STANDARD OPERATING PROCEDURE - EXPLOSIVES

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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  Specific Process or Equipment  Specific Hazardous Chemical  Hazard Class for a Group of Chemicals | | | |
| **DESCRIBE PROCESS/EQUIPMENT, HAZARDOUS CHEMICAL or HAZARD CLASS** | | | |
| **Explosives**  “An explosive is any chemical compound or mechanical mixture that, when subjected to heat, impact, friction, detonation, or other suitable initiation, undergoes rapid chemical change, evolving large volumes of highly heated gases—typically nitrogen or CO2—that exert pressure on the surrounding medium. The term applies to materials that either detonate or deflagrate.”  *Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards (section 4.D.3.1 Explosive Hazards) The National Academies Press: Washington, DC, 2011.*  Use these flowcharts to help make decisions on disposal of peroxide-forming compounds. <https://www.usf.edu/administrative-services/environmental-health-safety/documents/flowchart-pec.pdf>  The table below is a list of some explosive compounds with their structural features.      *Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards (section 4.D.3.1 Explosive Hazards) The National Academies Press: Washington, DC, 2011.* | | | |
| **HAZARD SUMMARY** | | | |
| Explosive compounds are a class of reactive chemicals.  Explosive compounds such as azos, peroxides, and peroxidizables are highly shock sensitive. Violent reactions occur when oxidizing agents contact reducing materials or combustibles. Oxidizable particles, when suspended in air, are an explosive mixture.  Explosions may result in direct physical damage or indirect damage from projectiles. | | | |
| **SPECIAL HANDLING AND STORAGE REQUIREMENTS** | | | |
| **Precautions:**  Follow manufacturer’s recommendations. Use a less hazardous material if possible. Work in a designated area. Do not work alone. Keep closed when not in use. Avoid heat, impact, friction, or catalysts, any of which may trigger an explosion. Even the small amount of energy transferred from light may cause some explosives to detonate.  **Storage:**  Store the smallest amount, at the lowest concentration possible. Many explosive compounds require refrigeration. Use an explosion-proof refrigerator. Make sure there is a backup power supply. Many explosive compounds have a limited shelf life. Date upon receipt and opening and discard when past expiration, as recommended by the manufacturer and/or literature. | | | |
| **ENGINEERING AND VENTILATION CONTROLS** | | | |
| Use in a chemical fume hood or glove box. Use a glove box when a controlled atmosphere, product purity protection, or complete blast protection is needed. The room where the chemical is being used should be equipped with proper exhaust ventilation to keep the airborne concentration below the allowable exposure limit. Emergency eyewash fountains and safety showers should be available in the immediate vicinity of any potential exposure.  Consider using a portable blast shield. | | | |
| **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: Heavy chemical resistant gloves neoprene, butyl, or flame resistant) or leather work gloves/welding gauntlets that extend past the wrist. Refer to a chemical glove compatibility chart to choose appropriate chemical resistant gloves specific to the chemical being used.  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: Click here to enter text.  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:  Research Specific Training from the PI/Lab Supervisor or their designee  EH&S Laboratory Safety Training  EH&S Hazard Communication  EH&S Hazardous Waste Awareness and Handling  EH&S Respirator Fit Test  EH&S Biomedical Waste  EH&S Universal Pharmaceutical Waste 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 ***Explosives*** 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 ***Explosives*** 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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