STANDARD OPERATING PROCEDURE-BIOSAFETY CABINET

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| **CONTACT INFORMATION** |
| **Location** | Building: | Room: |
| **Street Address:** |  |
| **Lab Safety Contact:** | Name: |
| Lab Phone: | Office Phone: |
| **Emergency Contact** | Name: | Phone: |
| **TYPE OF STANDARD OPERATING PROCEDURE** |
| Indicate which type of Standard Operating Procedure applies[x]  Specific Process or Equipment [ ]  Specific Hazardous Chemical[ ]  Hazard Class for a Group of Chemicals |
| **DESCRIBE PROCESS/EQUIPMENT, HAZARDOUS CHEMICAL or HAZARD CLASS** |
| **Biosafety Cabinet**LABCONCO Purifier Logic+ Class II A2 Biosafety Cabinet (302419100)LABCONCO Purifier Axiom Class II C1 Biological Safety Cabinet (304611100) |
| **HAZARD SUMMARY** |
| Electric shock, ultraviolet radiation hazard, biological and chemical hazard.Ultraviolet radiation hazard Germicidal lamps emit radiation almost exclusively in the far-UV range of 254 nm, and are commonly used in Laminar Air Flow hoods or biological safety cabinets and should be treated with extreme caution. Unfortunately, overexposure to UV radiation often times has no immediate warning signs. Symptoms of overexposure, including different stages of erythema (sunburn) or photokeratitis (welder’s flash) typically appear 4-24 hours after an exposure has occurred. The effect of UV radiation overexposure depends on UV dosage, wave length, portion of body exposed, and the sensitivity of the individual. Certain sensitive people may suffer retinal damage and people suffering from certain rare medical conditions or prescribed certain drugs may suffer an extreme reaction, for example an exaggerated sunburn reaction.Skin- UV radiation can initiate erythema within exposed skin. This “sunburn” consisting of “redness” ulceration varies in severity, and can occur from only a few seconds of exposure. Symptoms can also vary due to one’s genetic makeup. Pale to fair skin individuals are more susceptible to burns. In addition various medications (i.e. birth control) can exaggerate symptoms. Chronic exposure to UV radiation has been linked to premature skin aging, wrinkles and skin cancer. Note: the neck and wrist areas are commonly left unprotected.Eye- UV radiation exposure can damage the cornea, the outer protection coating of the eye. Photokeratitis is a painful inflammation of the eye caused by UV radiation-induced lesions on the cornea. Symptoms include a “sand like” feeling in the eye last can last several days. Chronic exposures to short term UV radiation can lead to the formation of cataracts but also Pterygium (tissue growth on the white of the eye which may extend to the cornea and block vision), Cancer (of the skin around the eye), macular degeneration (degeneration of the retina) and loss of vision. |
| **SPECIAL HANDLING AND STORAGE REQUIREMENTS** |
| Do not use the biological safety cabinets in a manner other than stated in the manual. These biological safety cabinets are designed for the laboratory environment and should only be used by persons knowledgeable in safe laboratory practices. • Do not use cabinet for any other function for which it was not intended:* The **Purifier Logic+ Class II A2 Biosafety Cabinet** can be used for **biological samples reception only** (no chemicals/volatile solvents because it is not vented and recirculate 30% of the air in the room)
* The **Purifier Axiom Class II C1 Biological Safety Cabinet** can be used to **deactivate biological samples** and also to **process deactivated samples with chemicals/ volatile solvents** (because it is vented and the air is 100% exhausted).

**REMEMBER TO FILL THE BIOSAFETY CABINET LOG EVERY TIME YOU USE A BIOSAFETY CABINET****Electrical safety:*** Use only properly wired and earth-grounded outlets to avoid shock hazard.
* Check that the line voltage agrees with the voltage listed on the name rating plate affixed to the biological safety cabinet.
* Never use a 3-to-2 plus adapter; never use a 2-wire extension cord or a 2-wire grounding type of multiple outlet receptacle strip.

**Chemical and biological safety:*** The cabinet is not a substitute for personal protective equipment. Laboratory personnel shall wear safety glasses, laboratory coat, and gloves at all times when working in the cabinet.
* Ready the work area. Operate cabinet blowers for 10 minutes before beginning work to allow the cabinet to purge or remove particulates from the cabinet.
* Decontaminate the biosafety cabinet, before use with biological and surface-decontaminate all materials to be placed inside (if sterile environment needed for the procedure) with a suitable disinfectant, 10% bleach for 30 minutes followed by 70% ethanol, and allow to dry.
* All materials needed for the manipulations shall be placed in the cabinet before the work is initiated to minimize in-and-out motions. The rapid movement of a worker’s arms in a sweeping motion into and out of the cabinet will disrupt the air curtain and may compromise the partial barrier containment provided by the BSC. Moving arms in and out slowly, perpendicular to the face opening of the cabinet will reduce the risk.
* Extra supplies (e.g. additional gloves, culture plates or flasks, culture media) shall be stored outside the cabinet. Only the materials and equipment required for the immediate work shall be placed in the BSC.
* Other personnel activities in the room (e.g. rapid movement, open/closing room doors, etc.) should be avoided when working in biosafety cabinet as they may also disrupt the cabinet air barrier.
* Manipulation of materials should be delayed for approximately one minute after placing hands/arms inside the cabinet. This allows the cabinet to stabilize and to “air sweep” the hands and arms to remove surface microbial contaminants.
* Do not cover air intake grill. Laboratory personnel shall not rest arms on the air intake grill. All operations shall be performed at least four (4) inches from the front grill on the work surface.
* Heat sources such as Bunsen burners are strictly prohibited inside the BSCs as they significantly disrupt the laminar flow of air. To sterilize bacteriological loops, micro-burners or electric “furnaces” may be used.
* If culture media or other fluids need to be aspirated, suction or aspirator flasks should be connected to an overflow collection flask containing disinfectant (the aspirated materials can then be discarded as noninfectious waste).
* Laboratory personnel shall clean up all minor spills in the cabinet immediately. For larger spill see the emergency procedure.
* All materials used to clean up spills shall be discarded as biohazardous waste.
* Biohazard collection bags shall not be taped or place on the outside of the cabinet. The frequent inward/outward movement needed to place objects in these bags is disruptive to the integrity of the cabinet air barrier and can compromise both personnel and product protection. Instead use smaller biohazard collection bags within the cabinet.
* Laboratory personnel shall dispose of contaminated gloves as biohazardous waste.
* Pipette discard trays containing an appropriate chemical disinfectant shall be used within the cabinet and discarded as biohazardous waste.
* Potentially contaminated materials (e.g. containers, equipment, etc.) shall not be brought out of the cabinet until they have been surface decontaminated.
* Contaminated materials can be placed into a closable container for transfer to an incubator, autoclave or for other decontamination treatment.
* Decontaminate the biosafety cabinet, after use with biological and before requesting service. Disinfect and lift the work surface. Surface disinfect the area beneath the work surface with a suitable disinfectant, 10% bleach for 30 minutes followed by 70% ethanol, and allow to dry.
* Let the blowers operate for 10 minutes with no activity inside the cabinet to purge the cabinet of contaminants.
* Dispose of all waste according to appropriate biosafety and environmental health & safety guidelines.
* Please note that dust particles on the light and on the surface of the biosafety cabinet will inhibit decontamination. UV lights must be cleaned weekly to remove any dust and dirt that may block the germicidal effectiveness. (Using an appropriate glass cleaner, or LabSolutions Glass & Surface Wipes, Labconco part # 1570000; clean the sash and the surface of the UV lamp)
* The biosafety cabinet must be decontaminated before filter changes and before being moved. The most common decontamination method is by fumigation with formaldehyde gas. BSC decontamination may only be performed by a certified contractor.

**ultraviolet radiation safety:*** Never work in a biological safety cabinet while the germicidal lamp is on. Close the sash while lamp is on (UV irradiation is absorbed by the tempered safety glass of the sash, on the model we own UV light cannot come on if sash is raised).
* Avoid working in the same room / around the safety cabinet while germicidal lamp is on. Close sash for extra protection and wear appropriate PPE. Pay particular attention to laboratory surfaces, such as stainless steel, that can reflect UV light and increase your UV exposure.
* Laboratory personnel shall wear a closed-front laboratory coats (or a surgical gown), gloves (the gloves should overlap the cuffs) and polycarbonate face shield stamped with the ANSI Z87.1-1989 UV certification.
* Never look directly at the UV light when it is on.
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| **ENGINEERING AND VENTILATION CONTROLS** |
| Biosafety cabinets that are not vented cannot be used with chemicals/ volatile. Biosafety cabinet that need to be used with chemicals/ volatile solvents need to be vented with no air recycling but a 100% exhaust (like our Purifier Axiom Class II C1 Biological Safety Cabinet) |
| **PERSONAL PROTECTIVE EQUIPMENT** |
| **PPE Requirements:** [x]  Long pants or clothing that covers all skin below the waist[x]  Shoes that cover the entire foot[x]  Gloves; indicate type: Nitrile or latex Inspect gloves before use. Use proper glove removal technique to avoid skin contact with outer surface of glove. Wash hands after removing gloves.[x]  Safety goggles [ ]  Safety glasses[x]  Face shield polycarbonate face shield stamped with the ANSI Z87.1-1989 UV certification if UV light on[x]  Lab coat[ ]  Flame-resistant lab coat [ ]  Other: If the use of an N95, half mask, or full face respirator is requested, the individual and/or their supervisor must first contact Environmental Health & Safety for a consultation to determine if respirator use is necessary. If EH&S determines the use of a respirator is necessary, the individual must participate in the University’s respirator program. This includes a medical evaluation; respirator fit test, and training. |
| **EMERGENCY PROCEDURES** |
| In case of fire or large and/or extremely hazardous chemical releases pull the fire alarm and evacuate the area  If someone is seriously injured or unconscious**CALL 911 or CAMPUS POLICE AT <enter your campus PD #>**From a safe place, provide as much information as possible to the emergency responders including chemical name, volume, hazards, injuries, and location. **Chemical Exposure**: Remove any contaminated clothing, and IMMEDIATELY flush contaminated skin with water for at least 15 minutes following any skin contact. For eye exposures, IMMEDIATELY flush eyes with water for at least 15 minutes. Consult SDS for guidance on appropriate first aid. Where medical attention is required, bring the SDS(s) of chemical(s) to aid medical staff in proper diagnosis and treatment. **Evacuation Procedure*** Immediately evacuate the building via the nearest exit when the fire alarm is activated.
* If unable to evacuate due to a disability, shelter in the area of rescue / refuge, typically a stairwell landing, and wait for assistance from drill volunteers or emergency responders.
* Instruct visitors and students to evacuate and assist them in locating the nearest exit.
* Do not use elevators to exit the building during an evacuation as they may become inoperable.
* Carry only those personal belongings that are within the immediate vicinity.
* Close doors to limit the potential spread of smoke and fire.
* Terminate all hazardous operations and power off equipment.
* Close all hazardous materials containers.
* Remain outside of the building until the building is released for reentry.
* Do not restrict or impede the evacuation.
* Convene in the designated grassy gathering area and await instruction from emergency responders or drill volunteers. Avoid parking lots.
* Report fire alarm deficiencies, (e.g., trouble hearing the alarm) to facilities personnel for repair.
* Notify evacuation drill volunteers or emergency responders of persons sheltering in the areas of rescue/ refuge.
* **Never assume that an alarm is a “false alarm”. Treat all fire alarm activations as emergencies. Get out of the building!**

**Incident and Near Miss Reporting**: Report any incident that occurs in any University of South Florida affiliated teaching or research laboratory/studio or field research project. An incident means any unplanned event within the scope of a procedure that causes, or has the potential to cause, an injury or illness and/or damage to equipment, buildings, or the natural environment. Due to medical privacy concerns, no personal identifying information of the person involved in the incident shall be entered or submitted with the form. <http://www.usf.edu/administrative-services/environmental-health-safety/reporting/index.aspx>**Workers’ Compensation Procedure:** Call AmeriSys at 800-455-2079 to report a work-related injury or illness. Complete the Supervisor’s Accident Investigation Report available at the link above and send it to EH&S within 24 hours. |
| **WASTE DISPOSAL** |
| All chemical waste generated within USF System laboratories is considered hazardous waste and must be disposed of as hazardous waste in accordance with the USF Hazardous Waste Management Procedure, the U.S. EPA, and the FDEP. The USF Hazardous Waste Management Procedure can be found using the following link, <https://www.usf.edu/administrative-services/environmental-health-safety/documents/hazwaste-managementprocedure.pdf> |
| **TRAINING REQUIREMENTS** |
| All individuals working with chemicals in USF laboratories must take EH&S’s Laboratory Safety Training. To register for Laboratory Safety Training, please use the following link, <https://www.usf.edu/administrative-services/environmental-health-safety/training/course-descriptions.aspx#labsafety>This procedure may warrant additional safety training per the PI, EH&S, or an authorizing unit such as the Biosafety or Radiation Safety programs. Check training requirements for this activity below:[x] Research Specific Training from the PI/Lab Supervisor or their designee[x] EH&S Laboratory Safety Training [ ] EH&S Hazard Communication[x] EH&S Hazardous Waste Awareness and Handling[ ] EH&S Respirator Fit Test[ ] EH&S Biomedical Waste[ ] EH&S Hazardous Waste Pharmaceutical Training[ ] EH&S Fire Prevention Safety[ ] EH&S Slips, Trips, and Falls[ ] RIC Biosafety Core Course[ ] RIC Shipping Biohazardous Materials[ ] RIC BSL 3[ ] RIC Radiation Safety[ ] RIC Laser Safety[ ] RIC Boating Safety[ ] RIC Scientific Diving[ ] Other:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **PRIOR APPROVALS** |
| [ ]  This activity requires prior approval from the PI/designee.[ ]  If this box is checked, working alone is not allowed. |

By signing and dating here the Principal Investigator/ or a designee certifies that the Standard Operating Procedure (SOP) for ***Biosafety Cabinets*** is accurate and effectively provides safe standard operating procedures for employees and students in this lab who will handle this hazardous chemical.

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Signature Printed Name Date

I affirm that I have read and understand the Standard Operating Procedure for ***Biosafety Cabinets*** and have undergone the EH&S Laboratory & Research training and any lab specific training regarding this SOP.

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| Printed Name | Signature | Date |
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