



Safety Orientation for Laboratory-based Staff

**Health, Safety and Environment
Office**

Mission, Vision and Values

MISSION

To promote and support health, safety and environmental protection in teaching, research, and other activities at HKUST.

VISION

We sustain a healthy, safe and environmentally friendly culture at the HKUST campus, and our graduates bring forth the same into the wider society with pride.

VALUES

We care about the well-being of our campus community and put Health, Safety and Environment (HSE) at the heart of everything we do.

We perform our duties with professionalism and integrity.

We take the lead in proactive and preventive management of HSE risks.

We strive to advance our knowledge and expertise to face novel challenges and support cross-cutting solutions.

President's Message



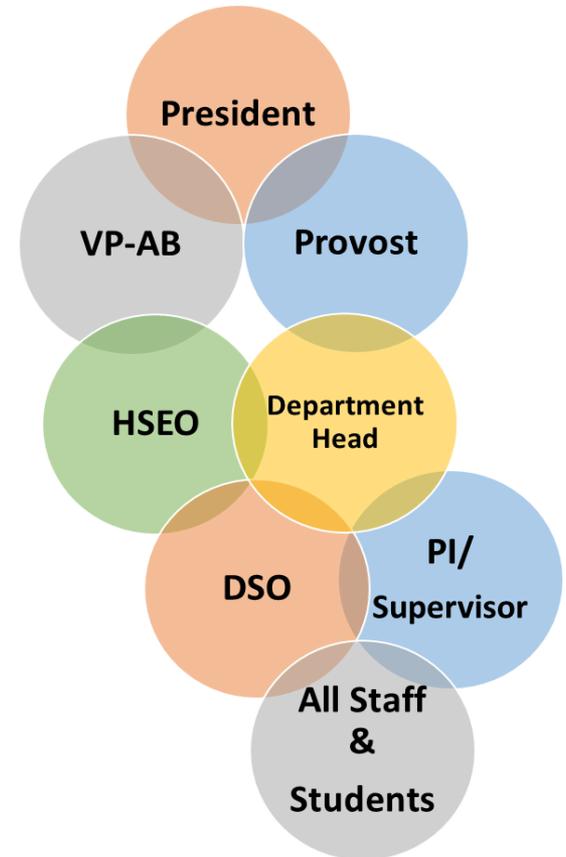
Main Points in President's Message

- People are at the heart of every HKUST success
- Everyone is responsible for safety
- Members must follow safety policies and practices in all operations and activities, including research
- HKUST upholds best-in-class health and safety standards, and expect graduates to bring safety culture to the wider society
- HSEO is available to provide professional guidance and support



How Safety is Managed in HKUST

- President ultimately responsible
- VP-AB delegated to oversee efforts
- Department heads held responsible
- Departmental Safety Officers (DSO) assist implementation
- PIs and Supervisors are crucial for controlling day to day operation
- All staff and students expected to follow instructions and ask questions
- Health, Safety & Environment Office (HSEO) provides guidance and services, and monitors performance



University & Departmental Safety Policies

SAFETY AND ENVIRONMENTAL PROTECTION MANUAL

Requirement Abstract

Preface

Chapter 1 : Policies and Management

Chapter 2 : Work Planning and Procedures

Chapter 3 : Emergency Procedures

Chapter 4 : Training and Education

Chapter 5 : Engineering Safety

Chapter 6 : Fire Safety

Chapter 7 : General Laboratory Safety

Chapter 8 : Chemical Safety

Chapter 9 : Biological Safety

Chapter 10 : Radiation Safety

Chapter 11 : Laser Safety (Class 3 and 4)

Chapter 12 : Occupational Health and Medical Surveillance

Chapter 13 : Personal Protective Equipment

Chapter 14 : Office Safety

Chapter 15 : Traffic Safety

Chapter 16 : Disposal of Hazardous Materials and Items under Regulatory Control

Chapter 17 : Waste Minimization

Chapter 18 : Resource Conservation

Chapter 19 : Liquid Effluent

Chapter 20 : Air Emissions

Chapter 21: Nanomaterial and Nanotechnology

Chapter 22: Laboratory Decommissioning and Repurposing

Chapter 23: Laboratory Standards and Design Guide

Chapter 24: Off-campus Activity Safety



<https://hseo.ust.hk/publication>

Departmental Safety Management



DEPARTMENT OF ELECTRONIC &
COMPUTER ENGINEERING



[INTRODUCTION](#) [PROGRAMS](#) [ADMISSIONS](#) [PEOPLE](#) [RESEARCH](#) [STUDENTS](#) [ALUMNI](#) [QAE](#) [SAFETY](#) [NEWS & EVENTS](#) [JOIN US](#)



LAB SAFETY

It is the responsibility of everyone in HKUST to be familiar with and to conform to the policies of the university's Health, Safety & Environmental Office (HSEO). This includes all faculty, technical and administrative staff, students (UG and PG), and research staff (appointed and visiting).

[Laboratory Access & Working Hours](#)

[Management Structure](#)

[Departmental Procedures](#)

[Work Plan](#)

[Emergency Contacts](#)

[Forms Download](#)

[Health And Safety Links](#)



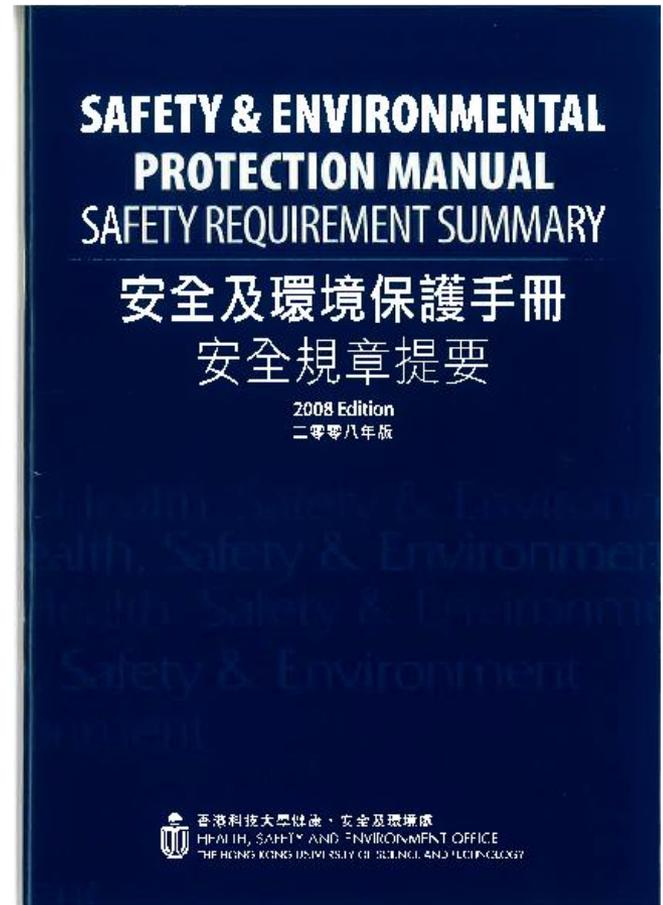
<https://ece.hkust.edu.hk/safety>

Highlights of Safety Requirements

- “Blue Book” summarized contents of HKUST Safety & Environmental Protection Manual
- Including requirements for lab workers using specific hazardous agents
 - Training
 - Registration
 - Medical Surveillance
 - Other requirements



https://hseo.hkust.edu.hk/system/files/documents/re_sum_e.pdf

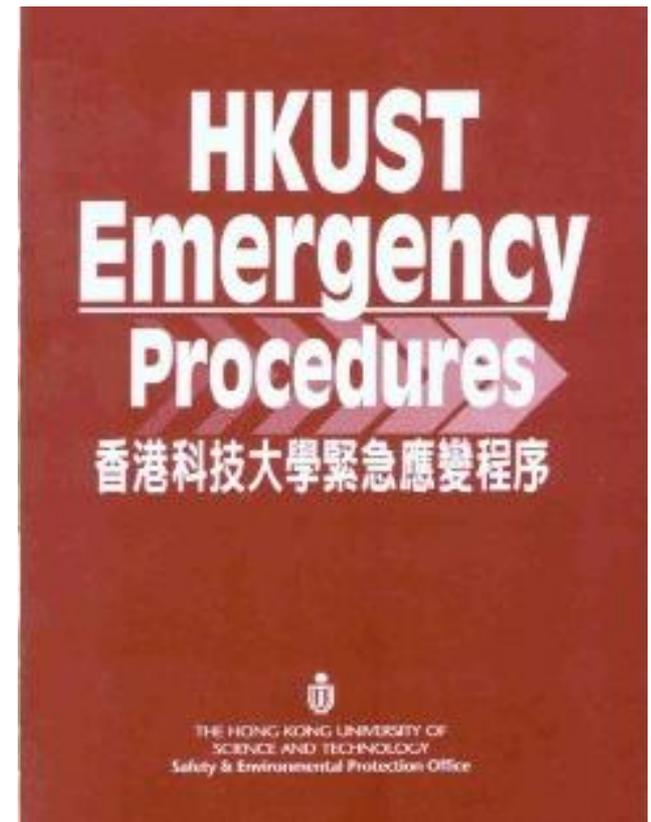


Highlights of Emergency Preparedness

- “RED Book” summarized contents of HKUST Emergency Procedures
- Including general emergency procedures for
 - Fire
 - Injury and Illness
 - Lift Entrapment
 - Hazardous materials spill
 - SCC Emergency phone number: x8999

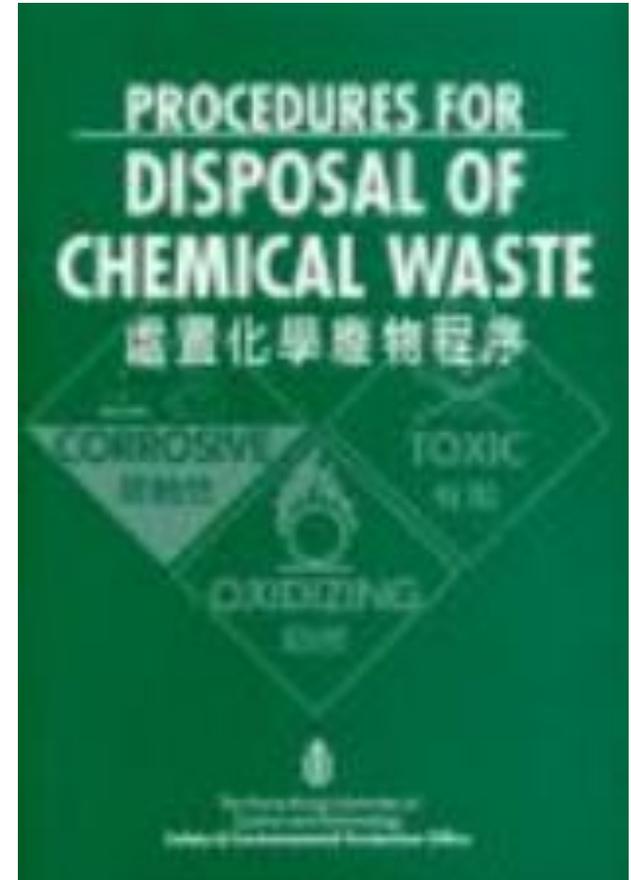


https://hseo.hkust.edu.hk/system/files/documents/Emergency_E.pdf



Highlights of Environmental Protection Requirements

- “Green Book” summarized contents of Procedures for Disposal of Chemical Waste
- Including scope of chemical wastes, chemical waste minimization, safety precautions in handling chemical wastes and chemical waste management for
 - General chemical wastes
 - Highly reactive chemical wastes
 - Solid chemicals or solid wastes contaminated by chemicals



Departmental involvement in Safety Management

- Departments are responsible for initiating
 - departmental safety policy
 - safety clearance (assess training needs, hands-on safety induction, etc)
 - department-wide safety training
 - accident investigation
 - self- inspection/audit
- Department Heads are held accountable
- Departmental Safety Committee
- Senior staff appointed as DSO



List of Departmental Safety Officer

LIST OF DEPARTMENTAL SAFETY OFFICERS

Dept./Office	DSO	Tel.	Email	Deputy DSO	Tel.	Email
AAF	VACANT			Mr Tak Yan Saviour LEUNG	8819	MELTY
ACCESS	Dr Shawn HUO	3176	XIAOHUO			
ACCT	Ms Juno S P TUNG	7555	ACJUNO	Ms Carolyn LAM	7554	ACCAROLY
AIS	Mr Matthew C Y CHIK	2071	MATTCHIK	Ms Janice CHAN	3292	JCPW
AMC	Ms Holly CHAN	3065	CHANHIMING			
ARO	Mr Rocky TANG	8687	ROCKY.TANG			
BioCRF (CWB)	Miss Angelie Callejo SHUI	6911	SHUIANGELIE			
BRI	Miss Flora Y W LAU	7295	BTFLORA			
CBE	Mr Wing Li LEUNG	8828	KELEE	Mr Hoi Yau CHENG	5724	KEHOIYAU
CCSS	Miss Debbie Y L MAK	6336	SEMYL			
CDO	Mr Wai Fung Michael CHEUNG	6447	MICHAELCWF	Mr Bocky WAN	6427	EOBOCKY
CEI	Miss Gloria LO	6318	CTGLORIA			
	Ms Judy CHUNG	6812	JUDYKKC			
CHEM	Dr Man Sing CHEUNG	7401	SING	Mr Chun Tak LAU	7378	DISNEY
CHEM FACULTY	Prof Haipeng LU	2097	HAIPENGLU			
CIVL	Mr Chi Man HO	8443	KEDAIVE	Mr Shing Tak LUI	7163	CESTLUI
CKSRI	Mr Chi Hin Samuel CHOW	3203	SAMUELCHOW			
CMO	Mr Wai Fung Michael CHEUNG	6447	MICHAELCWF	Ms Yuen Wa SHUM	6494	BERTHASYW
				Ms Tammy S K LAM (5/F)	6439	EOTAMMY
				Mr Edmond C W WONG(LS)	6850	EOEDWONG
				Mr Felix Ping Kuen LEE (Staff Housing)	3055	EOFELIX
CSE	Mr Dominic LAI	7005	DOMINIC			
CSO	Mr Keith Y K NG	6142	KSKEITH			
DAO	Ms Mendy C K WONG	6158	MCMENDY			
DBM	Mr Ray LEE	8934	BMRLEE			
DENG	Mr Ricky Ying Lung SZETO	5874	EGSZETO			
DHSS	Miss Angi Law	7791	SHANGI			
DSCI	Ms Anthea CHENG	7266	SSANTHEA			
DSTO	Mr Chun Leung Edward AU-YEUNG (Sport Facilities)	6679	SAAYCL			
	Ms Rita Ka Ki YAU (Amenities)	6654	SAYKK			
	Ms Daisy KWAN (Main Office & Other Service Area of DSTO)	8628	DAISYKWAN			
	Ms CY Luka LUK (SFA)	6686	SACYLUK			
	Ms Gina CHIK	6071	GINACHIK			
	Miss Rachel Yan (OGL)	5893	RACHELYAN			
	Mr Chun Gary LI (Water Sport Facilities)	6108	SAGARYLI			
E2I	Mr Paul David LAVIGNE	5930	EGPAUL			
EC	Ms Harna HUI	2428	ECHARNA			
ECE	Prof Abhishek Kumar SRIVASTAVA	2485	EEABHISHEK	Mr Joseph Sing Cheong CHENG	7086	CSCHENG
ECON	Miss Cindy Ying Lan SUN	7622	YINGLAN			
EI	Mr Charles Wai Chung NG	2294	IECHUNG			
EMIA	Mr Matthew C Y CHIK	2071	MATTCHIK			
ENVF	Mr Claisen YEUNG	8876	CLAIREY	Mr Kwok Pong HO	8874	KPHO
ENVR	Dr Ngai Ting LAU	6935	NTLAU			
EPACK	Dr Mian TAO	8356	EPMIAN			
FINA	Miss Kitty LUI	7673	KITTYLUI			
FO	Mr Jeff C F LI	7968	FOJEFF			

DSOs and Sections Head Meeting



2025 HEADS AND DEPARTMENTAL SAFETY OFFICERS MEETING



2 DECEMBER 2025
AT LTC

Roles and Responsibilities of Principal Investigators and Supervisors

- Ensure implementation of university-wide and departmental safety requirements in units under their supervision
- PI must
 - Declare safety issues during grant proposal
 - Implement safety controls on research projects
 - Ensure staff and students understand the hazards involved; received necessary safety training, including safety procedures specific to their work; and implement appropriate safety measures accordingly
 - Conduct periodic self-inspection
 - Compile Safety Completion Report at the end of research projects



Laboratory Manager



- The responsible person for a workplace should be a staff member who has overall control of day-to-day operations. In a Lab, it would normally be the PI.
- With assistance from HSEO, the responsible person has to develop a workplace Risk Assessment for operations and activities under his/her control.
- Keep it up-to-date.
- The responsible person should ensure all personnel, including students, have received the necessary information, training, and supervision to conduct their work safely.

Committee on Research Practices - Ethics and Safety Review

- A requirement by university on all research grant proposal, for RGC and other funding sources
- CRP Safety Review is an important part of research safety management as it enables assessment of potential hazards of research projects at the earliest possible time

Committee on Research Practices (CRP)



Terms of Reference

The CRP is an administrative committee reporting to the Provost and Vice-President for Research and Development (VP-RD). Its goal is to guide the attainment of the highest standards of integrity and professionalism in research conducted at the University.

1. To ensure that there is an effective review, monitoring and implementation process of research ethics and compliance in all research projects involving animal use, human subjects, artefacts and safety issues, undertaken by faculty, researchers and students.
2. To advise and endorse the Terms of Reference and Membership of its Sub-Committees, namely the [Animal Ethics Committee](#), [Human and Artefacts Research Ethics Committee](#), and [Safety Panel](#); and to receive their annual reports, and other reports as appropriate.
3. To handle and review non-compliance cases/complaints brought to the Committee, according to the "[Procedures for Handling Alleged Non-compliance and Complaints](#)". For severe cases of research malpractices, the Committee will report them to the Provost and VP-RD, for further handling.

<https://vprd.hkust.edu.hk/policies-compliance/crp>

Committee on Research Practices - Ethics and Safety Review

- When a proposal is eventually funded, HSEO will follow up to ensure necessary safety measures are in place

The screenshot displays the Tick@Lab web application interface. At the top left is the logo of The Hong Kong University of Science and Technology. The main header shows the protocol ID: "SP: SP-2022-0163 'Development of multiplexed droplet-based platform for multi-step single-cell sequencing', (v.5.0), Approved/Designated Member Review". Below the header are navigation buttons: "Back to overview", "Review", "Attachments", and an "Action" dropdown menu. A left sidebar contains a menu with categories: Home, Protocols (with sub-items: Animal Experiment Protocol, Human Research Ethics Protocol, Safety Protocol), Animal Orders, Animal Management, Compliance Support, Billing, Tasks, Reports, and Master Data. The "General Procedures" section is expanded, listing: Personnel, General Information, Training, Protocol/Forms Links, Chemical Hazards, Biological Hazards, Physical Hazards, PI Certification, SP Review (Administrative Use Only), and Workflow History. The main content area features a "Frequently Asked Questions" section with links to help guides and training videos, followed by a "GENERAL PROCEDURES" section with detailed instructions on protocol amendments and references to hazardous agents.

Standard operating procedures for hazardous chemicals or operations

Safe Operating Procedure of hydrofluoric acid for wafer etching

NOTE: You must read this entire document and both you and the Principal Investigator must sign it before commencing any work.

Project Number (e.g. Tick@Lab): SP2024-1111

Principal Investigator/Supervisor: Prof. TM Chan

Room and Building where SOP is used: Room 2005

Summary of how the Material/Equipment/Process will be used

Hydrofluoric acid (HF) is a highly corrosive and toxic inorganic acid used in various applications, including semiconductor manufacturing, glass etching, and metal cleaning. In semiconductor wafer etching, a precise and controlled amount of HF is used to remove oxide layers and create intricate patterns on silicon wafers, which are then used to produce integrated circuits and other electronic devices.

Potential hazards

1. **Corrosivity:** HF is highly corrosive and can cause severe burns and tissue damage upon contact with skin, eyes, or mucous membranes.
2. **Toxicity:** HF is highly toxic, and exposure to its vapor, liquid, or contact with the skin can result in systemic poisoning and potentially fatal consequences.
3. **Reactivity:** HF can react with various materials, including metals and glass, releasing hazardous gases such as hydrogen gas and silicon tetrafluoride.

Safety Installations

1. **Fume hood:** Use HF in a well-maintained and properly functioning chemical fume hood to contain and exhaust hazardous vapors.
2. **Ventilation:** Ensure proper general and local exhaust ventilation systems are in place to minimize exposure to HF vapors.
3. **Chemical storage:** Store HF in compatible containers, such as polyethylene or Teflon, in a designated acid storage cabinet.

Safe Work Practices

1. **Training:** Ensure all personnel handling HF receive proper training on its hazards, safe handling procedures, and emergency response such as the use of calcium gluconate gel.
2. **SOPs:** Establish and follow safe operating procedures (SOPs) for HF use, including etching, storage, and waste disposal.
3. **Inspection:** Regularly inspect and maintain equipment, containers, and PPE used for HF handling.
4. **Compatibility:** Store HF in compatible containers made of materials such as polyethylene or Teflon.
5. **Labeling:** Clearly label HF containers with appropriate hazard warnings and chemical identification.
6. **Segregation:** Store HF separately from incompatible chemicals, such as bases and oxidizing agents, to prevent accidental mixing and reactions.

Specific experimental procedures

1. Prepare a diluted HF solution (usually 1-5% concentration) in a plastic container. HF is extremely dangerous and corrosive, so proper safety precautions must be taken including wearing gloves, goggles, and protective clothing.
2. Place the silicon wafer into a Teflon or plastic holder. This will prevent direct contact between the HF solution and your hands.
3. Submerge the wafer holder into the HF solution.
4. Gently agitate or swirl the HF solution to promote even etching of the wafer. Let the reaction proceed for a few seconds to several minutes depending on the desired etch depth.
5. Remove the wafer holder from the HF solution and rinse the wafers generously with deionized water. This stops the etching reaction.
6. Dry the etched wafers using a Nitrogen gas stream. Do not blow dry using an air stream.
7. Inspect the etched wafers under an optical microscope to check if the desired surface features have been achieved. Repeat the etching procedure if needed.
8. Properly dispose of the used HF solution according to the safety guidelines. HF waste requires neutralization before disposal. Rinse the plastic containers and holders with deionized water.
9. Additional post-etching cleaning of the wafers may be needed prior to further processing. Isopropyl alcohol and photoresist stripping solutions can be used to remove residues.
10. Storage of etched wafers is done under a controlled environment to avoid surface contamination or oxidation. They should not be directly exposed to ambient air.

Standard operating procedures for hazardous chemicals or operations



Personal Protective Equipment

1. **Gloves:** Wear appropriate chemical-resistant gloves, such as nitrile or neoprene, when handling HF.
2. **Eye and face protection:** Use chemical splash goggles and a face shield to protect against potential splashes and contact with eyes or face.
3. **Protective clothing:** Wear a lab coat or chemical-resistant apron, and ensure that pants and shoes cover the entire lower body to minimize skin exposure.

Waste disposal

1. **Waste collection and Disposal:** Send a request to [HSEO](#) for HF waste container and waste collection for of HF waste.

Spills and Releases

1. **Spill kit:** Maintain a spill kit containing neutralizing agents, such as calcium carbonate and personal protective equipment in the vicinity of HF use.
2. **Spill containment:** In the case of a small spill, apply a neutralizing agent to the spill area and then absorb the neutralized material using an appropriate absorbent material. Dispose of the waste according to local regulations.
3. **Evacuation:** In the case of a large spill, evacuate the area and notify the security control centre by ext. 8999.

Emergency Procedures

1. **Exposure:** In the case of HF exposure, immediately flush the affected area with water at the nearest emergency eyewash and shower for at least 15-30 minutes. Remove contaminated clothing and PPE while rinsing.
2. **Calcium gluconate:** Apply calcium gluconate gel to the affected area and seek immediate medical attention.
3. **Emergency response:** Notify the security control centre by ext. 8999 and provide information on the incident, including the chemical involved, the location, and any injuries.

Prepared by: _____ Dr AB Chan _____

Date: _____ 28 Mar 2022 _____

Updated by: _____ Dr. CT Man _____

Date: _____ 28 Mar 2023 _____



https://hseo.hkust.edu.hk/system/files/internal/Requirements_Template%20of%20SOP_Ver1_20220626.pdf