



Administration and Finance

Operations Detail: **ENVIRONMENTAL HEALTH & SAFETY – 05**

**ENVIRONMENTAL HEALTH & SAFETY**  
**Servicing Potentially Hazardous Exhaust Systems**

October 2023

**1.0 PURPOSE**

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The purpose of this operations detail is to prevent employees and contractors from exposure to potential hazardous materials while performing work involving contact with interior surfaces of fume hoods and other potentially hazardous exhaust systems.

**2.0 BACKGROUND**

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This operations detail was established to provide safety information to FPM personnel and contractors working on potentially hazardous exhaust systems. This document provides guidance, rules, and regulations that govern the operation of CPP's Health and Safety Program and apply to all employees and contractors working on potentially hazardous exhaust systems.

**3.0 AUTHORITY**

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[Hazard Communication Standard \(Title 8 CCR Section 5194\)](#)

[Personal Protective Devices \(Title 8 CCR Section 3380\)](#)

[Respiratory Protection \(Title 8 CCR Section 5144\)](#)

[Injury and Illness Prevention Program \(Title 8 CCR Section 3203\)](#)

**4.0 PROCEDURES**

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***Roles and Responsibilities***

This section outlines employee and contractor responsibilities for complying with CPP's Health and Safety Program with respect to potentially hazardous exhaust systems.

**Deans, Directors, and Department Heads**

- Actively support this guideline document within individual colleges, departments, and units
- Designate a Department Contact to coordinate with EH&S and FPM when potentially hazardous exhaust systems are having operational issues
- Take disciplinary actions against any person determined to be out of compliance with this guidance document
- Notify FPM, contractors, and EH&S of any known hazards pertaining to the exhaust system to be worked on

**Supervisors**

- Assure that staff is aware of this guideline document and instructed on the details of implementation
- Report all workplace accidents or injuries may complete a manager's report of injury form
- Contact EH&S to complete a site investigation and request technical assistance

## Employees

- Comply with this Guideline and any further safety recommendations made by your supervisor or EHS
- Consult with your supervisor when there are questions regarding health and safety
- Report any job-related injuries or illnesses, questions on health and safety, or any unsafe or unhealthy working conditions to your supervisor
- Contact EHS to evaluate potentially unsafe conditions

## Department Contacts

- Notify building occupants of exhaust system/fume hood shutdowns prior to occurrence by posting the designated notices on the exhaust hoods affected and contacting the affected parties via e-mail, telephone, or in person
- Verify, on the day(s) of work, that the laboratories have complied with all shutdown requirements by conducting site visits to each of the affected locations
- Notify the dean, director, or department head of any personnel not complying with the required shutdown procedures or restrictions
- Remove all notification signs from fume hoods, doors, elevators, etc. once the project is completed, and notify the researchers that they can continue normal operation of their laboratory

## Environmental Health and Safety (EH&S)

- Review and revise this guideline document as needed
- Provide technical assistance and conduct safety audits when necessary
- Provide training to FPM employees that are required to access exhaust systems or roofs with potential hazards
- Coordinate with department contact and FPM to ensure all applicable safety requirements have been met

## Facilities Planning and Maintenance (FPM)

- Coordinate and communicate exhaust system shutdowns, utility outages, and service outages to the appropriate departmental contacts impacted
- Maintain a database of building and departmental contacts needed to effectively plan and communicate shutdowns in all buildings on campus
- Review design documents for new projects and ensure information is transferred to the Roof Safety Plan

## Contractors

- Communicate the potential hazards present when working on roofs with potential hazards. Outside contractors will be required to follow this Guideline and must be provided a copy
- Comply with all responsibilities listed in the "Supervisors" section of this Guideline with the exception that the outside contractor shall provide any personal protective equipment necessary for the project

## **Procedures**

Prior to and during work on the interior of potentially hazardous exhaust systems, proper steps shall be taken per this Guideline to ensure that personnel are not exposed to chemical, biological, or radiological hazards.

If users of exhaust systems do not comply with the requirements of an exhaust system shutdown, the work shall not take place until compliance is verified by the Departmental Contact, FPM and EH&S.

If the work requires access to a roof, EHS must be consulted to determine if there are potential roof top hazards prior to the commencement of the work.

### Pre-Job Preparation

Upon receipt of a work order involving the interior of a potentially hazardous exhaust system, the supervisor shall consult with EHS to determine if the work site has a potentially hazardous exhaust system. If the building does not have a potentially hazardous exhaust system, the work may proceed following normal work site safety procedures.

If the work site is listed as having potentially hazardous exhaust, the supervisor shall contact EH&S and FPM to determine if the work will require fume hoods or other potentially hazardous exhaust systems to be shutdown.

Once work within a potentially hazardous exhaust system is identified, the supervisor shall implement the following:

- FPM and EH&S will work with the Supervisor and the Department Contacts to determine the least disruptive and most efficient shutdown schedule.
- The Department Contact shall post a “Warning! Do Not Use This Hood” ([Appendix A](#)) sign on all affected exhaust hoods, fume hoods, and ducted BSCs. Doors to the affected laboratories, corridors, and additional locations may also be posted to increase awareness.
- This information shall also be communicated to the affected users via e-mail, telephone, or in person.

### Exhaust System Site Assessment

The supervisor and/or Department contact shall arrange with EH&S and FPM to perform a site assessment under the following conditions:

- If radioactive materials are used in the affected fume hoods or exhaust system, EH&S shall be contacted at ehs@cpp.edu or 909-869-4697. If necessary, EH&S will conduct a contamination survey of affected systems. After the survey has been conducted, EH&S shall notify the supervisor with an email of the results and any additional precautions required.
- For perchloric acid fume hoods, EH&S shall be contacted at to conduct a site assessment. If the inspection indicates perchlorates have formed or the presence of perchlorates is suspected, EH&S shall notify the project coordinator that a firm specializing in the cleaning and repairing of perchloric acid exhaust systems will have to be hired to abate the hazard before work can progress.
- Unusual circumstances or hazards were identified by the owner or noted by employees.

### Required Shut-Down Procedures

Laboratory personnel or other users are required to adhere to the following steps to prepare for a shutdown:

- All chemicals in affected hoods must be removed, capped, or covered.
- Funnels in chemical containers are not acceptable; funnels must be removed, and the containers covered or capped.
- All equipment, such as hotplates and stirrers, must be turned off.
- Clean the interior surfaces of the hood if workers will need to enter or contact the interior surfaces.
- Conducting any experiment in a shutdown fume hood or using any ducted exhaust system that goes to the shutdown system is prohibited.

Immediately preceding the start of the scheduled work, the Department Contact or designee shall inspect the impacted exhaust hoods to verify compliance. Any non-compliance shall be addressed by the Department Contact, and corrective action taken prior to the work proceeding. If the non-compliance cannot be corrected within a reasonable period, the work shall be rescheduled.

If a fan shutdown is required, the supervisor and the zone maintenance supervisor for the building shall determine who will turn the fans off and back on. Work shall comply with the EH&S Lock Out and Tag Out program.

If the work will take longer than scheduled, the workers shall notify their supervisor as soon as possible. The supervisor shall notify the laboratory personnel to coordinate the extended shutdown.

## Compliance

Failure to comply with this procedure may expose laboratory personnel and maintenance personnel to hazardous materials. Non-compliance with these requirements will result in the work not being completed as planned, causing delays in research, and a report to the appropriate dean, director, or department head for possible disciplinary action.

## Personal Protective Equipment

Personal protective equipment shall be worn during work on all fume hoods and other potentially hazardous exhaust systems. Protective equipment shall be provided to the workers by their supervisor. The goal is to prevent skin contact with the interior surfaces of these systems.

The minimum protective equipment required for all potentially hazardous exhaust systems include the following:

- Gloves – Disposable latex, vinyl or nitrile gloves shall be worn under a leather palmed glove. Additional acid or solvent resistant gloves may be required if unusual circumstances or hazards are identified. Contact EH&S if you have any questions.
- Safety Glasses – Shall be worn whenever work is taking place inside a laboratory. Glasses shall also be worn when working on exhaust duct work, dampers, and motors.
- Disposable Suit/Coveralls – Shall be worn when contact with the inside of a potentially hazardous exhaust system is likely.
- Respiratory Protection – Typically not required unless work on a potentially hazardous exhaust system involves the potential for exposure to contaminated dust and/or exposure to residual chemicals. Contact EH&S for information on the appropriate medical clearance and respirator cartridges.

## Post Completion of Work

- All locks and tags shall be removed from all locked-out/tagged-out equipment by the person that placed it.
- All locked-out/tagged-out equipment shall be put back in operation. Proper operation of said equipment shall be verified by the maintenance mechanic.
- Workers shall notify their supervisor upon completion of the work. The supervisor shall report the project completion to the FPM Customer Services. FPM will notify the Department Contacts.
- All notices and tags posted on the fume hoods, laboratory doors, entry doors, elevators, etc. shall be removed by the Department Contacts.
- The Department Contact shall notify the researchers of the project completion and give the go ahead to resume normal operations of the systems.

## Fume Hoods which Must Remain Operational

When FPM schedules a fume hood shutdown, the Department Contact shall inform FPM and EH&S if operation of a fume hood or exhaust system cannot be interrupted.

- These projects will not be a routine occurrence and will be assessed on a case-by-case basis.
- EH&S will develop a case specific written procedure for experiments allowed to continue while the work is performed on the rooftop.

The Department Contact shall post the procedure on each affected hood system and ensure all restrictions outlined in the procedure are relayed to the researcher and are being adhered to during the maintenance period.

If it is determined the roof top work cannot proceed with the experiment in progress, the experiment or process shall be relocated, or the work shall not be performed until the experiment has been completed.

The Department Contact and EH&S shall conduct weekly walk-through inspections during long term projects to verify compliance with the use restrictions.

Non-compliance with the use restrictions shall result in the affected hoods being shut down completely for the duration of the project and a report provided to the appropriate dean, director, or department head for possible disciplinary action taken against the users.

### Biological Safety Cabinets

A Biological Safety Cabinet (BSC) is designed to contain biological hazards. Repairs should only be made by trained personnel (3rd party vendors- TSS, CEPA, etc.) that understand the potential hazards present. In addition, all work on BSCs must be approved by the Institutional Biosafety Committee (IBC) and Biological Safety Officer (BSO) to prevent the potential release of a biological agent to the environment and potential exposure to personnel.

## 5.0 DEFINITIONS

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### **Biological Safety Cabinet**

A biological safety cabinet is a special safety enclosure used to handle pathogenic microorganisms in a laboratory. Some it can be exhausted outside of the facility, and some recirculate the air inside the room.

### **Departmental Contact**

The Department Contact is the person empowered by a dean, director, or department head to arrange for and coordinate maintenance and operational activities for a designated facility.

### **Fume Hood (Chemical Fume Hood)**

A fume hood is a ventilated enclosed workspace intended to capture contain, and exhaust fumes, vapors, and particulate matter generated inside the enclosure to the outside of the facility.

### **Environmental Health and Safety (EH&S)**

EHS is a CPP department that works to maintain a safe and healthy environment. The department coordinates with stakeholders in matters of environmental sanitation, occupational safety, occupational health, laboratory, and radiation safety. The department coordinates and assist in educating faculty, staff, and students on standards applicable to the University.

### **Perchlorates**

Perchlorates are vapors or condensed precipitates or perchloric acid. The vapors can condense while passing through the hood exhaust system forming perchlorate. Dry crystallized perchlorates are shock sensitive and can detonate upon contact during cleaning, modification, or repair of the hood system.

### **Perchloric Acid**

Perchloric acid is a strong acid that is a powerful oxidizing agent. Perchloric acid protocols involving cold perchloric acid can be performed in a standard chemical fume hood; however, specially designed fume hoods are required if perchloric acid is heated, or if perchloric acid is used at concentrations >72%, used frequently or in large quantities.

### **Perchloric Acid Fume Hood**

A perchloric acid fume hood is a fume hood constructed of noncombustible materials and equipped with a water wash-down system. This system is activated to prevent the formation of perchlorates in the exhaust ducts after using the acid.

### **Potentially Hazardous Exhaust Systems**

Any exhaust system used for chemical, radiological, or biohazardous materials is potentially hazardous. The systems include fume hoods, BSCs, exhaust snorkels, slot hoods, canopies, paint booths, etc.

### **Radioisotope/Radioactive Materials**

Radioisotope/radioactive materials are elements with unstable nuclei that give off energy in the form of ionizing radiation through a process called nuclear decay.

### **Roof Safety Plans**

Roof safety plans contain specific information regarding the equipment, fume hoods, ducted biological safety cabinets, exhaust fan locations on the roof of a specific facility.

## 6.0 CONTACTS

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This operations detail is owned, administered, interpreted, and revised as necessary by the [Office of Environmental Health & Safety](#) in the Division of Administrative Affairs. References guidelines, regulations, and other documents are available through EH&S at 909-869-4697, [ehs@cpp.edu](mailto:ehs@cpp.edu), or through the [EH&S website](#).

### **Erick Guandique**

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## 7.0 REVISION TRACKING

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### **Revision History**

Revision Date	Revised by	Summary of Revision	Section(s) Revised
10/31/2023	Natalie Schroeder	Initial Draft	All

### **Review/Approval History**

Approval Date	Approved by	Summary of Approval	Section(s) Approved
11/1/2023	Erick Guandique		All

## 8.0 APPENDICES

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[Appendix A: Do Not Use This Fume Hood Sign](#)

[Appendix B: Emergency Information](#)



**DO NOT USE THIS HOOD  
THIS HOOD IS TEMPORARILY OUT OF SERVICE  
DUE TO SCHEDULED WORK**

Date of shutdown	
Department Contact person	
Phone number	

- Use of this exhaust hood is prohibited until this warning notice has been removed.
- All containers of chemicals shall be capped or covered. Leaving funnels in the containers is not acceptable. All experimental equipment shall be turned off.
- This applies even if the exhaust fan is operating, people maybe working on the fume hood exhaust system.
- Use of this fume hood while it is tagged out of service may expose you and others to hazardous materials.

***Failure to comply with the above is considered non-compliance and will be referred to your dean, director, or department head for disciplinary action.***

Contact the **Department Contact, EH&S or FPM Customer Service** for additional Shutdown information

## **EMERGENCY INFORMATION**

Facilities Planning and Management (FPM) personnel and Contractors must abide by all alarms and evacuation procedures.

Personnel should dial:

**909-869-9070 for emergencies (911 from campus landline)**

**909-869-3030 for non-emergencies.**



### Important Contact Information

**All emergencies:**

909-869-3070 (911 from campus landline)

**Blue emergency phones:**

Press button and talk

**Central Plant (Heating and Ventilation):**

909-869-4831

**Environmental Health and Safety:**

909-869-4697

[ehs@cpp.edu](mailto:ehs@cpp.edu)

**Facilities Customer Service:**

909-869-3030

### Reporting Injuries

Injuries sustained by employees of a general contractor, or its subcontractor must be immediately reported to your project manager and environmental health and safety (EH&S). Within 48 hours of incident, the contractor shall furnish EH&S with a copy of any incident report that is generated on the campus. Such reports must include a medical description of the injury (if applicable) and action taken to prevent the reoccurrence.