

Safety Tour for New Researchers

This document describes safety information and procedures followed in the Sailor labs. Please read it carefully, then bring a printout with you when you take the Safety Tour. Schedule the tour directly with Prof. Sailor (msailor@ucsd.edu).

- My signature below indicates that I have read and fully understand the information provided in this document
- I authorize UC San Diego to use still or video image(s) of my person for educational or grant reporting purposes, including posting of such images on the University website:

(print name)

(signature)

(date)

Laboratory Safety Orientation Tour (given by Prof. Sailor):

- Web Location of lab safety procedures, group announcements, personnel bios, etc: <http://sailorgroup.ucsd.edu/announcements/>
- Laboratory doors and locks
- Contacting ambulance for medical emergencies
- Emergency phone numbers for Prof. Sailor and the Lab Manager
- Eye wash/douse showers location and operation
- Eye protection
- Lab coats/attire
- Gloves
- Use of N-95 Filtering Face Pieces
- No food or drinks allowed in the labs
- Sinks: tap water, distilled water, deionized water, and eye wash
- First aid kits
- Guidelines for using the etching hoods
- HF spills on the body, use of HF antidote gel
- Hazardous materials spills and kits
- Fire extinguishers location and operation
- Red power shutoff button by each door
- Yellow ventilation limits override button by each door
- Disposal of hazardous waste, garbage cans, broken glass containers, sharps containers
- Location of chemical storage: liquids in ventilated cabinets
- Earthquake safety, securing gas cylinders, chemicals
- Laser users
- MSDS access – www.ucmsds.com or other source
- Evacuation procedures and meeting points
- Export Control Items

Laboratory Safety Items:

After you get your UCSD ID, and before you can begin working in the lab, you need to complete the following laboratory safety tasks:

(1) Online lab safety training course: “UC Laboratory Safety Fundamentals” (Available from the UC Learning Center)

This is a required course for everyone who joins the lab. Everyone (including the students who are here just for the summer tutorials) must complete this online course and obtain a certificate:

- Log on to UC learning Center (<http://uclearning.ucsd.edu>) via Single Sign-On*
 - *Faculty/staff* (use default Business Systems tab and include username and password)
 - *Students* (use Student Sign On tab and include PID/PAC)
 - *Affiliates* (use Active Directory tab and include username and password - the ones you use to sign into your department’s server at your desktop)
- Search for keyword “UC Laboratory Safety Fundamentals”
- Complete the e-course
- Print out the “certificate of completion” you get on-screen at the end of the course and email a copy to the Laboratory Manager, Ricardo De Luna (rideluna@ucsd.edu) with copy to Prof. Sailor (msailor@ucsd.edu)

(2) Online lab hazards training course: “Annual Laboratory Hazards Training”

This is a course for those people who handle hazardous materials. Everyone (including the students who are here for the summer tutorials) must complete this online course and obtain a certificate:

- Log on to UC learning Center (<http://uclearning.ucsd.edu>) via Single Sign-On*
 - *Faculty/staff* (use default Business Systems tab and include username and password)
 - *Students* (use Student Sign On tab and include PID/PAC)
 - *Affiliates* (use Active Directory tab and include username and password - the ones you use to sign into your department’s server at your desktop)
- Search for keyword “annual laboratory hazards”
- Complete the e-course
- Print out the “certificate of completion” you get on-screen at the end of the course and email a copy to the Laboratory Manager, Ricardo De Luna (rideluna@ucsd.edu) with copy to Prof. Sailor (msailor@ucsd.edu)

(3) Online Covid-19 prevention training course: “Covid-19 Prevention Training”

This is a course for anyone who plans to enter UCSD facilities. Everyone (including the students who are here for the summer tutorials) must complete this online course and obtain a certificate:

- Log on to UC learning Center (<http://uclearning.ucsd.edu>) via Single Sign-On*
 - *Faculty/staff* (use default Business Systems tab and include username and password)
 - *Students* (use Student Sign On tab and include PID/PAC)
 - *Affiliates* (use Active Directory tab and include username and password - the ones you use to sign into your department's server at your desktop)
- Search for keyword "COVID-19 Prevention Training"
- Complete the e-course
- Print out the "certificate of completion" you get on-screen at the end of the course and email a copy to the Laboratory Manager, Ricardo De Luna (rideluna@ucsd.edu) with copy to Prof. Sailor (msailor@ucsd.edu)

(4) Laboratory Hazard Assessment Tool (LHAT), you will receive the link to this form through email). Read through LHAT and HCP completely and sign online

(5) Hazard Control Plan (HCP) for handling of hydrofluoric acid, a unique hazard in our laboratory. You will receive the link to this form through email). Read through LHAT and HCP completely and sign online
If you use HF and have not signed the HCP, you will be removed from the lab roster and no longer be allowed to work in our laboratory.

(6) New Worker Checklist (NWC), posted at:
<https://drive.google.com/file/d/1cYjHwyWx5mYVsZyXUqxzXInImey8KBE9/view?usp=sharing>).
This is the form that is required by the UCSD management.

(7) Get safety glasses and a lab coat.

It is a university requirement that you wear a lab coat and safety glasses at all times in the labs. You can pick up a pair of safety glasses and a loaner lab coat at the department of Environmental Health and Safety, PPE Fitting Room at University Center 401, Room 107. They are open Monday through Friday (10am-3pm). Glasses and lab coats are free of charge. You can also use one of the old lab coats hanging on the rack in our lab (Room 4226). **If you will be loaning out PPE from EH&S you must be on the LHAT and lab roster before making an appointment.**

<http://blink.ucsd.edu/safety/occupational/PPE/lab-ppe.html#UCSD-Loaner-program>

(8) Take in-person safety tour from Prof. Sailor:

This tour is given by Prof. Sailor. Before doing this, please read the Sailor lab's Safety Document (this document), the latest version of which is available online in the Sailorgroup Google Drive "Group Forms" folder. If you don't have access to this folder, send an email request to msailor@ucsd.edu. Bring a copy of this Safety Document with you to the safety tour. You should also be aware of the UCSD Laboratory Safety Manual, the UCSD Chemical Hygiene Plan, and the Safety Data Sheet database which can all be found on blink.ucsd.edu or in the hyperlink on the NWC form

(9) If you will be working with high energy lasers:

The Renishaw Raman spectrometer and the OPO/YAG pulsed laser (used for photoluminescence lifetime measurements) both use high energy lasers that are not eye-safe. If you will be using them, you need to have laser safety training. It is in two parts:

- (a) Complete the laser user enrollment form using the link below:
http://www-ehs.ucsd.edu/rad/Laser/Laser_Use_Enrollment.pdf

You will need the following information to fill out the LUA (Laser Use Authorization):

For the Raman spectrometer:

LUA #: 1094
Model: invia
Serial number: 81a768
Manufacturer: Renishaw

For the OPOTEK YAG/OPO laser:

LUA #: 1094
Model: OPOlette HE 355 LD
Serial number: 3108
Manufacturer: OPOTEK

- (b) Complete the **Online "Laser Safety Training" Course**—this is a course for anyone who plans to use lasers that are not eye-safe (such as in the Raman spectrometer, or in some of the photoluminescence measurement experiments):

- Log on to UC learning Center (<http://uclearning.ucsd.edu>) via Single Sign-On*
 - *Faculty/staff* (use default Business Systems tab and include username and password)
 - *Students* (use Student Sign On tab and include PID/PAC)
 - *Affiliates* (use Active Directory tab and include username and password - the ones you use to sign into your department's server at your desktop)
- Search for keyword "Laser Safety"
- Complete the e-course

- Print out the “certificate of completion” you get on-screen at the end of the course and email a copy to the Laboratory Manager, Ricardo De Luna (rideluna@ucsd.edu) with copy to Prof. Sailor (msailor@ucsd.edu)

(10) If you will be working with animals or animal tissues

Most of you will not be doing this. However, if you know that you will be working with animals or animal tissues (including blood or serum), you must comply with the Institutional Animal Care and Use Committee (IACUC) regulations:

1. Orientation to Animal Research at UCSD (Offered twice a month, 8:30 am to noon) Register online through IACUC: <http://iacuc.ucsd.edu/>
2. Fill out a personal qualifications form in advance of taking the Orientation.

You must be listed on an Animal Protocol with a PI to gain access to a vivarium, and to get an ID badge.

Other Recommended Classes:

*Anesthesia & Surgery in Small Animals

*Blood Borne Pathogens (Offered through UCSD EH&S online)

EMERGENCY GUIDE is available at

<http://blink.ucsd.edu/Blink/External/Topics/Policy/0,1162,3882,00.html>

Web location of lab safety procedures, group announcements, etc:

The document you are currently reading, standard operating procedures (SOPs) for all of our equipment, and a general orientation for the lab is available online in the Sailorgroup Google Drive “Group Forms” folder. Contact Prof Sailor (msailor@ucsd.edu) for access.

Written safety and operating procedures for most of our commonly used experiments and equipment are posted near their stations.

Photographs, brief biographies, and contact information (email, laboratory phone number, and office location) for all the lab personnel are posted on the group website (<http://sailorgroup.ucsd.edu/people>). Your signature on this document indicates your approval to have your photograph, biography, and contact information (UCSD email, laboratory phone number, and office location, not home address or personal email address) also posted on this public website.

Laboratory doors, locks and security

The laboratory protocol is to keep all doors locked at all times. This is to avoid problems with unauthorized persons entering the labs. Vendors are not allowed in the labs. If a sales person tries to enter the lab, please escort that person to Prof. Sailor's or the Lab Manager's office. The laboratory is monitored with closed-circuit security cameras to ensure your safety and to deter theft.

The lab doors are fitted with Masterlock Lock Boxes, each of which holds a physical key that opens the door. The lock box is Bluetooth-enabled, so you can open it with your smart phone:

- a) Download the app "Master Lock Vault Enterprise" to your smartphone
- b) Set up an account within that app using your preferred email address
- c) Send that email address to Mike or to the Lab Manager so it can be authorized

Contacting ambulance for medical emergencies

Emergency: In case of emergency (persons exhibiting uncontrolled bleeding, unconsciousness, etc.), dial 911 or 858 534-4357 (534-HELP). The number 911 dialed from a campus line goes directly to the UCSD Police Station, and their phones can tell exactly from what room and building the call originates. They then escort the paramedics to the correct place.

Urgent: (frostbite, small HF burn, non-arterial bleeding, broken bones) Unless you have your own (non-UCSD) insurance, you must seek medical treatment at one of two UC San Diego Center for Occupational & Environmental Medicine (COEM) clinics, unless the incident requires emergency care (911) or treatment is needed after COEM hours of operation. If you are covered by UCSD and you don't go to the COEM clinics, you will have to pay the bill out of your own pocket.

The COEM clinic most convenient to us:

COEM – Campus location
8899 University Center Lane, Suite 160
San Diego, CA 92122 (PDF map)
(858) 657-1600 (Call for an appointment, please)
Monday–Friday, 8 a.m. – 4:30 p.m.

The Nobel Shuttle comes within about 2 blocks from the clinic – corner of Lebon and Nobel.

After hours injuries should be treated at a UCSD hospital emergency room:

Thornton hospital
9300 Campus Point Drive
La Jolla, CA 92037
858-657-7000
MAP: <http://health.ucsd.edu/locations/pages/thornton.aspx>

Reporting Injuries

Information regarding where to seek treatment for a work-related injury and how to report a work-related injury is available at:

<http://blink.ucsd.edu/safety/occupational/reporting.html>

All injuries must be reported verbally to EH&S following directions posted on all lab doors. If you are in doubt about whether or not an injury is “reportable”, contact EH&S and they will decide. Incidents must also be reported to the Chair, Chief Operating Officer and the Safety Committee.

For more information about the UCSD insurance coverage:

<http://blink.ucsd.edu/Blink/External/Topics/Policy/0,1162,404,00.html>

If you are a campus-funded employee, you can call: (858) 822-2979 or 534-4785

Emergency phone numbers for laboratory personnel

Prof. Sailor's numbers

cell phone number: (619) 253-8188

office phone number: (858) 534-8188

Lab manager numbers

Ricardo De Luna's office number: (858) 534-8945

Ricardo De Luna's cell phone number: (323) 358-1270

Eye wash/douse showers location and operation

Showers are in the hallways, eye wash stations are in the hallways and in every laboratory sink. You will be instructed on their use during the tour. Be sure to keep the eye wash and shower areas clear of obstructions.

Eye protection

Laboratory-grade safety glasses must be worn at all times in the laboratory, even if you are not doing any chemistry. When handling HF (etching, making solutions), you must wear a face shield. The face shields are hung above the etching hoods.

Gloves

Whenever performing any chemical manipulations, including handling glassware, etch cells, etc., you should wear disposable nitrile gloves. Boxes of gloves of all sizes are located on benches throughout the labs. When etching or handling HF, butyl rubber gloves should be worn over the nitrile gloves. These are hanging on each designated HF etching hood.

Lab coats/attire

No open toed sandals, shorts or skirts when doing chemistry. Long pants that cover the top opening of the shoes are recommended. Lab coats are

recommended whenever performing any chemical manipulations. When etching or handling HF, you are required to wear a lab coat. Spare lab coats are hung at the end of hood #1 in the main lab.

Use of N-95 filtering face pieces

If you will be handling particles (microparticles or nanoparticles) outside of a fume hood, it is a good idea to wear an N-95 filtering face piece. If you don't know what that is, perhaps you have been living under a rock during the COVID era. There is a web-based training, and a Standard Operating Procedure for N-95 Filtering Face Pieces for Voluntary Users (available in the SailorGroup Google Drive under "SOPs").

No food or drinks are allowed in the labs

Not even in your backpack

Water and sinks

We have four kinds of water in the lab: tap water, distilled water, deionized water, and eye wash

Do not drink the tap water or any other water from the lab. Use of the eye wash will be demonstrated during the lab tour

First aid kits

Located by most doors in the labs. Contain band-aids, gauze bandages, ointments, and HF antidote gel

Hydrofluoric acid hazards

Hydrofluoric acid is considered more toxic than cyanide gas. The IDLH (Immediately dangerous to life or health) given by NIOSH for HF gas is 25 mg/m³. From the Mallincrodt Baker, Inc. MSDS (Material Safety Data Sheet):

Material Safety Data Sheet (MSDS) for hydrofluoric acid

Hazards Identification

Emergency Overview

POISON! DANGER! CORROSIVE. EXTREMELY HAZARDOUS LIQUID AND VAPOR. CAUSES SEVERE BURNS WHICH MAY NOT BE IMMEDIATELY PAINFUL OR VISIBLE. MAY BE FATAL IF SWALLOWED OR INHALED. LIQUID AND VAPOR CAN BURN SKIN, EYES AND RESPIRATORY TRACT. CAUSES BONE DAMAGE. REACTION WITH CERTAIN METALS GENERATES FLAMMABLE AND POTENTIALLY EXPLOSIVE HYDROGEN GAS.

J.T. Baker SAF-T-DATA(tm) Ratings

Health Rating: 4 - Extreme (Poison)
Flammability Rating: 0 - None
Reactivity Rating: 2 - Moderate
Contact Rating: 4 - Extreme (Corrosive)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: White (Corrosive)

Material Safety Data Sheet (MSDS) for hydrofluoric acid (cont)

Potential Health Effects of HF

Exposure to hydrofluoric acid can produce harmful health effects that may not be immediately apparent.

Inhalation of HF:

Severely corrosive to the respiratory tract. May cause sore throat, coughing, labored breathing and lung congestion/inflammation.

Ingestion of HF:

Corrosive. May cause sore throat, abdominal pain, diarrhea, vomiting, severe burns of the digestive tract, and kidney dysfunction.

Skin Contact with HF:

Corrosive to the skin. Skin contact causes serious skin burns which may not be immediately apparent or painful. Symptoms may be delayed 8 hours or longer. The fluoride ion readily penetrates the skin causing destruction of deep tissue layers and even bone.

Eye Contact with HF:

Corrosive to the eyes. Symptoms of redness, pain, blurred vision, and permanent eye damage may occur.

Chronic Exposure to HF:

Intake of more than 6 mg of fluorine per day may result in fluorosis, bone and joint damage. Hypocalcemia and hypomagnesemia can occur from absorption of fluoride ion into blood stream.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, eye problems, or impaired kidney or respiratory function may be more susceptible to the effects of exposure to HF.

Material Safety Data Sheet (MSDS) for hydrofluoric acid (cont)

First Aid Measures For HF contact

Inhalation of HF:

Get medical help immediately. If patient is unconscious, give artificial respiration or use inhalator. Keep patient warm and resting, and send to hospital after first aid is complete.

Ingestion of HF:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact with HF:

Remove the victim from the contaminated area and immediately place him under a safety shower or wash him with a water hose, whichever is available.

Remove all contaminated clothing. Handle all HF-contaminated material with gloves made of appropriate material, such as PVC or neoprene

Keep washing with large amounts of water for a minimum of 15 minutes.

Have someone make arrangements for medical attention while you continue flushing the affected area with water.

If HF antidote gel (2.5% calcium gluconate in a water-soluble gel) is available, limit the washing to five minutes and massage the gel into the affected area.

Seek medical attention as soon as possible for all burns regardless of how minor they may appear initially.

HF ANTIDOTE GEL:

This is calcium gluconate dissolved in a water-soluble gel

Distributed by Pharmascience Inc.

8400 Darnley Rd. Montreal, Canada. H4T 1M4

Phone: (514) 340 - 1114

Fax: (514) 342 - 7764

U.S. (Buffalo, NY) distributor: 1-800-207-4477

ALTERNATIVES TO CALCIUM GLUCONATE GEL

Immerse the burned area in a solution of 0.2% iced aqueous Hyamine 1622 or 0.13% iced aqueous Zephiran Chloride. If immersion is not practical, towels should be soaked with one of the above solutions and used as compresses for the burn area. Ideally compresses should be changed every 2 minutes. Hyamine 1622 is a trade name for tetracaine benzethonium chloride, Merck Index Monograph 1078, a quaternary ammonium compound sold by Rohm & Haas, Philadelphia. Zephiran Chloride is a trade name for benzalkonium chloride, Merck Index Monograph 1059, also a quaternary ammonium compound, sold by Sanofi-Synthelabo Inc., New York, NY.

Material Safety Data Sheet (MSDS) for hydrofluoric acid (cont)

Eye Contact with HF:

Irrigate eyes for at least 30 minutes with copious quantities of water, keeping the eyelids apart and away from eyeballs during irrigation.

Get competent medical attention immediately, preferably an eye specialist.

If a physician is not immediately available, apply one or two drops of ophthalmic anesthetic, (e.g., 0.5% Pontocaine Hydrochloride solution).

Do not use oily drops, ointment or HF skin burn treatments. Place ice pack on eyes until reaching emergency room.

Note to Physician on treatment of HF burns:

General: For burns of moderate areas, (greater than 8 square inches), ingestion and significant inhalation exposure, severe systemic effects may occur, and admission to a critical care unit should be considered. Monitor and correct for hypocalcemia, cardiac arrhythmias, hypomagnesemia and hyperkalemia. In some cases renal dialysis may be indicated.

Inhalation: Treat as chemical pneumonia. Monitor for hypocalcemia, 2.5% calcium gluconate in normal saline by nebulizer or by IPPB with 100% oxygen may decrease pulmonary damage. Bronchodilators may also be administered.

Skin: For deep skin burns or contact with concentrated HF (over 50%) solution, consider infiltration about the affected area with 5% calcium gluconate [equal parts of 10% calcium gluconate and sterile saline for injection]. Burns beneath the nail may require splitting the nail and application of calcium gluconate to the exposed nail bed. For certain burns, especially of the digits, use of intra-arterial calcium gluconate may be indicated.

Eyes: Irrigation may be facilitated by use of Morgan lens or similar ocular irrigator, using 1% aqueous calcium gluconate solution [50ml of calcium gluconate 10% in 500 ml normal saline].

AN ALTERNATIVE FIRST AID PROCEDURE: The effect of HF, i.e. onset of pain, particularly in dilute solutions, may not be felt for up to 24 hours. It is important, therefore, that persons using HF have immediate access to an effective antidote even when they are away from their work place in order that first aid treatment can be commenced immediately.

We recommend that any person in contact with HF should carry, or have access to a tube of HF Antidote Gel at all times; ideally with one tube at the work place, one on the person and one at home.

It is imperative that any person who has been contaminated by HF should seek medical advice when the treatment by HF Antidote Gel has been applied.

REFERENCES:

1. Brown, T.D. Treatment of Hydrofluoric Acid Burns
2. Sprout, W.L. et al Treatment of Severe Hydrofluoric Acid Exposures (Journal of American Occupational Medicine 25:12, 1993)
3. Bracken, W.M. et al Comparative Effectiveness of Topical Treatments for Hydrofluoric Acid Burns, University of Kansas (Journal of Occupational Medicine 27:10:1985)
4. Burke, W.J. , et al Systemic Fluoride Poisoning Resulting from A Fluoride Skin Burn (Journal of Occupational Medicine (5,39:1973)

Fire extinguishers location and operation

Fire extinguishers are located by the doors and at various locations in the hallways and laboratories. You will be instructed how to use them in the safety tour.

Red power shutoff buttons by each door

The red buttons by each door turn off all electricity to the lab (including lights). If someone is being electrocuted or if an instrument misbehaves severely, giving out smoke, sparks, kittens, or other unusual items, push this button.

Yellow ventilation limits override buttons by each door

To save power, some of the hoods slow their flow rate when no motion is detected in front of the hood for a period of ~5 minutes. The big yellow button by each door overrides the motion sensors and turns the hood fans up to full power. If there are chemical vapors spilling into the lab you should immediately leave the lab. Pushing this button on your way out will clear the vapors faster.

Disposal of hazardous waste, garbage cans, broken glass containers, sharps containers

Waste Disposal Procedures

No chemical waste should be put down the sink drains or into the trash. This includes bottles that used to contain a chemical but have not been rinsed. Residues in glass vials can be rinsed into the chemical waste container (see below) with ethanol, and then the glass vial can be dried and put into the broken glass waste.

All chemical waste must be placed in the proper disposal container. Our chemical waste containers are located in hood #3 of the main lab (Pacific Hall room 4226). The etching hoods each have their own dedicated waste bottle for HF-containing electrolyte wastes.

Disposal of Chemical Waste

We have one "general use" liquid waste container, mostly for organic chemicals, located in hood #3 of the main lab (Pacific Hall room 4226).

Generally students also keep a smaller waste bottle on their bench, called a Recurring Container, to collect regularly recurring hazardous waste. These containers must be emptied at least once weekly. If they contain volatile hazardous vapors, the bottle must be stored in a hood. The bottle should have a label on it that looks like the following:

UC San Diego

ACCUMULATION TAG for Recurring Container Use

THIS TAG IS FOR THE COLLECTION OF REGULAR RECURRING HAZARDOUS WASTE. This label may be used on initial accumulation containers if the container is emptied at least once weekly. For more information, contact hazwaste@ucsd.edu or (858) 534-2753.

Emptied on:

M	T	W	TH	F	Sat	Sun
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

UCSD Campus, SIO and La Jolla Medical Center 9500 Gilman Drive, La Jolla, CA 92093
 UCSD Medical Center and Clinical Teaching Facil. 200 West Arbor Drive, San Diego, CA 92103
 Nimitz Marine Facility and Marine Physical Lab 297 Rosecrans Street, San Diego, CA 92106
 Other:

Name: Phone:

Building: Room:

Contents:

Hazard Class: Flammable Toxic
(check one or more) Alkaline Oxidizer
 Cyanide Other:

Physical Form: Liquid Solid Gas Comments:

Please refer to <http://link.ucsd.edu/safety/research-lab/hazardous-waste/tag-use.html> Rev. 4/9/15

The Recurring Container must be placed in a secondary containment vessel such as a deep tray to contain spills. If you work with chemical waste that cannot go into the general use bottle (such as strong acids, chemical oxidants, or heavy metals), you will also have to use your own waste bottle. You must attach a waste tag to all waste bottles. This can be made at <https://ehs.ucsd.edu/myresearchsafety/do/mrsHome>. Click the Online Waste Tag Program. The SLIM computer in the main lab (Pacific Hall 4226) is attached to a printer and waste tags can be printed directly from that machine in the lab. When you put something in this container, write the identity and the approximate amount in the “% of Total” field.

Example:

*** PI Name:** SAILOR, MICHAEL JOSEPH

*** Do you want to** Create New Tag ? Create Tag from Profile?

Profiles HF liquid

*** WGN** MICHAEL JOSEPH SAILOR /WGN 260 /UCSD MAIN CAMPUS

*** Building** Pacific Hall (If you cannot find your building, click [here](#))

*** Room Number** 4226 (If you cannot find your room number, click [here](#))

*** Location for waste pickup** 4226

*** Indicate type of content** Chemical Waste

Chemical Waste (Press the Add button to search for and add a chemical.)

Chemical Name	% of Total (Ex: 999.9999)	Remove
HYDROFLUORIC ACID MIXTURE <input type="text" value="Search"/>	60.0	Remove
ETHANOL <input type="text" value="Search"/>	40.0	Remove
Total %(must = 100) 100		Remaining % 0.0000

*** Container Type** PLASTIC

*** Container Size** 1 L

*** Physical State** LIQUID

Volume of liquid waste content 0.0 L

*** Set Hazard properties** Flammable Corrosive Acid (ph <= 2) Corrosive Base (ph >= 12.5)
 Toxic Reactive Oxidizer Extremely Hazardous

Comments

*** Number of waste containers** 1

After clicking Submit, print the tag, fold it so the top right quarter is visible for EH&S to pick up, and attach it to the bottle or plastic bag.

182496 (WGN : 260)

**SHOW OTHER SIDE THROUGH
PLASTIC ENVELOPE**

CONTENTS (Continued from front)




Chemical Name	% of Total
Comments:	

HAZARDOUS WASTE

UCSD MAIN CAMPUS 9500 GILMAN DRIVE , LA JOLLA CA 92093	
Tracking Number : 182496	WGN : 260
Accumulation Start Date : 5/12/16	Waste must be given to EHS by: 8/10/16
Generator Account Name : SAILOR	Profile Name : HF liquid
Your Name : NICOLE CHAN	Phone : 8585348188
Building Name : Pacific Hall	Room Number : 4226

CHEMICAL WASTE	
Chemical Name	% of Total
HYDROFLUORIC ACID MIXTURE	60
ETHYL ALCOHOL (ETHANOL)	40
Total 100%	

Hazardous Properties

Flammable	Toxic	Oxidizer	Extremely Hazardous	Corrosive Base	Corrosive Acid	Reactive
						

Container Type: PLASTIC Container Size: 1 L
Physical State: LIQUID

182496 (WGN : 260)

**SHOW OTHER SIDE THROUGH
PLASTIC ENVELOPE**

INSTRUCTIONS :

1. 1/4 fold tag and insert into plastic envelope(available from EHS)
2. Affix tag to waste container BEFORE putting waste into container.
3. Attach tag to container of waste with envelope adhesive or other appropriate method.

182496 (WGN : 260)

**SHOW OTHER SIDE THROUGH
PLASTIC ENVELOPE**

KEY POINTS :

- Always keep the container closed when not in use
- Always keep the container in secondary containment.
- Do not contaminate the outside of the container. If you do wipe it off, dispose of the wipes as hazardous waste.
- Do not air evaporate, sewer, drain dispose or discard in ordinary trash.

If you are starting a new waste container (with a new tag), fill out the following:

WASTE GENERATOR NUMBER (WGN): 260

Building: Pacific Hall

Room Number: 4226

Location for waste pick up: 4226

Indicate type of content: Chemical Waste

CONTENTS: What you think is going into the container (e.g.; platinum waste, iodine waste, etc.) then label it as close to the composition of the waste as you expect.

Container Type:

Container Size:

Physical State: Liquid, Gas, Solid, Plasma

Hazard Properties: Check MSDS of chemicals

Place the waste tag on the side of the container and cover in clear tape (on the waste shelf), or place the tag in a Ziploc bag.

Waste bottles and bags are valid for 90 days or until they are full.

Keep an eye on the waste levels. PLEASE make a new waste bottle if the container is close to full. Prevent overflows and spills! . It is much easier to handle the waste in a preventative maintenance manner instead of after an overflow.

Hazardous materials spill kits

A bucket of vermiculite is stored in the lab. This is a porous, non-flammable mineral that will absorb liquid spills. Once used, you put the material in a plastic bag or other appropriate container and place it in the waste hood with an appropriate label. For HF spills, buckets of calcium carbonate are located under each etching hood. Calcium carbonate neutralizes HF via the following reaction:



Cleaning up HF spills

If you spill HF on the floor or the bench, CLEAN IT UP IMMEDIATELY.

To clean an HF spill, pour sodium bicarbonate (baking soda) or calcium carbonate powder on the spill. Let it react. Continue adding the neutralizing agent until the reaction stops. The hood now is hazardous, so please write a note and possibly cross the hood with the hazard tape, so that no one else will use it. After an hour, when the powder has absorbed the entire HF spill, clean it and dispose of all the paper towels used as HAZARDOUS WASTE. Put the trash into a ziploc bag and fill out and attach a waste tag. This bag can go into the waste storage hood. Solutions of other acids and bases can be neutralized with sodium bicarbonate; boxes are located on various shelves in the lab. Other liquids,

including flammable organics, can be soaked up with vermiculite. A bucket of the mineral vermiculite is kept in the main lab. Soak up the liquid and then put the vermiculite in a secondary container for disposal.

Location of chemical storage: liquids in ventilated cabinets

These will be shown in the lab safety tour.

Earthquake safety, securing gas cylinders, chemicals

Glass containers should be stored in cabinets. When on the lab bench, they should be placed far back from the edge to ensure they don't fall off the edge during an earthquake. All pressurized gas cylinders should be secured to the bench via a chain or a strap.

MSDS access – www.ucmsds.com or other source

MSDS, or Material Safety Data sheets, are available online at www.ucmsds.com. Any chemical sold commercially will have an MSDS, which tells you the hazards associated with that particular chemical. Before you use a chemical for the first time, you should go through the MSDS to be sure you are aware of the hazards. An example of an MSDS for HF was given earlier in this document.

Evacuation procedures and meeting points

If the building is evacuated due to a fire alarm, an earthquake, etc, we meet at the south entrance of Pacific Hall. You will be shown this during the safety tour.

Guidelines for using the HF etching hoods

Below are general guidelines. Before you use HF for the first time, you will be checked out by Prof. Sailor (in an event separate from the Safety Tour). Before you do your first etch, view the video "etching 101" at:

https://www.youtube.com/watch?v=KpCpDq_K8Ts

You should also shadow one or more of the current research group members until you are confident that you understand how to perform all procedures involved in etching and cleaning up the etch. Then schedule an "Etch Test" with Prof. Sailor (msailor@ucsd.edu).

HF is a very toxic and corrosive material. If spilled on the body, it must be rinsed off immediately (see the section above on First Aid measures).

IT IS A STANDARD PRACTICE IN OUR LAB TO NEVER WORK WITH HF (ETCH OR PREPARE SOLUTIONS) ALONE (WITHOUT SOMEONE ELSE IN THE LAB NEARBY).

Lab coats, apron, face shield, and gloves should be worn at all times when etching or handling etch cells that contain HF.

Always keep HF bottles (and HF waste containers) capped even if you intend to use them again in a few minutes.

Label all containers (contents, the date and your initials) that you put inside the hood. It's a good idea to cover labels with clear tape to prevent ink from dissolving.

Hoods designated as Etching Hoods are for HF and electrochemically driven experiments only.

Each hood has two work spaces:

- a. Electrochemical etching area
- b. Etch solution preparation/chemical etching station

A container of HF should always be within a secondary container. Paper matting does not count as secondary containment.

When you are done with a beaker or other container that you brought into the hood, rinse it out with ethanol or water three times into the HF waste container, remove it from the hood, rinse it out in the sink with lots of water and place it on the drying rack.

Do not leave transfer pipettes, caps, used kimwipes, paper towels, and other refuse in the hood. Contaminated items should be placed in a sealed container

(Ziploc bag) and disposed of as hazardous waste. Reusable transfer pipettes should be placed in the plastic beaker in the hood, not on the bench top.

Technology Control Plan: The next two pages relate to the intensified CCD camera (Andor iSTAR 334T Camera) that our lab uses for making time-gated photoluminescence measurements. This is the only instrument we have in our lab that is considered by the US Government as an “Export Administration Regulations (EAR) Dual-Use” item, which means that it could be used for purposes other than for basic research. By signing the document below you are agreeing that you will exert due care to ensure that the item is not removed or stolen from the laboratory. If you discover or learn that this instrument was stolen or it goes missing, please report it immediately to Prof. Sailor, to the Lab Manager and to the Export Control Office (export@ucsd.edu). While the document below refers to ITAR (International Traffic in Arms Regulations) in addition to EAR-restricted items, our lab does not currently have any ITAR-restricted items.

UC San Diego Campus Technology Control Plan (TCP)**Purpose**

The purpose of this Campus Technology Control Plan (TCP) is to control the dissemination of Export Controlled (EC) information and other Controlled Unclassified Information (CUI) and items being utilized during the performance of UCSD research and other activities. The purpose of this control plan is to identify and protect export restricted items in accordance with U.S. government export control regulations and ensure no unauthorized access or export of restricted items. This plan along with the TCP Export Restricted Items and TCP Authorized Persons List constitute the specific controls for physical security, IT security and personnel reviews. Additionally these documents inform campus personnel of the security responsibilities and requirements for these export restricted items.

The intent of this TCP is to demonstrate the appropriate level of security for controlled items technologies as it pertains to export control requirements.

It is unlawful under the export regulations to send or take export controlled information out of the U.S.; or to disclose such information, orally or visually, or to transfer export controlled information to a Non-US person inside or outside the U.S. without proper authorization. A license may be required for Non-US persons to access export controlled information.

In general, export controlled information means activities, items, information or materials related to the design, development, engineering, manufacture, production, assembly, testing, repair, maintenance, operation, modification, demilitarization, destruction, processing, and use of items with a capacity for military application utility, or any information relating to a contract with dissemination restrictions. Export controlled information does not include basic marketing information on function or purpose; general system descriptions; or information concerning general scientific, mathematical, or engineering principles commonly taught in schools, colleges and universities or information in the public domain. In these latter cases, it does not matter if the actual intended end use of the information is military or civil in nature.

A Non-US person is a person who is not a U.S. citizen, alien who is a "Lawful Permanent Resident" (Green Card holder), (8 USC § 1101(a) (20)) or other "Protected Individual" under the Immigration and Naturalization Act (8 USC §1324b (a) (3)) designated an asylee, refugee, or a temporary resident under amnesty provisions. The law makes no exceptions for Non-US students. Non-US Persons include any foreign corporation, business association, partnership trust, society or any other entity or group that is not incorporated or organized to do business in the United States, as well as international organizations, foreign governments and any agency or subdivision of foreign governments (e.g., diplomatic missions).

APPLICABLE REGULATIONS

- a. [International Traffic in Arms Regulations \(ITAR\) 22 CFR 120-130](#)
- b. [Export Administration Regulations \(EAR\) 15 CFR 730-774](#)
- c. [Assistance to Foreign Atomic Energy Activities \(AFE\) 10 CFR 810](#)
- d. [Office of Foreign Asset Controls Regulations 31 CFR 500-599](#)
- e. [National Industrial Security Program Operating Manual, \(NISPOM\), \(DoD 5220.22-M\)](#)

Rev 4/12/18

**Acknowledgement of UCSD Campus Technology Control Plan
for Export Controlled Information
(Attachment A)**

Acknowledgement of Technology Control Plan and Non-Disclosure Statement

I hereby certify that I have received, read, and understand the UCSD Campus TCP for handling Export Controlled Information and the procedures contained in this TCP. I agree to comply with the restrictions contained herein and with U.S. Government regulations as they pertain to export controlled information. I understand that I could be held personally liable if I unlawfully disclose, regardless of form or format, export controlled information to unauthorized persons. I further understand that I must attend export control training before working on any export controlled projects and that I must complete annual training thereafter.

I hereby acknowledge and understand that any information related to defense articles on the U.S. Munitions List (Department of State) or articles restricted by EAR (Department of Commerce), to which I have access or which is disclosed to me in the course of my (employment-assignment-enrollment-visit) at the University of California San Diego, is subject to export control under the ITAR or the EAR. I hereby certify that such data will not be further disclosed, exported or transferred in any manner to any non-US person or entity without prior written approval of the Office of Defense Trade Controls, U.S. Department of State for ITAR or the BIS, Department of Commerce for EAR. If I inadvertently export to an unauthorized recipient any controlled items, materials, equipment, software, data, information or technology received during my employment-visit-enrollment, I will report such unauthorized transfer promptly to the Export Control (export@ucsd.edu) and acknowledge the transfer to be a violation of U.S. Government regulations.

Print/Type Name: _____ Date: _____
 Department/Lab: _____
 UCSD Email: _____
 Employee ID: _____
 US Citizen
 US Person (under export regulations): Permanent Resident (Green Card holder)

Country of citizenship(s) (list all if multiple citizenships): _____

Note: Non-US Persons may not be included under the UCSD Campus TCP. Additionally, students (including U.S. persons) may not work on any project ineligible for the Fundamental Research Exclusion for their theses or dissertations (student hourly work is allowable). If student involvement will be used for their thesis/dissertation, please contact Export Control for prior approval.

Signature: _____

Return Signed Attachment A via campus mail to: Garrett Eaton, Export Control, MC 0992, geaton@ucsd.edu

Export restricted technology, technical data or contracts the above signatory will have access to under this TCP:

Type (Choose One)	UC ID Number	Description (Make / Model, Data Type or Contract Number)	Controlled under	Classification (ECCN or USML#)
Restricted Article		Andor iSTAR 334T Camera	EAR	6A203.b.2