

FS&T Pilot Plant Safety Orientation Manual

The Food Science & Technology Department California Processing Tomato Industry Pilot Plant (CPTIPP) is one of the finest facilities of its kind in the country. Occupying 4,000 sq. ft. of space, it has capabilities in food handling (for raw agricultural commodities- cleaning, grading, and preparation of material from the field as well as controlled storage environments), thermal processing, concentration, freezing, and drying.

Policy

Use of the CPTIPP facility is readily available to faculty, staff, students, other department personnel, and industry. In order to ensure maximum safety and the most orderly working environment, access privileges are subject to established authorization and scheduling procedures.

Authorization

1. Each individual must thoroughly read this document.
2. After such, the bottom of this document must be signed and submitted to the Pilot Plant Manager. This form must be on file before working in the facility.
3. Every individual must either be thoroughly familiar with or receive instruction on the proper use of equipment they will be using. Faculty are personally responsible to ensure that staff, outside company personnel and/or students are adequately trained in safety procedures and safe operation of equipment.
4. Other specific authorizations include:
 - Only certified forklift operators are allowed to use the forklift
 - Only trained personnel are to operate the overhead crane system(still retort only).
5. ONLY properly trained UC Davis employees, students, faculty and staff are authorized to utilize the equipment. Vendors and clients are not allowed to operate the equipment.

Scheduling and Access to the Facilities

1. Any activity in the CPTIPP should be scheduled with the Pilot Plant Manager by **filling out the Information Form. The Pilot Plant manager will contact you regarding your project after receiving the form.**
2. Normal hours for CPTIPP facility use are 7 AM to 4 PM. Work should be completed within this time frame. When exceptions are necessary, you must notify either the Pilot Plant manager of your plans. **At no time may any individual work in these facilities after hours alone.** There must be a second person with you at all times.
3. Try to be somewhat flexible in your plans as occasionally schedules may have to be changed depending on availability of equipment and/or floor space. It is advisable to come to the CPTIPP the day before to assist with setup.

4. Schedule visitors and/or tours with the Pilot Plant manager in advance so as to be made aware of any potentially dangerous conditions.

Note: In any issue involving personnel safety, the Pilot Plant manager has the authority to deny access to the facilities until the issue is satisfactorily resolved.

Using Services and Equipment

While the CPTIPP facility is a safe place to work, there are dangers and extreme care is necessary at all times. Be aware of potential hazards.

Do not use any of these services or equipment until you know:

1. How to safely connect them
2. How to safely use them
3. How to safely disconnect them
4. How to safely disassemble, clean, and reassemble them.

Do not start your operation -- if you have any question about the above four points.

Your work may involve use of a variety of services including:

- *cold and hot water,*
- *DI water*

WARNING: Avoid spraying water on any motor or electrical outlet.

- *electricity* (110v and 208v (single & three phase), 480v service (three phase))

WARNING: Check carefully for any frayed cord or loose connections. If noticed, stop immediately and notify the Pilot Plant manager.

- *compressed air* (adjustable psi, valve tag (CA)),
- *vacuum*, (valve tag(VAC)
- *natural gas* (valve tag (NG)
- *Culinary steam* (adjustable psi) *and industrial steam* (150psi).

The culinary steam pressure steam outlets are coded with a valve tag (STM-C), and the industrial steam is coded with a valve tag (STM-I)

WARNING: Steam lines are under high pressure and represent one of the most common dangers in the CPTIPP.

Do NOT attach or detach steam lines!

The manager is available to perform all steam connect and disconnect operations. If, for some reason, Pilot Plant personnel are not available, do not touch and call UCD Facilities at (530)752-1655.

NOTE: A good practice is to have the steam outlet of the equipment open slightly so that condensate can be released (usually both the inlet and outlet steam valves of a piece of equipment will be left open). Using protective gloves, slowly open the main steam valve at the supply line (This will be performed by the CPTIPP Staff)

Completion of the **Equipment Use Sheet** which can be obtained from the Pilot Plant manager is mandatory. Fill out your name or the company's name; the name of the machine and the number of hours you have used this piece of equipment. This tracking form is not only used for billing purposes but also serves as a machinery maintenance log.

Remember, do not use any of these services or equipment until you know:

1. How to safely connect them
2. How to safely use them
3. How to safely disconnect them
4. How to safely disassemble, clean, and reassemble them.

If you do not know the proper operational procedure or need additional information -- BE SURE TO ASK.

Hazardous Equipment Usage:

The use of any equipment which presents a high degree of hazard will require direct authorization from the Pilot Plant manager.

- Retorts require certified operators.
- Use of the forklift in requires a certified operator.

Personal Gear:

1. Clothing - Long pants are required in the CPTIPP. No shorts or skirts. Clothing should be snug, not loose or floppy. Lab coats are undesirable especially when unbuttoned. No loose ties or apron strings.
2. Footwear - Non-skid enclosed shoes or boots; rubber pullover boots are highly recommended. Absolutely no open-toed or open-heel footwear.

Warning: When wet, the floors of the CPTIPP can be extremely slippery.

3. Hair Coverings - **A hair covering must be worn upon entering**- Hair nets are located on or near main entrance doors entering the CPTIPP.
4. Safety Glasses - It is recommended that safety glasses be worn whenever working in the Pilot Plant. They are supplied for you and are located in the safety cabinet.

•Full face shields are also available upon request.

5. Ear Plugs - Ear plugs are provided whenever you are working with excessively noisy equipment. If your work will produce high noise levels, post the sign "[Hearing Protection Required](#)" at the entrance to the Pilot Plant. The sign is in the safety cabinet. Ear protection is available at the safety cabinet.
6. Insulated Gloves - Rubberized insulated gloves are in the safety cabinet and should be used whenever you are working with steam or chemicals. Please return these to the cabinet when you are finished using them.
7. Disposable Gloves - Must be used when handling foods that will be consumed. These are located on the wall right as you enter the CPTIPP.

Take care not to cross contaminate.

- Jewelry should not be worn in the CPTIPP. Rings and watches should be removed. Plain wedding bands are acceptable.

Hygiene and Other Common Sense Matters:

It is expected that sanitary hygienic practices are followed whenever you are working with food.

- Handle food only with clean hands or gloves.
 - Wash hands thoroughly before returning from the restroom (hands should be under water and scrubbed with soap for a period of 15-60 seconds; rinse well and dry).
 - There should be no food or drink in the pilot plant area; no chewing gum.
 - Do not sit on the work tables.
 - "Lock-in" the casters of any work table or equipment you're using.
- No smoking in any building on the campus.

Chemical Usage:

When using chemicals, other than detergents, you must:

- Have ready access to and follow precautions in Material Safety Data Sheets (located in room 1105).
- Notify others in the area of potential hazards.

Properly label every container with the compound(s), concentration, date, and name of person who either prepared it or is using it. Follow the RTK (Right-to-Know) procedure.

Never store chemicals in the CPTIPP facility, chemicals should be stored in the Chemical Storage Cage in the equipment storage room 1101G.

In case of a minor spill, a spill response kit is located in the equipment storage room 1101G.

Failure to Follow Safe Practices:

Upon failure to observe safe practices an individual will:

- Be immediately notified by the manager and the incident recorded
- Upon continued failure, be reported to their direct supervisor
- Upon further problems, be referred to the department chairman.

Personal Injury Accidents:

Accidents often happen when doing repetitious jobs or when taking shortcuts or just not paying close attention to the work at hand. Consider the "what ifs".

For example,

What if a machine needs to be shut off fast -- where is the on/off switch, where is the electrical plug or the circuit breakers?

What if you need help fast -- is someone nearby, where are the phones, the first aid kit?

Be prepared for an accident **before** something happens.

1. In case of a serious accident call an ambulance immediately - dial (911). Report any injury to the Pilot Plant Manager (Amy Fletcher, 530-752-7162, ahfletcher@ucdavis.edu)
2. The first aid kit is in the safety cabinet.
3. Safety shower and eye wash station are located outside the main entrance to the pilot plant across the hallway (to the right of FST Analytical Lab room 1104).
4. Fire extinguishers are located to the left of the main entrance to the CPTIPP and to the left of the South East corner man door of the CPTIPP.

Food Safety, Processing of Low Acid Foods, Food Storage

Sensory Evaluation Products and Record Keeping:

Sensory testing involving human subjects must first be approved by UC Davis Office of Research. Refer to their Web site for instructions and training requirements.

Again, use common sense and follow good hygienic practices. Use clean wholesome food. Clean and sanitize the equipment, utensils, and cutting boards. Wear disposable gloves. Be aware of temperature exposure. Clean as you go. Dispose of unwanted or unusable foods properly.

Notify the Pilot Plant manager if you are using a non-certified FDA procedure. Any non-certified process is extremely dangerous and the containers of such products must be clearly marked with a "Not for Human Consumption- Research Use Only" label.

They should be stored in the researcher's lab not in common storage, preferably under lock and key.

Label and date every container that enters the storage rooms clearly and completely. Use permanent markers and labels that adhere well regardless of temperature.

If products are outdated, moldy, rotten, or unwanted - dispose of it properly and thoroughly wash any reusable container.

Products produced for Sensory Evaluation:

1. Low acid foods must meet FDA approved methods.
2. Use only food grade additives in products to be consumed.
3. Use disposable gloves when handling food for consumption.

Clean-up:

It is the responsibility of each user to clean their work area, equipment and utensils. Sweep up all solids and discard in trash receptacles **before** hosing down the floor.

Do not wash food down the drain.

WARNING: Be careful not to spray water onto electric motors and cords.

Each individual should remove their own trash to the dumpster on the south side of the building behind the CPTIPP.

Again, before cleaning a piece of equipment first ascertain that the power is off and it's disconnected from the electricity.

Thoroughly wash, scrub, rinse and sanitize equipment. Allow to air dry before reassembling. If knives, blades or other cutting surfaces are exposed, use extreme caution. If possible, cover these areas and post a warning of the potential danger.

General Safety Considerations:

Use common sense and work carefully at all times. If you are unsure of what to do or have questions while working, contact CPTIPP staff before proceeding. Try to prevent an accident from happening -- think before you act!

Unplug equipment before cleaning, disassembling and while not in use.

Be very careful with water sprays especially around electricity.

Do not stick hands, fingers or any utensil into any machine while it is operating or even while it is plugged in.

Do not try to catch falling knives. Don't even try to catch or reposition fruits/vegetables entering running machinery.

Lockout/Tagout Protocol:

The lockout/tagout program is designed to prevent the continued use of damaged or malfunctioning equipment. Lockout devices are on the wall of the dry equipment storage room. Each individual is responsible to lockout and tag any piece of equipment he or she believes is unsafe or not operating properly. Steam lockouts consist of a plastic housing closed over the steam valve and padlocked. To lock electrical equipment, enclose the plug in the lockout housing and padlock it. Remember to sign the card and inform the manager.

Miscellaneous Information:

Phone numbers:

Amy Fletcher: Pilot Plant Manager – (O) 530-752-7162 (C) 530-219-9517

Email: fstpilotplant@ucdavis.edu or ahfletcher@ucdavis.edu

CPTIPP- 530-752-1365

UCD Facilities- 530-752-1655

Restrooms – are located down the hallway from the CPTIPP

Dept of Food Science & Technology Pilot Plant Safety Training Record

I _____ have read and understood the FS&T Pilot Plant

(Name)

handout provided to me on _____.

(Date)

(Signature)

(Trained By)

(Date)