
- Methods that may be used to detect the presence of a hazardous chemical,
- General information on safety equipment and personal protective equipment, and
- Chemical Hygiene Plan

7.5: FALL PROTECTION AND LADDER SAFETY TRAINING

Fall Protection Training reviews the proper use of scaffolding, ladders, aerial lifts, and other forms of work at heights.

Ladder Safety Training is available for departments or groups where the only exposure to fall hazards is from work on moveable ladders.

7.6: HAZARDOUS MATERIALS SHIPPING TRAINING

This training is required for any person shipping hazardous material by ground, air, or vessel. Shipments of hazardous materials can be made by following directions in shipping guidance document. The primary material that may be considered hazardous for shipment from the CCPHL is infectious materials, Category B. Hazardous Materials training is available online through the Centers for Disease Control and Prevention (CDC) and in class based training. This training must be completed prior to shipping any human body products.

7.7: HAZARDOUS WASTE MANAGEMENT TRAINING

Hazardous Waste Management Training will be arranged by your supervisor based on expected job exposures. *Hazardous Communication*, also known as HazCom, is mandatory for all those handling, generating, or managing regulated waste. This training is available on-line, and your supervisor can guide you to the most current training available.

7.8: HEALTH INSURANCE PORTABILITY ACCOUNTABILITY ACT (HIPAA)

This training is required of all employees and is primarily received by documenting an awareness level of the Canton City 800-016-P_HIPAA Policy

SECTION 8 – RECORDKEEPING

8.1: MEDICAL RECORDS

Confidential medical records are created and maintained in the laboratory. All medical information will be maintained in compliance with the Canton City Public Health Records Retention Policy and the HIPAA Policy.

8.2: Training Records

At a minimum, training records must include the following information:

1. Date of training session.
2. Contents or summary of the training.
3. Name of person(s) attending the training.
4. Name of person(s) conducting the training.

Records for training are maintained by the individual completing the training. Refer to Department wide plans for additional trainings and record keeping requirements.

SECTION 9 – CHEMICAL SAFETY

Refer to attachment: [400-03-01-A Chemical Hygiene Plan](#)

SECTION 10 – BIOLOGICAL SAFETY

Refer to attachment: [400-03-02-A Canton City Public Health Exposure Control Plan 2016-5](#)

SECTION 11 – ELECTRICAL SAFETY PLAN

11.1: INTRODUCTION

The purpose of this section is to inform laboratory occupants to remediate electrical hazards when possible and develop appropriate work procedures for electrical safety.

Electrical hazards for laboratory employees usually include shock, burn, or fire hazards. Electrical shocks occur when a part of the body becomes part of the electrical circuit. One way this can occur is by contacting a metallic part of a piece of equipment that has become energized by contact with an electrical conductor.

The severity of the electrical shock depends on the following:

- The amount of the current (measured in Amperes or Amps),
- The pathway through the body,
- The duration of the exposure, and
- Whether the skin is wet or dry.

11.2: ROLES AND RESPONSIBILITIES

Laboratory personnel are responsible for their electrical equipment. Maintenance Department Staff may only perform design changes to the building's electrical infrastructure. Specific changes may be required when a change in the electrical load exceeds the capacity in each area (such as after a new equipment is established in an existing space). Laboratory personnel are responsible for ensuring that electrical equipment connected to the building power system is in good condition.

Any electrical accident of a serious nature may be investigated by the Fire Marshal and the Electrical Inspector.

11.3: GENERAL REQUIREMENTS

Laboratory personnel typically encounter electricity in the form of hard-wired equipment (e.g., specialty microscopes, generators), plug-and-cord equipment (e.g., refrigeration, centrifuges, heating baths), extension cords, and outlets. The following requirements must be followed to ensure electrical safety:

11.3.1: Use of Extension Cords

In general, extension cords are not appropriate where a permanent wiring solution is available, regardless of convenience. Extension cords should be used only for temporary purposes and replaced with surge protectors if needed for longer periods of time. When extension cords are used, the following restrictions apply:

- Use only extension cords that are rated for hard or extra hard usage. Review the capacity of the extension cord to ensure that you are staying within the cord's power rating.
- Use only extension cords with a minimum conductor size of 12 AWG (American Wire Gauge) and only cords with a grounding pin. Never remove the grounding pin to make a three-prong cord fit in a two-prong outlet.
- Extension cords may not be run through doors, windows, walls, or ceilings and may not be attached to building surfaces (i.e., walls, ceilings) by staples or other means.
- Extension cords must be protected from damage and may not be placed in such a way that they create a tripping hazard.
- Extension cords may not be plugged in end-to-end or "daisy chained."
- Extension cords must be inspected regularly for wear, as it is especially likely around the plug. Worn or frayed cords must be removed from service and replaced. Cracks in extension cords may not be repaired with electrical tape.
- Extension cords cannot be used for space heaters unless prior approval is obtained.

11.3.2: Use of Power Strips

Power strips permit more products to be plugged into the same outlet. While power strips may be convenient, they may also create safety hazards when used incorrectly.

Power strips do not increase the amount of power available to a location, but rather more access to the same electrical source. A heavy reliance on power strips generally indicates that additional wall outlets are needed. Follow these procedures when using power strips:

- Use only NRTL (Nationally Recognized Testing Laboratory) tested power strips and be sure they are used only as intended by their NRTL listing.
- Select power strips that are properly rated for the application.
- Read and understand the manufacturer's instructions and limitations on the power strip. For example, the on/off switch on the power strip may not be designed to interrupt the power of the devices plugged into the strip during normal applications.
- Do not overload the circuit. Review the capacity of the circuit and the power requirements of all of the items plugged into it. This includes not only the items plugged into the power strip, but also other devices plugged into wall outlets along the same circuit.

11.3.3 Use of Clamp Lighting

Clamp lighting refers to lamps that can be attached to objects (such as desks, benchtops, or equipment) using a clamp connected to the lamp assembly. These devices are commonly available

at many home and office product retailers. Clamp lighting poses special hazards in the laboratory due to the generation of heat and the potential for the equipment to accidentally fall. Follow these procedures when using clamp lighting:

- Use only NRTL (Nationally Recognized Testing Laboratory) tested clamp lights, and ensure they are used only as intended by their NRTL listing.
- Use clamp lights that are properly rated for the application. Many clamp lights cannot be used in a wet environment.
- Clamp lights may not be attached to any surface within 6 feet of a water source (e.g., sinks, emergency showers, water tanks). Clamp lights may not be attached to any surface directly above a water source at any distance.
- Prevent lights from contacting combustible materials (such as paper goods). Move combustible materials at least three feet away from the lamp reflector surface. Move any combustible materials that could potentially fall onto the reflector surface to another location.
- Do not wrap excess cord around the lamp. The reflector surface gets very hot and may damage the cord jacket.
- Inspect cords daily prior to use for cracks, wear, or exposed conductor wires. Discard lamps with damaged cords.

11.3.4: Ground Fault Circuit Interrupters

Ground Fault Circuit Interrupters, or GFCIs, are designed to protect the end user from electrical shock. GFCIs are not required on all circuits in laboratories. Best management practices in laboratory safety call for all outlets within 6-feet of a water source (such as a sink) or in a wet environment to have GFCI protection. All maintenance requests and renovation designs must include a provision for GFCI protection under these circumstances. Older buildings may be “grandfathered” and exempt from this requirement.

If a laboratory currently has outlets with GFCI protection, they should be tested regularly. Laboratory personnel are responsible for testing the GFCI. To test the receptacle GFCI, first plug a lamp into the outlet and turn it on. Next, press the “TEST” button on the GFCI. Under proper functioning conditions, the GFCI’s “RESET” button should pop out and the light will turn off. Press the “RESET” button to restore power to the outlet.

- If the “RESET” button pops out but the light does not go out, the GFCI has been improperly wired. Submit a maintenance request to correct the wiring errors.
- If the “RESET” button does not pop out, the GFCI is defective and should be replaced.

11.4: CHANGES TO BUILDING ELECTRICAL SERVICES

Only an electrician that is properly licensed may perform changes to electrical services in the laboratory. Adding or modifying building circuitry or wiring are examples of a change to the electrical service. Changes are requested by submitting a maintenance request.

11.5: DAMAGED OR DEFECTIVE EQUIPMENT

Any of the following circumstances requires that the user immediately take the equipment out of service:

- Experiencing shocks, even mild shocks when the equipment is touched,
- Abnormal heat generation, and
- Arcing, sparking, or smoking from the equipment.

Laboratory personnel must tag the equipment, "Do Not Use" and should arrange for equipment repair or disposal.

11.6: SPECIAL CONSIDERATIONS

Follow these guidelines when working with electrical equipment or devices:

All electrical equipment must be constructed in accordance with the requirements of the current National Electric Code.

- If flammables are used, electrical equipment with motors must be rated for Class I Division II environments.
- The manufacturer must certify refrigerators used to store flammable chemicals.
- Install ground fault circuit interrupter (GFCI) outlets within 6 feet of a water source.

F. CITATIONS & REFERENCES

Biosafety in Microbiological and Biomedical Laboratories (ISBN: 017-040-00547-4) at
<https://www.cdc.gov/labs/BMBL.html>

G. CONTRIBUTORS

The following staff contributed to the authorship of this document:

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H. APPENDICIES & ATTACHMENTS

[400-003-01-A Chemical Hygiene Plan](#)

[400-003-02-A Canton City Public Health Exposure Control Plan 2016-5](#)

[400-003-03-A Infectious Waste Containment Plan](#)

[400-003-05-A Emergency and Warning Sign](#)

[400-003-06-A_Chemical Inventory \(only available through Laboratory Supervisor\)](#)

I. REFERENCE FORMS

[400-003-04-F Safety Anomaly Log](#)

[400-003-07-F Policy Acknowledgement Signature Page](#)

[400-003-08-F Employee Injury Report-Employee](#)

[400-003-09-F Employee Injury Report-Supervisor](#)

[400-003-10-F Employee Injury Report-Witness](#)



J. REVISION & REVIEW HISTORY

Revision Date	Review Date	Author	Notes
03/31/2010			Original adoption 03/31/2010
09/30/2016	03/02/2018	C. Henning	Complete formatting revision with significant updates throughout
03/02/2018		C Henning	Grammatical changes made throughout this document and all attachments, Sections 5.9 & 11.3.1 had addition of bulleted item. Suggested updates provided by all Lab Staff.
01/08/2020	01/08/2020	C Henning	Full Staff Review followed by numerous small changes including adding hyperlinks, format changes, updating links, adding injury forms. Additionally, replaced Spill Log with more generic Safety Anomaly Log.
07/11/2022	07/11/2022	C Henning	Replaced updated attachment, COOP
04/18/2024	04/18/2024	C Henning	Full Staff Review followed by numerous small changes, primarily grammatical. .

K. APPROVAL

This document has been approved in accordance with the “800-001-P Standards for Writing and Approving PPSOGFs” procedure as of the effective date listed above.