WHITWORTH UNIVERSITY

ACADEMIC BIOSAFETY PROGRAM

Policy/Scope

Policy Statement: This program sets forth the instructions, resources, and requirements for work with and around biosafety hazards in academic settings at Whitworth University. Certain elements within this program describe the University's compliance with Washington State's Department of Occupational Safety and Health regulations (also known as Washington Administrative Codes or WACs) and other elements detail our compliance with National Institutes of Health (NIH) guidelines. Although WACs apply exclusively to employees, the NIH guidelines make no employee/student distinction. Whitworth believes that it is in the best interest of our staff, faculty and students to have the elements of this plan apply to all applicable members of our community. It is expected that staff and faculty explicitly teach the biosafety principals contained in this program, while demonstrating their own compliance.

Scope: In general, this program applies to the departments of Chemistry, Biology, and Health Science. However, the scope of this program is not defined by department lines, it applies to anyone of any department that engages in the activities described herein and as a result are potentially exposed to a biohazard. For example, psychology students working with animals in the vivarium would still be included in the scope of this program even though they are not within the departments of chemistry, biology or health science.

The procedures outlined in this program also intersect with additional requirements based on the type and nature of the work being conducted. For example, working with live animals will require compliance with the Institutional Animal Care and Use Committee guidelines in addition to compliance with all applicable portions of this program. Every effort is being made to streamline the various requirements, but it is the responsibility of the Principal Investigator (hereafter the PI) to ensure that all applicable requirements have been met.

Responsibilities

Administrative Oversight: The Office of the Provost is responsible to ensure compliance with this program and to provide the resources necessary for compliance applicable to the current scope of approved activities. It is also incumbent upon the Provost to provide disciplinary action in response to substantial non-compliance. The Dean of the Colleges of Arts and Sciences will ensure that the Academic Biosafety Program document is reviewed annually for continued applicability and compliance.

Institutional Biosafety Committee (IBC): Whitworth University is responsible for ensuring that all research involving recombinant or synthetic nucleic acid molecules conducted at or sponsored by Whitworth University is conducted in compliance with NIH Guidelines, found here: http://osp.od.nih.gov/office-biotechnology-activities/biosafety/nih-guidelines. The Whitworth University Institutional Biosafety Committee (IBC) shall oversee research performed at the university

involving recombinant and synthetic nucleic acid molecules, as defined below and in the NIH Guidelines. The purpose of this oversight is to protect the health and safety of employees, students and the public regarding such research. For more information, please consult Whitworth University's Policy on Research Involving Recombinant or Synthetic Nucleic Acid Molecules (DNA/RNA) found here.

Institutional Animal Care and Use Committee (IACUC): All research, testing or instructional demonstration projects that include the use of vertebrate animals must be approved in advance by the Whitworth Institutional Animal Care and Use Committee (IACUC). More information can be found on the IACUC website.

Institutional Review Board (IRB): All research, testing or instructional demonstration projects that involve the use of human subjects must be approved in advance by the Whitworth Institutional Review Board. These projects don't always intersect with biosafety hazards, but do on occasion. More information can be found on the Sponsored Programs website.

Department chairs: As supervisors, department chairs have the authority and responsibility to ensure that individuals under their supervision adhere to the standards in this program and that their departments remain compliant with the procedures and requirements. It is acknowledged that occasionally a department chair or supervisor will not share biosafety expertise with those they supervise, however, their responsibility remains.

Principal investigators (PI): Principal Investigators are the individuals directing both student and faculty projects and research as such, they are responsible for the application of this program in their respective lab spaces. The PI will provide training to all personnel working in their laboratory that includes: the necessary precautions to prevent exposures, information on how personal health status may impact an individual's susceptibility to infection, and the option to receive immunizations or other prophylactic interventions when appropriate. The PI must ensure that laboratory personnel working in their lab demonstrate proficiency in all applicable standard and specialized microbiological practices, especially working with BSL2 agents.

Employees: For the purposes of this plan, employees are those that work in a laboratory setting; also referred to as lab workers, lab personnel, lab staff, lab employees or science faculty. All staff and faculty that work in an academic lab, regardless of position or title are expected to abide by and implement all of the procedures in this program. Further, they must complete designated training and provide applicable training to student workers or others in their charge. They are responsible to report hazardous or unsafe conditions to their supervisor and work to ensure that those conditions are corrected.

Pest control: Insects – Internal and external building spray by a contractor. Mice – Facilities Services staff set traps as needed; persistent issues are handled by a professional pest control agency.

Definitions and Biohazard Categories

I. Biohazards are infectious agents or biologically derived infectious materials that present a risk or potential risk to the health of humans or animals, either directly through infection or indirectly through damage to the environment. Below are a number of categories of biohazards.

a. Pathogens: Pathogens can infect humans, plants or animals. They can be bacterial (including those with drug resistance plasmids), fungi, viruses and parasites.
b. Human blood, blood products, tissues and certain other body fluids. These could be encountered during an emergency situation or as a part of anticipated research. Either way they must always be treated as though they are infectious. This is what is known as Universal Precautions.
c. Cultured cells: all human and certain animal cells and the potentially infectious agents these cells may contain.
d. Allergens: Any substance that causes an allergic reaction. These can be from a chemical or a biological source. The scope of this program focuses on allergens from biological sources.
e. Toxins (bacterial, fungal, plant, etc.): Toxins are poisonous substances that are produced from a living organism and can cause disease in other living organisms, typically at very low dosages.
f. Clinical specimens: A clinical specimen is a sample of a substance or material that has been collected for the purpose of clinical examination or study. These typically include things like urine, blood or tissue samples.
g. Infected animal and animal tissues: Animals, their tissues and their excrements have the potential to carry and transmit disease to each other and to humans. Proper care and husbandry is vital to prevent disease transmission. Any animal that is suspected of, or known to carry disease is to be segregated and examined by a veterinarian. Their ultimate disposition will be determined based on the recommendation of the veterinarian and IACUC protocols. Any diseased, but non-infectious tissue (i.e. tumors) that will be kept for further study will be handled with fixative. No infectious diseased tissue will be kept for study.
h. Live animals: Live animals will be housed and cared for based on the standard husbandry practices for the individual species and in accordance with IACUC requirements.
i. Recombinant DNA (rDNA) and other synthetic nucleic acids: In the context of this policy and the *NIH Guidelines*, recombinant and synthetic nucleic acid molecules are defined as:
    i) molecules that a) are constructed by joining nucleic acid molecules and b) that can replicate in a living cell, i.e., recombinant nucleic acids;
    ii) nucleic acid molecules that are chemically or by other means synthesized or amplified, including those that are chemically or otherwise modified but can base pair with naturally occurring nucleic acid molecules, i.e., synthetic nucleic acids, or
    iii) molecules that result from the replication of those described in (i) or (ii) above.

II. Biological agent classification (note that this classification is different than the one NIH uses in regards to recombinant DNA.)
a. Class 1: Agents of no or minimal hazard under ordinary conditions or handling
b. Class 2: Agents of ordinary potential hazard. This class includes agents which may produce disease of varying degrees of severity from accidental inoculation or injection

or other means of cutaneous penetration but which are contained by ordinary laboratory techniques.

c. Class 3: Agents involving special hazard or agents derived from outside of the United States that require a federal permit for importation unless they are specified for higher classification. This class includes pathogens that require special conditions for containment.
d. Class 4: Agents that require the most stringent conditions for their containment because they are extremely hazardous to laboratory personnel or may cause serious epidemic disease. This class includes class 3 agents from outside the United States when they are employed in entomological experiments or when other entomological experiments are conducted in the same laboratory area.
e. Class 5: Foreign animal pathogens that are excluded from the United States by law or whose entry is restricted by USDA administrative policy.
f. Note: Federally licensed vaccines containing live bacteria or viruses are not subject to these classifications. These classifications are applicable, however, to cultures of the strains used for vaccine production, or further passages of the vaccine strains.

III. Principals of Biosafety

a. Physical containment levels. More commonly referred to as Biosafety Levels, these levels describe the containment capabilities of the physical space in which the potential hazard is used. Physical containment is necessary to reduce the potential for exposure of the laboratory worker, workers outside of the laboratory and the environment to biohazards. Physical containment is achieved using laboratory practices, containment equipment, and special laboratory design. These levels are additive in their containment. For example, level 2 has all of the containment methods of level 1 with the addition of specific containments for level 2, and so on. The biosafety level required is determined by an evaluation based on the organism, the infection risk and the type of work being conducted. The table below gives an overview of the containment practices and the type of work that is appropriate for each level. Note that Whitworth is not currently equipped for BSL 3 or BSL 4 level work.

Biosafety Level	**Containment**	**Appropriate for:**
BSL1	The laboratory is not separated from the general traffic patterns in the building. Work is generally conducted on open bench tops. Special containment equipment is not required or generally used. Laboratory personnel have specific training in the procedures conducted in the laboratory and are supervised by faculty with training and expertise in microbiology or a related science. Sinks are required for handwashing.	Work done with defined and characterized strains of viable microorganisms not known to cause disease in healthy adult humans.
BSL2	Access to the laboratory is restricted when work is being conducted. Certain procedures in which potentially	Work done with a broad spectrum of indigenous moderate-risk agents present in the community and associated with

	infectious aerosols are created are conducted in biological safety cabinets or other physical containment equipment. Biosafety warning signage is required in these spaces.	human disease of varying severity. Certain agents can be used safely on the open bench, provided the potential for cross-contamination or splashes or aerosols is low.
BSL3	Access to the laboratory space is restricted at all times. All manipulations are conducted in a biological safety cabinet. Specialized ventilation systems may be required to control the release of infectious aerosols from the laboratory. Laboratory personnel have specific training in handling pathogenic agents.	Work done with indigenous or exotic agents with a potential for respiratory transmission and which may cause serious and potentially lethal infection.
BSL4	Isolation of aerosolized infectious materials is accomplished primarily by using a class III biosafety cabinet or a full-body, air supplied positive pressure personnel suit. The facility is a separate building or a completely isolated zone with specialized ventilation and waste management systems to prevent the release of viable agents.	Work done with dangerous and exotic agents, which pose a high individual risk of life-threatening disease for which there is no available vaccine or therapy.

Hazard Controls

I. Administrative Controls

a. Signage: Appropriate signage on laboratory doors and equipment is essential for communicating the hazards and necessary precautions to entrants and occupants. For the purposes of this program, only biosafety related signage is discussed, other signage such as NFPA diamonds may be required by other plans. Biosafety specific signage is required for BSL2 and higher labs. The biohazard sign must include the standard biohazard symbol in red or orange, indicate the biosafety level, the person in charge of the space and precautions to be taken before and during entry and prior to leaving. A standard BSL 2 door sign template can be found on the Academic Chemical & Biological Safety website.

b. Medical surveillance: Medical surveillance is required by Department of Occupational Safety and Health for employees that have an occupational exposure to bloodborne pathogens. See the University's Bloodborne Pathogen Program for more information and training on offered vaccinations.

c. Specimen transport: The transportation of a biohazardous substance outside of its building of origin is prohibited unless being shipped with proper containment via a third party vendor. Transportation of a biohazardous substance to another lab within the same building may be done but only in a covered, tightly sealed container in a stable

rack. If the samples are infectious, a secondary container must also be used. The container must be labeled with the contents and a contact person/phone number.

d. Training: Training in addition to that listed below may be required depending the type and nature of laboratory work. For example, chemical safety or waste management may also be needed for an individual to be considered fully trained for the work they will do.
    i. Staff and Faculty will receive necessary training for external sources.
    ii. Students working in BSL2 laboratories will receive training in two forms. First, they will complete the Biosafety Training worksheet, which includes vocabulary, an explanation of biosafety levels, a hazard analysis specific to the organisms they will be working with, proper BSC use, interactions with oversight committees, waste disposal/decontamination, and signs and symptoms of exposure. Second, they will receive hands-on training from the supervising faculty, which includes aseptic techniques, lab specific protocols, and techniques to minimize aerosol production.
    iii. Students working in the vivarium will complete hands on training conducted by faculty on the proper care and maintenance of the vivarium animals. Students working on projects subject to IACUC oversight will be trained by supervising faculty and training documentation provided to the IACUC committee.
    iv. Students working with recombinant DNA will complete hands on training conducted by the supervising faculty and documentation will be provided to the IBC.

II. Engineering Controls

a. Biological safety cabinets (BSC): BSCs are designed to contain aerosols generated during work with infectious material using laminar airflow and high efficiency particulate air (HEPA) filtration. Three types of BSCs (Class I, II and III) are used in microbiological laboratories. Open-fronted Class I and Class II BSCs are partial containment devices that provide a primary barrier offering significant levels of protection to laboratory personnel and to the environment when used in combination with good microbiological techniques.
    i. The Class I BSC is suitable for work involving low to moderate risk agents, where there is a need for containment, but not for product protection. It provides protection to personnel and the environment from contaminants within the cabinet. The Class I BSC does not protect the product from “dirty” room air.
    ii. The Class II BSC protects the material being manipulated inside the cabinet (e.g., cell cultures, microbiological stocks) from external contamination. It meets requirements to protect personnel, the environment and the product. There are three basic types of Class II BSCs: Type A, Type B and 100% Exhaust. The major differences between the three types may be found in the percent of air that is exhausted or recirculated, and the manner in which exhaust air is removed from the work area.
    iii. The gas-tight Class III BSC or glove box provides the highest attainable level of protection to personnel, the environment and the product. It is the only cabinetry which provides a total physical barrier between the product and

personnel. It is for use with *high risk* biological agents and is used when absolute containment of highly infectious or hazardous material is required.

iv. It is important to note that laminar flow clean benches must not be utilized for work with biohazardous or chemically hazardous agents. Clean benches provide product protection by ensuring that the product is exposed only to HEPA-filtered air. They do not provide protection to personnel or the ambient environment.

III. Personal Protective Equipment (PPE): PPE is used to protect individuals from contact with hazardous materials and infectious agents. Appropriate clothing is also necessary in order to have full protection. This section will address the requirements based on biological hazards, for guidelines regarding chemical hazards; consult the Academic Chemical Management and Safety program.

a. Eye/face protection. Eye protection can be required based on chemical hazards or biological hazards. Whenever there are the potential for splashes, sprays or splatters of biohazardous materials, splash goggles and/or face shields must be worn.

b. Clothing and laundering. There are a variety of hazard combinations that will determine the full requirements for clothing and clothing protection. Each situation should be evaluated and clothing selected according to the hazard present. In general, however, the goal is to avoid skin contact with biohazardous substances, to that end skin should be covered. In regard to 'street clothes' this means that there should be no exposed skin from the neck down to the floor. Exposed arms should be covered with a lab coat or similar protective covering. In addition to preventing skin exposure, lab coats are essential in preventing the spread of contaminates outside of a laboratory space. Lab coat laundering shall be accomplished at a frequency commiserate with the hazards of the specific laboratory. For example, BSL2 laboratory spaces shall have their lab coats laundered once per week. They should not be removed from the laboratory in which they are used except for laundering. Lower hazard laboratories may launder their lab coats once per semester. Laundering of staff and faculty lab coats is accomplished on campus via the industrial washers in Custodial Services.

c. Gloves. Disposable gloves can serve two purposes. First, they can protect the wearer from hazards, both chemical and biological. Second, they can protect biological samples from microbial contamination. It is important for laboratory workers to understand the distinction between these motivations and to choose gloves appropriate for the task. Generally, most types of commonly available single-use gloves will be capable of protecting samples and protecting users from biological hazards. Chemical protection varies greatly by glove type. Gloves for other hazards such as heat or cold may also be required.

Recommended Work Practices

I. **Pipettes and Pipetting:** Laboratory infections have occurred from the oral aspiration of infectious materials, mouth transfer via a contaminated appendage and inhalation of aerosols. Exposure to aerosols may occur when liquid from a pipette is dropped onto the work surface, when cultures are mixed by pipetting, or when the last drop of an inoculum is

blown out. A pipette may become a hazardous piece of equipment if improperly used. The safe pipetting techniques which follow are required to minimize the potential for exposure to hazardous materials.

a. Never mouth pipette. Always use a pipetting aid.
b. If working with biohazardous or toxic fluid, confine pipetting operations to a biosafety cabinet.
c. Always use cotton plugged pipettes when pipetting biohazardous or toxic materials, even when safety pipetting aids are used.
d. Do not prepare biohazardous materials by bubbling expiratory air through a liquid with a pipette.
e. Do not forcibly expel biohazardous material out of a pipette.
f. Never mix biohazardous or toxic material by suction and expulsion through a pipette.
g. When pipetting, avoid accidental release of infectious droplets. Place a disinfectant soaked towel on the work surface and autoclave the towel after use.
h. Do not use pipettes that require 'blowout'.
i. Do not discharge material from a pipette at a height. Whenever possible allow the discharge to run down the container wall.
j. Place contaminated, reusable pipettes horizontally in a pan containing enough liquid disinfectant to completely cover them. Do not place pipettes vertically into a cylinder. Autoclave the pan and pipettes as a unit before processing them for reuse.
k. Discard contaminated disposable pipettes in an appropriate sharps container.
l. When working in a BSC, pans, sharps containers for contaminated pipettes and all other waste containers should be placed inside the biosafety cabinet.

II. Syringes and needles: The use of needles and syringes should be restricted to procedures for which there is no alternative. Blunt cannulas can be used as alternatives to needles in certain situations. Needles and syringes should never be used as a substitute for pipettes. Use disposable, locking syringe units whenever possible.

a. General precautions:
    i. Bending, recapping, clipping or removal of needles from syringes is prohibited. If it is essential that a contaminated needle be recapped or removed from a syringe, the use of a mechanical device or the one-handed scoop method must be used. The use of a needle nipping devices is prohibited and the devices must be discarded as infectious waste.
    ii. Use a separate pan of disinfectant for reusable syringes and needles. Do not place them in pans containing pipettes or other glassware.
    iii. Used disposable needles and syringes must be placed in an appropriate sharps disposal container and discarded as infectious waste.
b. When working with biohazardous or potentially infectious agents:
    i. Work in a biosafety cabinet whenever appropriate.
    ii. Wear gloves
    iii. Fill the syringe carefully to minimize air bubbles.
    iv. When transferring infectious samples, expel air, liquid and bubbles from the syringe vertically into a cotton swab moistened with disinfectant. Wrap the

needle and stopper in a cotton swab moistened with disinfectant when removing a needle from a rubber-stoppered bottle.

v. Do not use a syringe to mix infectious fluid forcefully.
vi. In order to avoid transfer of infectious materials to the user, do not contaminate the needle hub when filling.

III. Scalpels and razor blades
   a. When putting on and taking off scalpel blades:
      i. On: Open package, grip back of blade, guide into handle, blade should click when securely on.
      ii. Off: Use ClickSmart blade remover and follow picture directions.
   b. Never dispose of sharps in wastebaskets or garbage cans. Use the ClickSmart or a sharps disposal container.
   c. When using a scalpel, always cut away from self and others.
   d. When not in use, scalpel should be in the instrument tray with blade in a corner pointing away from self and others.
   e. During dissection, if the blade becomes dull, change it. A dull blade can be more dangerous than a sharp blade.
   f. Always remove blade when finished and prior to washing scalpel handle.

IV. BSCs: Biosafety cabinets are certified annually by an outside contractor. Appropriate inward airflow must be verified before initiating work. Check the magnehelic gauge regularly to ensure proper operation. Understand the type and limitations of the BSC being used. Be sure that airflow is not disrupted by items on the grills, the movement of others in the room or the opening or closing of doors. Doors to adjoining lab spaces or hallways must be closed prior to the start of work. Plan work in advance and work from 'clean to dirty'. Minimize the storage of materials in and around the BSC.
   a. Operational Instructions:
      i. Cabinet blowers should run for at least 10 minutes before opening biohazardous substances inside the cabinet and for 10 minutes after the completion of work.
      ii. As much as possible, procedures should be performed in the center of the BSC rather than on the peripheral. Move slowly when removing or introducing new items into the BSC.
      iii. In general, the interior of the BSC should be considered a contaminated zone and should be treated and decontaminated accordingly.
      iv. If using a BSC equipped with a UV light, it should be left on for 5-10minutes following the use of an infectious agent.
      v. Plan work in advance. Segregate contaminated and clean items. Always discard contaminated items inside of the BSC (put waste containers inside).
      vi. Avoid the use of an open flame device (Bunsen burner). They create airflow turbulence that can compromise sterility. Heat buildup may damage the filters.
      vii. If a piece of equipment that creates turbulence is used (such as centrifuge or blender, place it in the back 1/3rd of cabinet and stop other work while it is operating.
      viii. Protect the building vacuum system by placing a cartridge filter between the vacuum trap and the source valve in the cabinet.

ix. Clean up all spills in the cabinet immediately. Wait 10 minutes before resuming work.
x. Leave PPE in laboratory. Wash hands before leaving laboratory.

V. Incubators: Check the temperature prior to use and reset to 37C after use. Consult the operating manuals for specific information. Incubators are to be decontaminated after each semester.

VI. Water baths: Monitor frequently to ensure proper water level. Decontaminate water baths each semester if they have been used with live organisms. Decontaminate immediately if there is a cell culture spill in the water bath.

VII. Cryostats: Freezing tissue does not necessarily inactivate infectious agents. Follow all manufacturer's recommendations for the care and maintenance of the equipment. Extreme care should be taken with changing the knife blades. Stainless steel mesh gloves are recommended. When working with biohazardous material in a cryostat, the following is recommended:

a. Consider the contents of the cryostat to be contaminated and decontaminate it frequently with a disinfectant appropriate for the biohazardous substance.
b. Consider trimmings and section of tissue that accumulated in the cryostat to be potentially infectious and remove them during decontamination.
c. Consider solutions used to stain potentially infectious samples to be contaminated.

VIII. Centrifuge equipment: Follow the manufacturer's instructions for the specific instrument in order to avoid mechanical failure and the production of aerosols. Under no circumstance is anyone to operate a centrifuge without first being trained on that specific piece of equipment and reading the operating manual. In general:

a. Make sure the instrument and all associated parts are clean and in good working order prior to use.
b. Use only the parts and equipment intended for use with a given centrifuge.
c. Be sure that tubes are filled, sealed, wiped down with disinfectant and not overfilled.
d. Be sure that tubes are balanced and placed in the centrifuge so that the bucket and rotors are balanced properly.

IX. Autoclaves: Under no circumstance is anyone to operate an autoclave without first being training on that specific piece of equipment and reading the operating manual. Do not store material in an autoclave to be autoclaved at a later time. Never autoclave an oxidizing material with an organic material, this combination could result in a severe fire or explosion.

a. Steris- follow procedures found in operating manual found in Robinson 138.
b. Market Forge SterilMatic – Chamber should be filled to appropriate level with deionized water. Door gasket should be checked for wear. Monitor for at least 4 minutes after start-up to ensure proper operation.

X. Other equipment (blenders, grinders, etc.). Most of these devices have the potential for aerosol production and therefore when working with biohazardous materials they should be used in a BSC. In general, ensure that all users are properly trained prior to use and that manufacturer's recommendations are followed. When using equipment, all possible hazards should be identified and controlled. In addition to any chemical or biological hazards posed by the solutions being processed, this sort of equipment can also pose physical hazards, such as electrical fire, as well as health hazards, such as lacerations.

XI. Loop sterilizers and Bunsen burners. For the proper use of a Bunsen burner to achieve sterile transfer of liquids and inoculation, the flame must be adjusted to a steady blue flame. This indicates a better air gas mixture and thus a hotter flame, which is more appropriate for sterilization. Be sure to keep flammable chemicals and combustible materials out of the area. Maintain a clear path to the gas control handle so that it can be turned off quickly and safely if necessary. Long hair should be tied back and loose or baggy clothing and accessories should be avoided when using a Bunsen burner.

Housekeeping

Laboratory staff: Laboratory personnel are responsible to clean and disinfect laboratory benches, equipment and areas that require specialized technical knowledge. Laboratories should be kept neat and free of clutter. Chemicals, glassware and equipment should be stored properly when not in use. Access to sinks, eyewashes, emergency showers and fire extinguishers must be maintained. Aisles and corridors shall be kept free of tripping hazards.

Custodial staff: For general laboratory spaces, custodial personnel are responsible to clean the floors and empty the garbage. Permission should be obtained from Laboratory Managers prior to additional, non-routine, or deep cleaning. In BSL2 laboratory spaces, non-laboratory personal are forbidden to enter, for any reason, when the biohazard sign is displayed. When BSL2 spaces are cleaned (in coordination with the PI), special care must be taken to clean in such a way that does not generate aerosols. Any equipment used should be equipped with a HEPA filter.

Decontamination and Waste Management

At Whitworth, decontamination is generally achieved by one of two methods, chemical or thermal destruction. Chemical decontamination is accomplished by using chemicals such as bleach or Lysol to destroy biohazardous agents. These chemicals pose a risk to the health of the user and should be handled accordingly. Thermal decontamination is achieved by autoclaving. Only certain materials can withstand the heat required for successful decontamination by this method. Decontamination methods should be selected based on the type and nature of the item as well as the risk level of the biohazard. Other decontamination methods are available and can be implemented as necessary. These include, but are not limited to incineration, decontamination gases/vapors, and nonionizing radiation.

Waste management: Biologically uncontaminated chemical waste should be handled according to Whitworth's Hazardous Waste Management Program. Biohazardous waste will be handled according to this program. Biohazardous waste is anything that is potentially infectious or has come in contact with anything that is potentially infectious. This includes things like bacteria, yeast, and saliva samples. Non-disposable equipment will be autoclaved or sterilized by use of a chemical such as bleach. Disposable equipment and samples will be disposed of in a labeled Biohazard container. Solids and liquids will be collected separately and items that could poke through a bag (such as pipette tips) are collected in a box (bag lined if small amounts of liquids are present). Items that could cause lacerations such as razor blades and syringe needles will be disposed of in red biohazard 'sharps' containers. Human and animal remains are handled separately and uniquely. Please consult topic specific SOPs for specific information.

Emergency Procedures

Emergency procedures: Certain procedures may vary depending on the laboratory and the nature of the biohazard. In general, all appropriate PPE should be donned, non-essential personnel should be cleared, all spilled material should be contained (and subsequently decontaminated and properly disposed of), all contaminated surfaces and equipment should be decontaminated. Contact the PI in charge of the laboratory for additional information.

Review

Provost:	Caroline Simon	Dec 2017
Dean of the College of Arts and Science:	Noelle Wiersma	Dec 2017
Chemical Hygiene Officer:	Joy Diaz	Dec 5, 2017