Standard Operating Procedure -#COE-SOP-0002

Laboratory Researcher Commissioning Requirements

Facility: NMSU C	ollege of Engineering Laboratories
Written by: Juani	ta Miller, Safety Specialist, <u>miljgh@nmsu.edu</u> (575)-646-1292
Scope: This SOP d	lescribes requirements for work area labeling, chemical inventory and
housekeeping as we	all as training required to work in a hazardous chemicals laboratory
Date:	November 10, 2017
Revision:	Zero(0)

Introduction:

This procedure describes the requirements to work in any Chemical Engineering Laboratory. These requirements include training, Experimental Safety Plans, work area assignments and labeling, chemical inventory, hazardous waste management and housekeeping.

These requirements are in conjunction with the COE Chemical Hygiene Plan. Training requirements are as assigned by the Department, Environmental Health and Safety (EH&S) and the COE Safety Specialist. Adherence to other policies include COE Working Alone or In Isolation.



Standard Operating Procedure Details:

Outline of Requirements in this document are as follows. See details below for each of these. Researcher Training Requirements

- a. EHS and Department Training required before unescorted lab access allowed
- b. COE Safety Training as applicable
- 2. Experimental Safety Plan Requirements
- 3. Hood and/or Workspace Assignments
- 4. Labeling Requirements for workspaces
 - a. Name Tags
 - b. Drawer labels
 - c. Workspace Shelf labels
 - d. Refrigerator/freezer labels
- 5. Hazardous Waste Requirements
- 6. Chemical Inventory and Storage
 - a. Bar code scanning into Quartyz
 - b. Quartzy Owner Chemical Inventory

Appendices

- A Laboratory Researcher Commissioning Checklist
- B Jett Hall Laboratory Maps
- C Chemical Segregation and Storage Chart
- D References



1. Training Requirements

a. EHS and Department required training requirements can be found on the Chemical Engineering Department's website under Administration and looking for the pull down menu for CHME EHS

(https://chme.nmsu.edu/research/ehs/#Required_Safety_Training)

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- b. COE Safety Required Training
 - i. Special and/or Specific Training will be determined as part of the ESP Process
 - Specific hazards, such as cryogenic and carcinogenic materials, combustible dust, machine hazards etc., may require additional or special training. Consult with the COE Safety Specialist for additional details of requirements and offering locations.
 - Specific equipment training for items such as the fume hoods, biosafety cabinet, laser, centrifuge, etc. will frequently be required. Training will be provided by the Principal Investigator and/or the COE Safety Specialist.
- 2. Experimental Safety Plan
 - a. The researcher must have a signed Experimental Safety Plan to work in the lab. This document and its procedures can be found on the Chemical Engineering Department website at https://chme.nmsu.edu/research/ehs/

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- b. For new ESPs, always consult this website to use the most current template for the document. All signatures and approval from the COE Safety Specialist are required to begin work.
- c. The ESP must be filled out per established procedure and have the following additional details included in the Experimental Scope in Attachment 1 and on the required drawing in Attachment 2. For new ESP's started after 12/01/17, this information must be provided in the contact information block and in the drawing in Attachment 2.

- i. Identity of Fume Hood/Work Space
- ii. Locations of drawers and shelves used by the researcher
- iii. Location of chemical storage for those materials assigned to the researcher
- iv. Location of any additional equipment needed for these experiments such as analytical tools in other buildings and lab spaces.
- v. Identify which waste collection points used
- vi. Details of transportation of samples if analysis will occur in another building or lab space.
- 3. Hood and Workspace Assignments
 - Hoods and workspace will be assigned by either the COE Safety Specialist or the Chemical Engineering Department Lab Manager. A <u>list</u> of hood assignments can be found on the Chemical Engineering Department website.
 - b. Request new or changes to space through those individuals
 - c. Maps of the Jett Hall lab spaces are in Appendix B.
- 4. Labeling Requirements for Workspaces
 - a. Name Tags →
 - i. Each researcher using a hood or other workspace needs to prepare a name tag, place it in a clear holder and affix it to either the front of the fume hood or in a visible part of their workspace. Multiple name tags need to be affixed if more than one researcher is sharing the fume hood or work space even if one is the lead researcher and others are supporting the tasks.
 - ii. You can find a template for name tags and refrigerator labels on the CHME EHS website. Use clear tape to attach the name tag holder to the fume hood.





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Laboratory Researcher Commissioning Requirements



b. Drawer Label \rightarrow

ii.

- i. Each drawer used by a researcher needs to be labeled with the following information:
 - 1. Researcher name
 - 2. Contents
 - 3. Hazard Conditions if applicable (e.g. biological, combustible dust, etc.)
 - A label maker is available for your use in the CHME Office





- c. Shelf Label \rightarrow
 - i. Each drawer used by a researcher needs to be labeled with the following information:
 - 1. Researcher name
 - 2. Contents
 - 3. Hazard Conditions if applicable (e.g. biological, combustible dust, etc.)
 - ii. A label maker is available for your use in the CHME Office



- d. Refrigerator/Freezer Label →
 - i.

Most refrigerators and freezers are the responsibility of a single Principal Investigator but researchers share space to store their samples and/or chemicals. The outside of the refrigerator should have the following labels:

1. Chemical Inventory for entire refrigerator with owner names

2. Researcher name along with description of samples and approximate inventory (e.g. rack of 50 ml test tubes)

3. You can find a template for name tags and refrigerator labels on the CHME EHS website. Use clear tape to attach the name tag holder to the refrigerator or freezer.





- 5. Hazardous Waste Requirements
 - a. A <u>list</u> of Waste Collection Points by PI can be found on the Chemical Engineering Department website. The researcher will identify their needs for combined or segregated waste collection in their ESP. Those containers will be stored in one of those waste collection points. The required NMSU Waste Tracking forms will be kept current by the researcher when the add materials to containers.
 - b. The waste collection points will be monitored by the lab manager to determine when they are full and need to be picked up by NMSU EH&S.
- 6. Chemical Inventory and Storage
 - a. All chemicals will be scanned into the Quartzy database, along with owner name, exact location, date purchased etc.
 - b. Chemicals need to be segregated by flammable and corrosive materials per the chart in Appendix C and stored in appropriate cabinets. Use the cabinets provided under fume hoods for flammable and corrosive storage. Consult the lab manager or COE Safety Specialist for other storage questions.
 - c. Some materials will require special storage conditions such as:
 - i. Water or Air Reactive materials will be stored in the inert cabinet
 - ii. Temperature sensitive materials will be stored in a refrigerator or freezer
 - iii. Combustible or hazardous dust producing materials will be stored in containers appropriate to allow opening in restricted space, such as a glove box.

- d. Low hazard dry materials may be stored on the open shelves in the fume hood workspace. These materials need to be stored in secondary containment such that they cannot be spilled or knocked off the shelves. The shelf needs to be labeled with appropriate information as shown in Paragraph 4 above.
- e. Print the chemical inventory list from Quartzy using the following method. Use the export function on the left side of the screen to receive an excel spreadsheet.

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This will generally contain the entire CHME inventory. You will need to sort this data to find those items you own. After you have your items together, print that part of the spreadsheet.



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f. Print a copy of the chemical inventory for the fume hood and/or workspace, placed it in a clear sleeve and affix it to the side of the hood with the name tags. This inventory needs to be kept current with any changes to ESPs.





Appendix A - Laboratory Researcher Commissioning Checklist

CHME - Researcher Commissioning Checklist

Date		
Researcher Name		
Principal Investigator Name		1
ltem	Description	Complete (Y/N)
Hood Assignment	Hood Number #	
Bench Top Assignment	Bench Area #	
ESP Update Submitted	ESP #'s,,	
Name Tag Label(s)		
Drawer Label(s)		
Shelf Label(s)		
Refrigerator/Freezer Label(s)		
Hazardous Waste Collection Points Identified?		
Hazardous Waste Containers Available?		
Chemicals Inventory in Quartzy		
Chemicals Inventory Posted		
Fume Hood Training Complete		

See COE-SOP-0002, "Researcher Lab Commissioning Requirements" for more details and examples.





Appendix B - Jett Hall Laboratory Maps







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Appendix C - Chemical Segregation and Storage Chart

Midd Lab Safety CHEMICAL SEGREGATION AND STORAGE CHART RECOMMENDED STORAGE INCOMPATIBLES CLASS OF CHEMICAL EXAMPLES CHEMICALS METHOD SEE SDS IN ALL CASES Store in a cool, dry area, away from oxidizing Compressed Gases Oxidizing and toxic compressed gases. Securely strap or chain cylinders to a Methane, Acetylene, Propane - Flammable gases, oxidizing solids. wall or bench top. Store in a cool, dry area, away from **Compressed Gases** flammable gases and liquids. Securely strap Oxygen, Chlorine, Bromine Flammable gases. - Oxidizing or chain cylinders to a wall or bench top. Store in a cool, dry area, away from Compressed Gases Flammable and/or oxidizing gases. flammable gases and liquids. Securely strap Carbon monoxide, Hydrogen sulfide - Poisonous or chain cylinders to a wall or bench top. Inorganic (mineral) acids - Hydrochloric acid, Sulfuric acid, Store in a separate, Ined/protected acid storage cabinet. *DO NOT store acids on Flammable liquids, flammable Chromic acid, Nitric acid, Note: Nitric acid is a strong Corrosives - Acids owidzer and should be stored by itself. Separate nitric acid solids, bases, oxidizers. Organic INORGANIC acids metal shelves* from other acids by staring it in a secondary container or a separate acid cobinet. Store in a separate, lined/protected acid Flammable liquids, flammable Corrosives - Acids storage cabinet. *DO NOT store acids on Organic acids - Acetic acid, Trichloroacetic acid, Lactic acid solids, bases, and oxidizers. ORGANIC metal sheives* Inorganic acids Ammonium hydroxide, Potassium hydroxide, Sodium Flammable liquids, oxidizers, **Corrosives** - Bases Store in a separate storage cabinet. tworaxide poisons acids. Store in a secure location away from all other monium Nitrate, Nitro Urea, Sodium azide, Trinitroaniline, Trinitroanisole, Trinitrobenzene, Trinitrophenol/Picric acid, Trinitrotoluene (TNT) Explosives chemicals. Op not store in an area where All other chemicals. they can fail. Store in a filammable storage cabinet. Note: Peroxide forming chemicals must be dated Acetone, Senzene, Diethyl ether, Methanol, Ethanol, **Flammable Liquids** Acids, bases, oxidizers poisons, upon opening, e.g., ether, tetrahydrofuran, Hexanes, Toluene doxate Store in a separate dry cool area away from Acids, bases, oxidizers, and Flammable Solids Phosphorus, Carbon, Charcoal oxidizers, corrosives poisons. Store in a dry, cool location. Protect from Water Reactive water and the fire sprinkler system, Sodium metal, Potassium metal, Lithium metal, Lithium Separate from all aqueous Chemicals applicable. Label location - WATER REACTIVE Aluminium hydride solutions, axidizers. CHEMICALS-Sadium hypochlarite, Benzoyl peraxide, Patassium permanganate, Potassium chlorate, Potassium dichromate. Store in a spill tray inside a non-combustible Note: The following chemical groups are considered Separate from reducing agents, Oxidizers cabinet, separate from fiammable and ovidzers: Nitrates, Nitrites, Chromates, Dichromates, flammables, combustibles, organic combustible materials. Chiorites, Hypochiorites, Chiorates, Perchiorates, materials. Nermanganates, Iodates, Nersulfates, Neroxides, Acrates, Bromates. Superoxides.

Store separately in a verted, cool, dry, area in Cyanides, heavy metal compounds, i.e. Cadmium, Mercury, Flammable liquids, acids, bases, chemically resistant secondary containers. oxidizers. Osmium Store on general laboratory benches or General Chemicals Agar, Sodium chloride, Sodium bicarbonate, and most non-See MSDS shelving. Use upper shelving for nonreactive salts hazardous chemicals only. May 2016

Middlebury Sciences Environmental Health & Safety

qo/labsafety



Poisons/Toxic

Non-Reactive

Appendix D - References:

- 1. Standard Operating Procedure -#COE-SOP-0001, "Chemical Fume Hood Operation"
- 2. NMSU COE Chemical Hygiene Plan

