GENERAL WORKPLACE SAFETY

Millimeter Wave Research Center

http://tempest.das.ucdavis.edu/

https://www.ece.ucdavis.edu/dmrc/research/

https://sites.google.com/view/mmwave/home

Safety Coordinator

- Logan Himes
- lghimes@ucdavis.edu
- Cell 530-957-0389

Agenda

- Safety Acronyms
- Safety Policy
- Why is safety important?
- Environmental Health & Safety
- 911
- Police Department
- Fire Department
- Emergency Planning
- Potential Job Related Hazards

Safety Acronyms and Definitions

- OSHA - Occupational Safety & Health Act
- EH&S - Environmental Health & Safety
- IIPP - Injury & Illness Prevention Plan
- SDS - Safety Data Sheets
- CUPA - Certified Unified Program Agency
- EGRESS - Your Emergency EXIT
- CLSC – Chemical & Lab Safety Commission
- DSC – Dept. Safety Coordinator
- PPE – Personal Protective Equipment
- Safety Net-Specific safety documents

College of Engineering Laboratory Safety Officers

Lance Halsted, ECE Department
Safety Coordinator (DSC)
Telephone: (530) 752-8959
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Loan-Anh Nguyen, EH&S Lab
Safety Professional
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UCD Fire/Police Department

- Police Department
  - Campus at Night
  - Escort Service
- TAPS (Transportation and Parking Services)
  - 530-752-8277 (TAPS)
- Reporting A Crime
  - 911
  - Fire Phone 530-752-1234
  - Police Phone 530-752-1230
  - 530-754- COPS (3677)

“911”, 752-1234, 752-1230

- Speak clearly, give your name, where you are located (building/ room number), phone number, and remain there until the fire or police department arrives

- Facilities: 752-1655 or online https://facilities.ucdavis.edu/

Fire Safety

- On-Campus Fire Department
- Really cool trucks

- Using Fire Extinguishers
  - FIRST call the UCD Fire Department
  - Decide if you can control the fire
  - RACE and PASS

RACE

In a fire emergency follow these four steps;

RESCUE people.

ACTIVATE the alarm.

CONFINE the fire

EVACUATE the area.

PASS

In the case of a fire that can be contained by a fire extinguisher, remember;

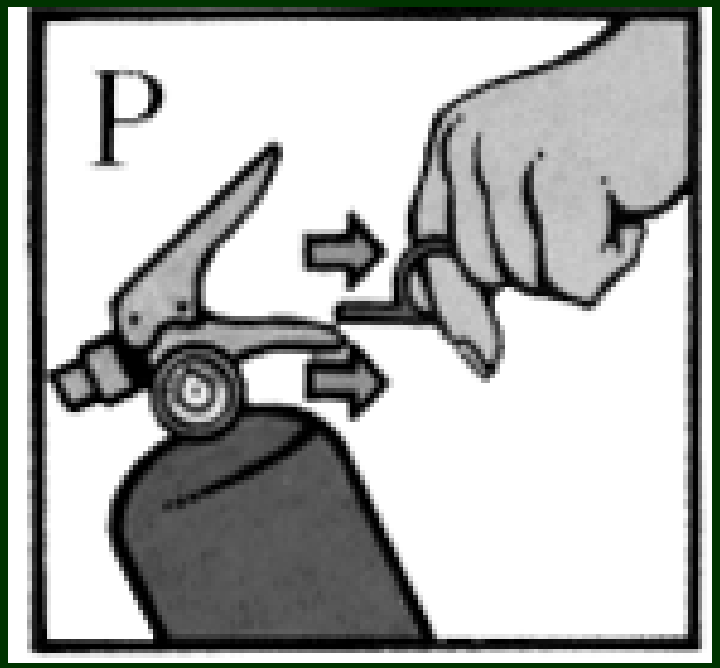
Pull the pin

Aim the nozzle

Squeeze the handle

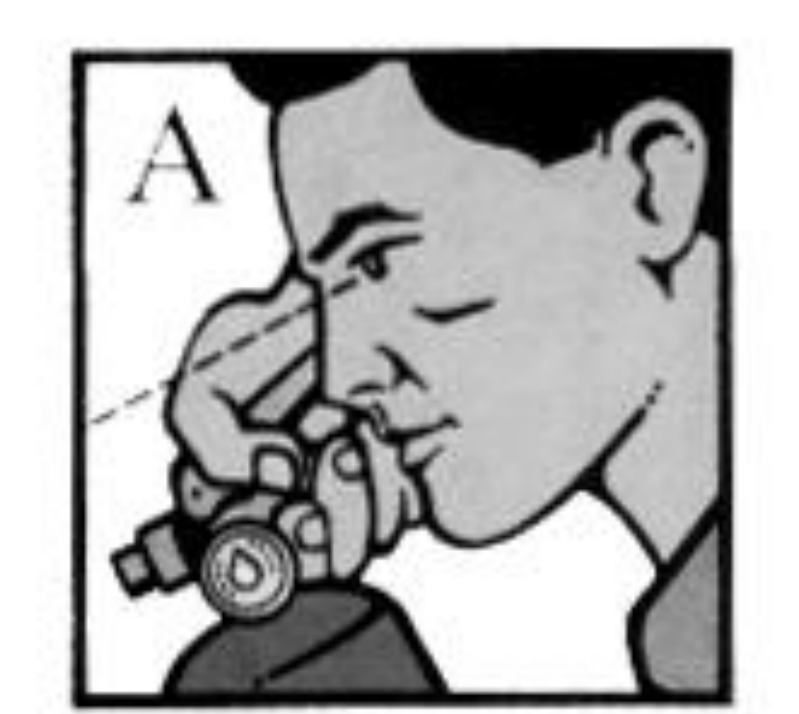
Sweep the base of the fire

PULL THE PIN

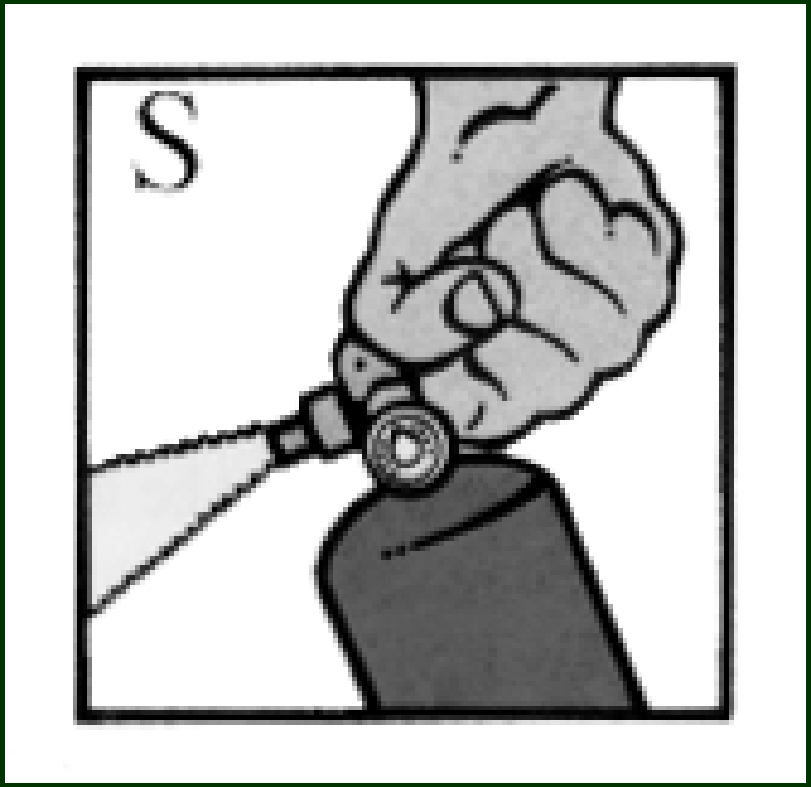


FIRE EXTINGUISHER

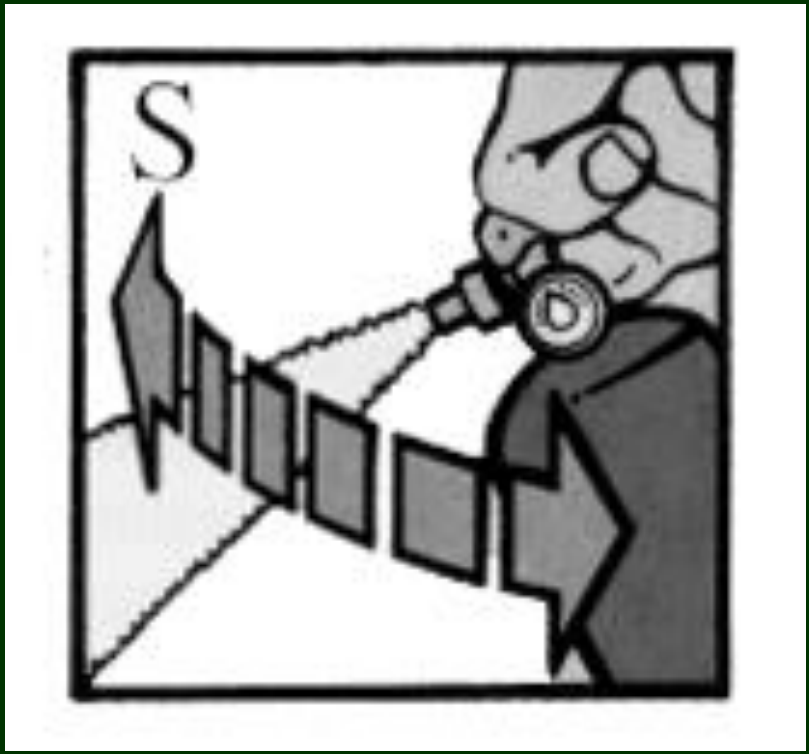
AIM THE NOZZLE AT THE BASE OF THE FIRE



SQUEEZE THE HANDLE



SWEEP THE NOZZLE FROM SIDE TO SIDE AT THE BASE OF FLAMES



Fire Safety

- The Four Fire Extinguisher Rating Types:
- A, B, C, and D. Generally you will have an ABC rated fire extinguisher.

“A” Rated
Ordinary Combustibles

Ordinary or common combustibles
Fires in paper, plastic, linen, wood or textiles
(Remember “ashes”)

“B” Rated
Flammable Liquids

Fires in gasoline, alcohol, grease
(Remember “barrels”)

“C” Rated
Electrical Equipment

Energized electrical equipment
Computers, copy or fax machines
(Remember “current”)

“D” Rated Metals

- Metal fires; Aluminum, Magnesium, Titanium
- Must have specialized training in order to use!

Fire Alarm Pull Stations

- Fire Only (with exceptions)
- Ventilation in some Buildings

Fire Alarm Pull Down

Pulling this handle will activate the fire alarm system and notify the Fire & Police Dept. of an emergency.

Trucks and personnel will come.

Ventilation Pull Down

Pulling this handle will shutdown the supply air to the room; Importantly this pull handle will not trigger fire alarm.

Emergency Planning

- Building Evacuation
  - Reporting In
  - Where to go?
  - NEVER use an elevator in an emergency
- Disaster Recovery
  - Records
  - Research

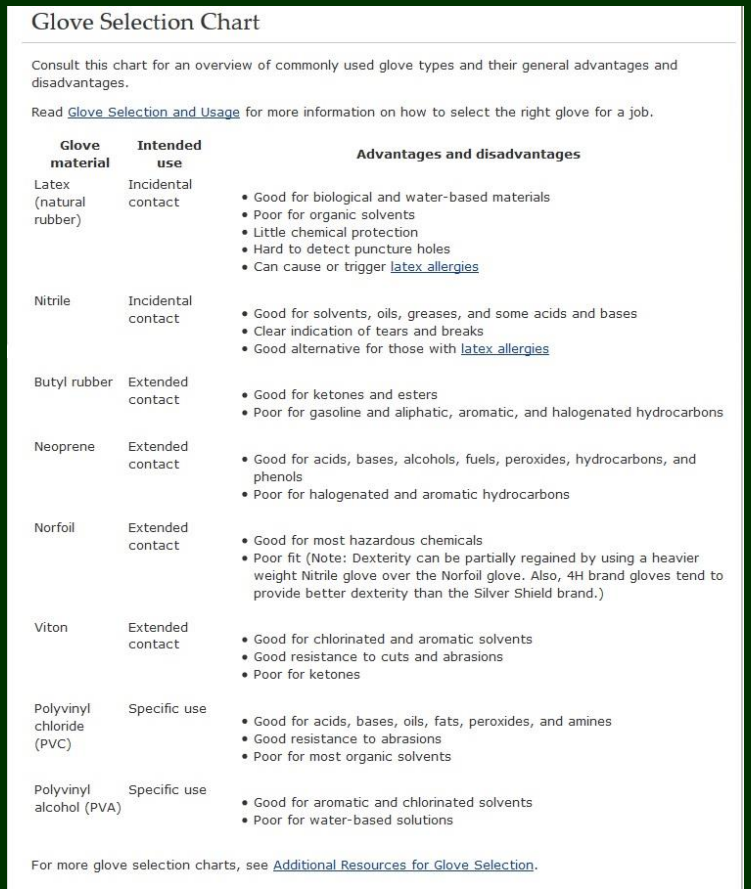
Injury Illness Prevention Plan (IIPP)

- Located online though ECE and EH&S websites, also in the Wet Lab and Main Lab at 2900 Spafford St.
- Training Records online and physical copies with Logan
- Reporting Work Related Injuries – Safety Net #121

Safety Data Sheet (SDS)

- Required to either have internet access for reference or printed SDS’s for each chemical in lab all
- Glove selection for chemicals
- Know the location of the first aid and spill kit in the lab

Glove Selection Guide



Glove Selection Chart

Consult this chart for an overview of commonly used glove types and their general advantages and disadvantages.

Read Glove Selection and Usage for more information on how to select the right glove for a job.

Glove material	Intended use	Advantages and disadvantages
Latex (natural rubber)	Incidental contact	• Good for biological and water-based materials • Poor for organic solvents • Little chemical protection • Hard to detect puncture holes • Can cause or trigger latex allergies
Nitrile	Incidental contact	• Good for solvents, oils, greases, and some acids and bases • Clear indication of tears and breaks • Good alternative for those with latex allergies
Butyl rubber	Extended contact	• Good for ketones and esters • Poor for gasoline and aliphatic, aromatic, and halogenated hydrocarbons
Neoprene	Extended contact	• Good for acids, bases, alcohols, fuels, peroxides, hydrocarbons, and phenols • Poor for halogenated and aromatic hydrocarbons
Norfoil	Extended contact	• Good for most hazardous chemicals • Poor fit (Note: Dexterity can be partially regained by using a heavier weight Nitrile glove over the Norfoil glove. Also, 4H brand gloves tend to provide better dexterity than the Silver Shield brand.)
Viton	Extended contact	• Good for chlorinated and aromatic solvents • Good resistance to cuts and abrasions • Poor for ketones
Polyvinyl chloride (PVC)	Specific use	• Good for acids, bases, oils, fats, peroxides, and amines • Good resistance to abrasions • Poor for most organic solvents
Polyvinyl alcohol (PVA)	Specific use	• Good for aromatic and chlorinated solvents • Poor for water-based solutions

For more glove selection charts, see Additional Resources for Glove Selection.

SDS/Labels/Emergencies

UCDAVIS
UNIVERSITY OF CALIFORNIA

SAFETY DATA SHEETS, LABELS, *and* HAZARDOUS CHEMICAL EMERGENCIES

Department Name:	Electrical & Computer Engineering
SDS Location:	0125 Office Bookcase
Contact for SDS Information:	Mike Banducci

Cal/OSHA's Hazard Communication Standard requires manufacturers of products containing hazardous chemicals to furnish safety data sheets (SDSs) for their products. The SDS provides information such as toxicity, flammability, and reactivity hazard data; handling and storage guidance; and emergency procedures to follow for spills, exposure, and fighting fires.

Manufacturers' labels must contain ***pictograms, signal words, hazard and precautionary statements, product identifier, and supplier information.***

Hazardous chemicals are not limited to the laboratory. Materials such as cleaning agents, paints, art materials, photographic chemicals, and automotive supplies may contain hazardous chemicals. Whenever there is doubt about the hazards associated with any material, contact your Supervisor or Safety Services at 530-752-1493.

Prior to performing a non-routine or unfamiliar operation that may involve hazardous chemicals, contact your Supervisor, Principal Investigator, or Department Safety Coordinator for information and training.

GHS- Hazard Pictograms and Related Hazard Classes

Exploding Bomb	Corrosion	Flame Over Circle
• Explosives • Self-reactives • Organic peroxides	• Skin corrosion/burns • Eye damage • Corrosive to metals	• Oxidizing gases • Oxidizing liquids • Oxidizing solids
Gas Cylinder	**Environment**	**Skull & Crossbones**
• Gases under pressure	• Aquatic toxicity	• Acute toxicity (fatal or toxic)
Exclamation Mark	**Health Hazard**	**Flame**
• Irritant (eye & skin) • Skin sensitizer • Acute toxicity • Narcotic effects • Respiratory tract irritant • Hazardous to ozone layer (non-mandatory)	• Carcinogen • Mutagenicity • Reproductive toxicity • Respiratory sensitizer • Target organ toxicity • Aspiration toxicity	• Flammables • Pyrophorics • Self-heating • Emits flammable gas • Self-reactives • Organic peroxides

IN CASE OF EMERGENCY, CALL 911

For skin or eye contact, immediately flush the affected area with running water for at least 15 minutes. If a substantial portion of the body is involved, use a safety shower. Seek medical attention. If the chemical is toxic, or if its toxic properties are unknown, **call 911**.

For inhalation or ingestion, follow instructions on the product label or SDS. Seek medical attention or **call 911**.

For chemical spills, check product label or SDS for instructions. If you suspect the chemical is flammable, extinguish all ignition sources. If instructions are not immediately available, the spill is large, or if chemical has definite or unknown corrosive, explosive, or toxic properties, evacuate and restrict access to the area and **call 911**. Clean up small spills ***only*** if you are trained and have access to spill kit supplies. See Safety Net #13 for detailed guidelines.

NOTICE TO EMPLOYEES: Under California Code of Regulations, Title 8, section 3204, you have the right to see and copy your medical records and any records your employer maintains of your exposure to hazardous substances or harmful physical agents. In addition, you, your personal physician, or your collective bargaining agent may request information contained in SDSs. No discrimination action (including discharge) may be taken against you if you exercise your legal right.

Potential Job Related Hazards

- Exposure to needles and discarded sharps.
- Exposure to biological wastes via inhalation, ingestion, or injection.
- Exposure to compressed gases and liquids.
- Exposure to electrical hazards. Many electrical motors, tools, and experimental devices can malfunction and produce serious electrical shocks.
- Exposure to radioactive materials via inhalation, ingestion, or injection.
- Exposure to rotating machinery.
- Exposure to toxic and/or hazardous chemicals including skin/eye contact, inhalation, ingestion, or injection. This also includes hazardous waste materials, properly stored and scheduled for timely pick up.

Potential Job Related Hazards

- Exposure to flammable liquids.
- Exposure to slipping, falling, tripping hazards. Fluids may be spilled on the floor and electrical and/or computer cords or other research materials, boxes, etc., may be left in walkways, inside or outside of the building.
- Exposure to heavy objects. Laboratory supplies, tools, and test apparatus are often heavy and require proper lifting techniques and/or lifting equipment.
- Exposure to forklifts and overhead cranes carrying heavy loads.
- Exposure to rodents and pests.
- Exposure to potentially working late with minimal security.
- Exposure to welding arc and cutting torch glare.

Potential Job Related Hazards

- Exposure to airborne particles.
- Exposure to eye, neck, back, arm, wrist strain, and repetitive motion injury.
- Exposure to laser and ultraviolet light.
- Exposure to cryogenic materials.
- Physical injuries due to fires, earthquakes, bomb threats and workplace violence.
- Motor vehicle accidents involving personal injury, or property damage.
- Exposure to high noise environment.
- Exposure to heavy and high strength magnets.

Waste

- Chemical Acids/Bases
- Chemical Waste - Safety Net #8
- Sharps
- All waste must be properly labeled and removed within six months of waste label date
- UC Davis WASTe System online

CHEMICAL SPILLS – SAFETY NET #13

SWIMS

- STOP - working.
- WARN - other people in the lab.
- ISOLATE – the area.
- MONITOR – yourself for an injury.
- STAY – in the area.

Caution Signs

Caution Signs

Building Egress Example
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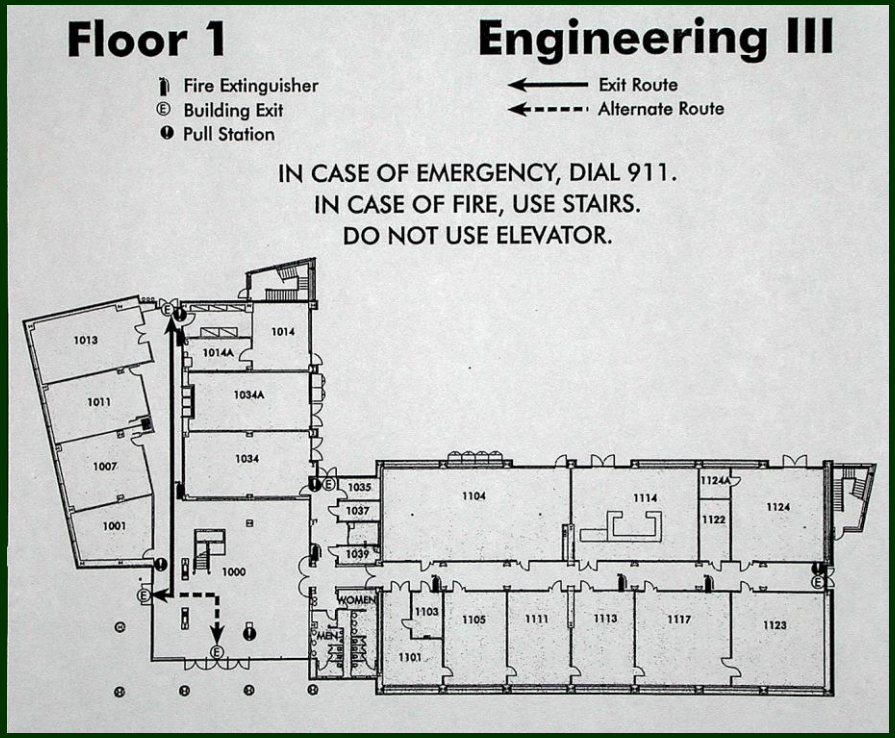
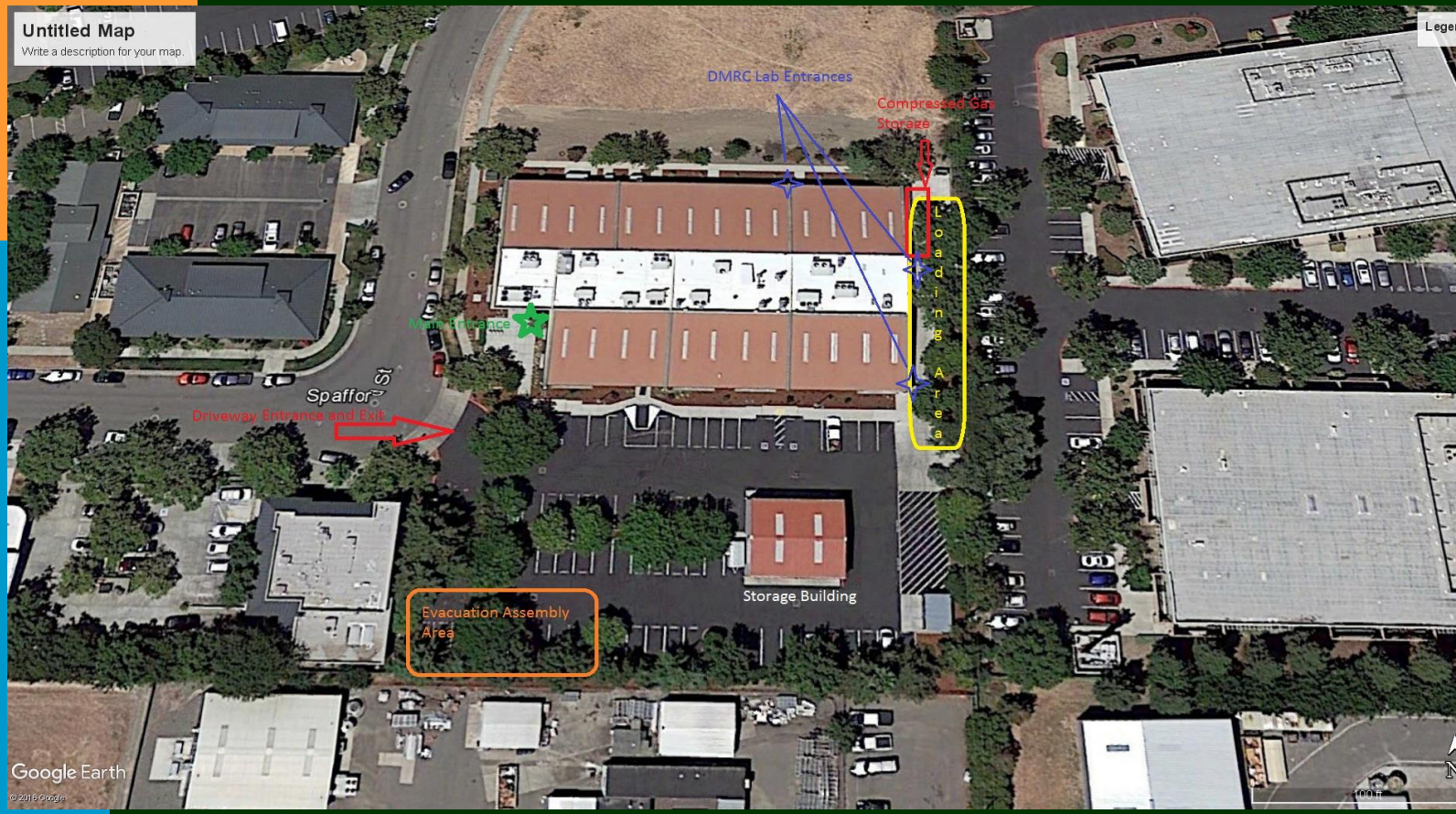
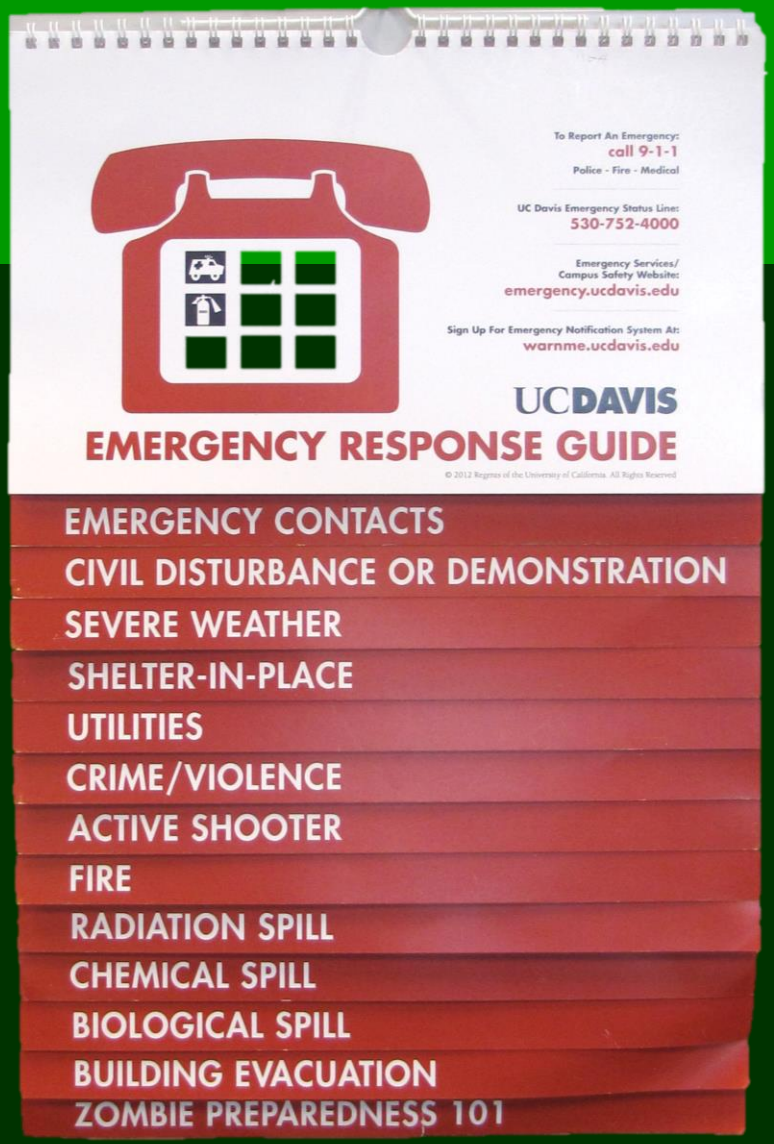


Building Egress Example
2900 Spafford, note the evacuation area in the parking lot (in orange)



Emergency Response Guide



Summary

- Use the resources available
- Take the classes – UC Laboratory Safety Fundamentals (**required**), laser (LUA), biological (BUA), radiation (RUA), X-ray (MUA),electrical, and chemical.
- Plan ahead, think safety…

- ASK QUESTIONS

UCD RIGHTS

You have the right to:

- Training
- Safe workplace
- File a formal complaint
- Get involved with safety

GENERAL WORKPLACE SAFETY

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Millimeter Wave Research Group
530-957-0389

THINK SAFETY