**Standard Operating Procedures Fact Sheet**

The OSHA Laboratory Standard requires that Chemical Hygiene Plans include specific elements and measures to ensure employee protection in the laboratory. One such requirement is Standard Operating Procedures (SOPs) “relevant to safety and health considerations to be followed when laboratory work involves the use of hazardous chemicals”. This is especially the case if your lab operations include the routine use of "select carcinogens, reproductive toxins and substances which have a high degree of acute toxicity”.

Standard Operating Procedures can be stand-alone documents or supplemental information included as part of research notebooks, experiment documentation, or research proposals. The key idea with laboratories having standard operating procedures is to ensure a process is in place so that an experiment is well thought out and includes and addresses relevant health and safety issues.

At a minimum, SOPs should include details such as:

* The chemicals involved and their hazards.
* Special hazards and circumstances.
* Use of engineering controls (such as fume hoods).
* Required personal protective equipment.
* Spill response measures.
* Waste disposal procedures.
* Decontamination procedures.
* Description of how to perform the experiment or operation.

While the OSHA Laboratory Standard specifies the requirement for SOPs for work involving hazardous chemicals, laboratories should also develop SOPs for use with any piece of equipment or operation that may pose any physical hazards. Examples include:

* Safe use and considerations of lasers.
* Use of cryogenic liquids and fill procedures.
* Connecting regulators to gas cylinders and cylinder change outs.
* Use of equipment with high voltage.

Standard Operating Procedures do not need to be lengthy dissertations and it is perfectly acceptable to point laboratory personnel to other sources of information. An example to include as part of the SOPs can be:

“*To use this piece of equipment, see page 4 in the operator’s manual (located in file cabinet #4).”*

EHOS can assist laboratories in developing general and specific SOPs for chemical use in laboratories. Due to the large variety of research and the number of laboratories at City College, it is the responsibility of each laboratory PI and department to ensure that SOPs are developed and the practices and procedures are adequate to protect their lab workers who use hazardous chemicals.

**Standard Operating Procedure Template**

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| Read the Standard Operating Procedures Fact Sheet before filling out this form.  Print out the completed form and keep a readily accessible hard copy in the lab. Keeping an electronic copy is highly recommended. |

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| Date: |  |
| SOP Title: |  |
| Principal Investigator: |  |
| Department: |  |
| Room and Building: |  |
| Lab Phone Number: |  |

**Section 1** – **Process or Experiment Description**

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| Provide a brief description of your process or experiment, including its purpose. Do not provide a detailed sequential description as this will be covered by section #15 of this template. |

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**Section 2** – **Hazardous Chemicals**

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| List chemicals used. Include chemical name, common name and abbreviation. |

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**Section 3** – **Potential Hazards**

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| List chemicals used. Include chemical name, common name and abbreviation.  (Describe the potential hazards associated with the chemicals or the procedure.) Examples include:   1. Chemical hazards such as carcinogenic, irritant, corrosive, acutely toxic 2. Reproductive hazards such as teratogens or mutagens 3. Allergies or chemical sensitivities that may be associated with the chemical 4. Physical hazards such as reactive, unstable, pyrophoric, implosion, exothermic, and use of high energy equipment. |

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**Section 4** – **Routes of Exposure**

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| As applicable, describe the potential routes of exposure associated with the procedure such as inhalation, injection and skin/eye contact. |

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**Section 5** – **Approval**

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| Use will be limited to the following personnel (check all that apply): | | | |
|  | Yes | No |
| Principal Investigator |  |  |
| Graduate students |  |  |
| Technical staff |  |  |
| Post-doctoral employees |  |  |
| Undergraduates |  |  |
| Other (describe) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  |

**Section 6** – **Training**

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| Training requirements: The user must demonstrate competency and familiarity regarding the safe handling and use of this material prior to purchase. Training should include the following:   * Review of current SDS * Review of the OSHA Lab Standard * Review of the [Chemical Hygiene Plan](http://forum.sci.ccny.cuny.edu/administration/ehs/documents/ccny-chemical-hygiene-plan/view) * Review [CUNY Laboratory Manual](http://www.cuny.edu/about/administration/offices/ehsrm/CUNYLabSafetyManualfv120110.pdf) * Laboratory safety training (EHOS) * Special training provided by the department/supervisor * Review of the departmental safety manual * Safety meetings and seminars |
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**Section 7** – **Personal Protective Equipment**

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| All personnel are required to wear the following personal protective equipment whenever handling this material (check all that apply): |

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| Safety glasses |  |
| Chemical safety goggles |  |
| Face shield |  |
| Gloves (*type*) |  |
| Lab coat |  |
| Rubber coat |  |
| Other (describe)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |

**Section 8** – **Designated Area**

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| Designated work area(s) - Required whenever carcinogens, highly acutely toxic materials, or reproductive toxins are used. The intent of a designated work area is to limit and minimize possible sources of exposure to these materials. The entire laboratory, a portion of the laboratory, or a laboratory fume hood or bench may be considered a designated area location. Materials shall be used only in the following designated areas in the laboratory.  Check all that apply: |

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| Demarcated area in lab |  |  |
| Fume hood |  |  |
| Glove box |  |  |
| Other |  | (describe) |

**Section 9** –**Storage Requirements**

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| Materials will be stored according to compatibility and label recommendations in a designated area.  Describe storage requirements for the hazardous chemicals, especially for highly toxic, highly reactive/unstable materials, highly flammable materials, and corrosives. |

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**Section 10** – **Special Handling Procedures**

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| Describe special handling requirements for hazardous chemicals used in your procedure, especially for highly toxic, highly reactive/unstable materials, highly flammable materials, and corrosives. |
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**Section 11** – **Engineering Controls**

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| **Guidance on Engineering and Ventilation Controls –** Consult SDS and review safety literature and peer-reviewed journal articles to determine appropriate engineering and ventilation controls for your process or experiment. Guidance is available from health and safety specialists at City College.  As applicable, describe the engineering controls used for the procedure. Examples:   1. Use of fume hoods or glove boxes 2. Special ventilation 3. HEPA filtered vacuum lines 4. Non-reactive containers 5. Temperature control 6. Bench paper, pads, plastic-backed paper 7. Special signage 8. Safe sharp devices 9. Other safety devices used |

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**Section 12** – **Decontamination**

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| **For hazardous material spills or releases which have impacted the environment (via the storm drain, soil, or air outside the building) or for a spill or release that cannot be cleaned up by local personnel:**   1. Notify City College    1. Public Safety by calling 7777/6911    2. EHOS by calling the numbers listed above, |
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| **Small Spills Cleanup:**  In the event of a minor spill or release that can be cleaned up by local personnel using readily available equipment (absorbent, available from EHOS in Small Spill Kit):   * Notify personnel in the area and restrict access. * Review the SDS for the spilled material, or use your knowledge of the hazards of the material to determine the appropriate level of protection. * Wearing appropriate personal protective equipment, clean up spill. Collect spill cleanup materials in a tightly closed container. * Manage spill cleanup debris as hazardous waste. |

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| **Clean up work area and lab equipment.**  Describe specific cleanup procedures for work areas and lab equipment that must be performed after completion of your process or experiment. For carcinogens and reproductive toxins, designated areas must be immediately wiped down following each use. |
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**Section 13** – **Exposure: Emergency procedures to be followed (from SDS):**

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| Skin/eye contact--**Symptoms:** |
| First Aid: *Example: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid. Remove immediately all contaminated clothing. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.* |
| Inhalation--**Symptoms:** If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| First Aid: *Example:* *Remove from exposure to fresh air immediately. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.* |

**Section 14 – Waste Disposal**

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| Collect the hazardous waste in a container that is compatible with the waste. Tightly capped and label the container. Use preprinted hazardous waste labels to label all hazardous waste containers. Hazardous waste containers are kept in secondary containment trays at the satellite accumulation area. |

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| Chemical Waste Generated | | | | | | | |
| Chemical Name | State | | | Non-Hazardous | Hazardous | If hazardous what is/are the hazard/s? | How is the waste managed? |
| Solid | Liquid | Slurry |
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**Section 15** – **Process Steps**

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| For each step’s description, include any step-specific hazard, personal protective equipment, engineering controls, and designated work areas in the left-hand column. |

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| **Process Steps** | **Safety Measures** |
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**Training Documentation**

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Prepared by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reviewed/Revised by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A copy of the completed SOP must be filed with the City College EHS Manager, Lhamo Tshering, at [ltshering@ccny.cuny.edu](mailto:ltshering@ccny.cuny.edu).