STANDARD OPERATING PROCEDURE FOR SOLDERING IRONS/PENS

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| **CONTACT INFORMATION** | | | |
| **Location** | Building: | | Room: |
| **Street Address:** |  | | |
| **Lab Safety Contact:** | Name: | | |
| Lab Phone: | Office Phone: | |
| **Emergency Contact** | Name: | Phone: | |
| **SPECIAL THANKS** | | | |
| We at EH&S would like to express our gratitude from Dr. Ferekides and the Electrical Engineering Department for allowing us to adapt their Soldering Safety procedures into this SOP that will be made available to all labs at USF. | | | |
| **TYPE OF STANDARD OPERATING PROCEDURE** | | | |
| Indicate which type of Standard Operating Procedure applies:  Specific Process or Equipment  Specific Hazardous Chemical  Hazard Class for a Group of Chemicals | | | |
| **DESCRIBE PROCESS/EQUIPMENT, HAZARDOUS CHEMICAL or HAZARD CLASS** | | | |
| ELECTRIC SOLDERING IRON/PEN | | | |
| **HAZARD SUMMARY** | | | |
| List physical, chemical, and health hazards associated with the chemical, chemical class, process, or machine.  HEALTH HAZARDS  LEAD EXPOSURE: Lead on your skin can be ingested and lead fumes can be given off during soldering. Other metal fumes can also be hazardous. Lead can have serious chronic health effects, such as reproductive problems, digestive problems, nerve disorders, memory and concentration problems, muscle, and joint pain.  SILVER EXPOSURE: Exposure to silver can occur through ingestion, skin contact, and inhalation. Exposure to Silver can cause chronic health issues related to renal, ocular, and respiratory function as well as irreversible changes in skin pigmentation.  TOXIC FUMES: Flux and Flux cleaners may contain irritants, respiratory sensitizers, and flammable ingredients. The smoke formed is mostly from the flux which can be irritants or respiratory sensitizers that can aggravate asthma.  PHYSICAL HAZARDS  HIGH HEAT: Soldering irons can achieve temperatures of about 400˚C which can cause severe burns upon skin contact and can ignite combustible materials that come into contact with iron tip.  ELECTRIC SHOCK: Electric shock from damaged or exposed wirings can cause involuntary muscle reaction, paralyze muscles, burn tissues and internal organs, and can be fatal.  FIRE HAZARDS: Hot Soldering iron/pens can ignite combustible/flammable materials that come into contact with iron tip. | | | |
| **Procedure** | | | |
| * Always inspect equipment prior to use. * Always ensure the area in which you are soldering is free of flammable and combustible materials. * Never touch the element or tip of the soldering iron. * Hold wires to be heated with tweezers or clamps. * Keep the cleaning sponge wet during use. * Always return the soldering iron to its stand when not in use. **Never put it down on your workbench**. * Turn unit off or unplug it when not in use. * Work Safely with Solder, Flux, and Cleaners. * Wear eye protection, solder can “spit”. * Use lead free solder. * Keep a lid on waste solder containers when not adding waste material. * Keep cleaning solvents in dispensing bottle to reduce inhalation hazards. * Always wash your hands with soap and water after soldering. * Read and understand the SDS for all materials before beginning work. | | | |
| **ENGINEERING AND VENTILATION CONTROLS** | | | |
| * **Work in a well-ventilated area**. A benchtop fume extractor may be necessary to remove harmful fumes caused by solder and flux from the soldering workstation by filtering the air. * Avoid breathing fumes by keeping your head to the side of, not above, your work. | | | |
| **PERSONAL PROTECTIVE EQUIPMENT** | | | |
| **PPE Requirements:**  Long pants or clothing that covers all skin below the waist.  Shoes that cover the entire foot  Gloves; indicate type: Click here to enter text.  Inspect gloves before use. Use proper glove removal technique to avoid skin contact with outer surface of glove. Wash hands after removing gloves.  Safety goggles  Safety glasses  Face shield  Lab coat  Flame-resistant lab coat  Other: Wear nonflammable or 100% cotton clothing that covers your arms and legs to help prevent burns.  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 <** **813-974-2628**  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** | | | |
| **Lead solder, dross, and solder sponges must be collected and disposed of as hazardous waste.**  SOLDER WASTE   * Discard lead and/or silver containing solder and dross in a sturdy container with a lid. * Label the container with the words “Hazardous Waste”, “Lead/Non-Lead Solder Waste”(or “Silver Solder Waste” if it contains silver), and “Toxic”. * Store container(s) in Satellite Accumulation Area and submit a waste pick-up request once full.   SOLDER SPONGES:   * Discard solder sponges in a sturdy container with a lid. **Never rinse sponges/rings in sinks** * Label the container with the words “Hazardous Waste”, “Lead contaminated solder sponges”, and “Toxic” * Store container(s) in Satellite Accumulation Area and submit a waste pick-up request once full.   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 & Research 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:  Research Specific Training from the PI/Lab Supervisor or their designee  EH&S Laboratory Safety Training – Physics  EH&S Hazard Communication  EH&S Hazardous Waste Awareness and Handling – Art Studios/Shops  EH&S Respirator Fit Test  EH&S Biomedical Waste  EH&S Universal Pharmaceutical Waste Testing  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**Soldering**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 **Soldering** 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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