



FS&T Pilot Plant Use Policy

University California, Davis
August A. Busch III Brewing & Food Science Laboratory

FS&T Pilot Plant (CPTIPP)
Department of Food Science & Technology

April 5, 2016

Personnel:

Pilot Plant Manager – Amy Fletcher

1. Goals:

- a. To create a professional environment in which teaching, research, outreach and extension activities can be conducted in support of the mission of the Department of Food Science & Technology program at UC Davis. The activities of the CPTIPP must generate sufficient economic returns to cover CPTIPP plant employee salaries and enable appropriate maintenance of the facilities. As such, CPTIPP priorities are as follows:
 - i. Teaching:
 1. To provide hands-on learning experiences for students enrolled in Food Science & Technology and related curricula.
 - ii. Research:
 1. To provide a state-of-the-art facility and technical assistance for conducting food related research at the testing/research/pilot plant level of production.
 2. To assist in the transfer of new technology from the research program to the industry.
 3. To provide facilities and staff support on a fee-for-use basis to assist companies and individuals with production and testing of product formulations provided by the client.
 - iii. Outreach/Extension:
 1. To provide facilities for use in applied extension research and continuing education programs.

2. Authorized Personnel- Processing Area, Environmental Rooms, and Storage Rooms:

- a. Every person that works in the pilot plant should have safety training specific to the pilot plant environment (CPTIPP Safety Orientation Manual) and an orientation training covering appropriate aspects of the pilot plant for their needs, in addition to the other

safety training required by the University. Only individuals with this training will be authorized to work in the pilot plant. The Pilot Plant manager (or designee) will provide this training.

- b. Visitors should always be accompanied by a person authorized to be in the pilot plant. For liability reasons, persons that are not students, staff, people holding contracts for product development/research activities, or officially enrolled in a cooperative extension short course of the University are not allowed to work in the pilot plant. Visitors touring or observing a process should be kept at a safe distance away from hazardous equipment that is in operation.
- c. Tour Groups not affiliated with a class or program of the Department of Food Science & Technology are being handled and conducted through the Robert Mondavi Institute. Please contact Babette Orendain at brorendain@ucdavis.edu. All members of a tour group must be 12 or older. Children under the age of 12 are not allowed in the pilot plant processing areas.

3. Authorized Activities and Materials:

- a. Only activities approved and scheduled by Pilot Plant Manager will be allowed in the pilot plant.
- b. All activities in the pilot plant will use food grade materials. No experiments using nonfood grade ingredients, pathogenic organisms, or nonfood materials are to be used or processed in the food processing equipment, placed in food grade environmental rooms, or in food grade storage areas. Processing of cosmetics, drugs, manure, and other nonfood materials in the CPTIPP is not appropriate.
- c. Pump oils and hydraulic fluids that are inside the motor drives of equipment that are required for their operation are allowed in the processing area. Extra oil or fluids should not be stored in the pilot plant areas. They should be stored in the equipment storage room (1101G).
- d. Specific training is required for operation of the overhead crane, pallet lifts, and forklifts in the CPTIPP. If you have not been trained and do not have a training certificate **do not** operate these devices.
- e. Glassware and glass containers, laboratory glassware, wooden items, (e.g., flasks, graduate cylinders, pipettes, beakers, thermometers, wooden shipping containers, etc.) are prohibited from the pilot plant.
- f. Glass thermometers and thermometers containing mercury are prohibited (except for equipment that has these thermometers built in). Metal probe digital or dial thermometers shall be used. These will be provided by the user, the CPTIPP does not provide thermometers.
- g. The overhead door should only be opened to bring in or remove large pieces of equipment from the pilot plant as authorized by the Pilot Plant manager. Opening the overhead door allows insects and birds to enter the processing area. Shipping and

receiving of items and trash removal should use the Equipment Storage room (1101G) roll-up door that is provided for this purpose.

- h. Equipment and supplies that are packaged in wood or cardboard shipping containers should be received in Equipment Storage room (1101G) using the roll-up door and driveway area and the packing materials should be removed in the receiving area, not in the pilot plant. Nails, screws, metal straps, wood, and other packing materials should not be brought into the processing area.
- i. All activities carried out by students and department staff in the pilot plant should be scheduled. Only students and staff that have scheduled activities should be working in the pilot plant.

4. Scheduling:

- a. The Food Science & Technology Department website <http://foodscience.ucdavis.edu/> has a link labeled “Facilities”, follow that to the “California Processing Tomato Industry Pilot Plant”. Please click this link to see pictures of the equipment, equipment capabilities, equipment rate info, contact info, and a pdf style form for project inquiry that gets filled out by the prospective user (description of project, user, equipment needs, utility needs, duration of project, storage, etc.) and emailed to the Pilot Plant Manager for evaluation and feasibility.
- b. Priority in Scheduling:
 - i. Teaching:
 - 1. Classes have first priority with respect to scheduling. Final requests for dates during the Fall , Winter and Spring quarter and request for use of specific pieces of equipment during a quarter are due no later than 21 days before the first day of classes.
 - ii. Research:
 - 1. Research projects that produce revenue for the CPTIPP. Research projects that will utilize the pilot plant (including its storage facilities) for any portion of the proposed work should develop a budget for the work based on the rate structure.
 - iii. Cooperative Extension Workshops:
 - 1. Prior to finalizing the date for the cooperative extension work that will involve the pilot plant, the leader of the workshop should discuss the project/demo and the costs associated with performing the demo or running the project in the CPTIPP with the Pilot Plant Manager and receive approval of the dates to ensure that they do not conflict with prior teaching and major research project commitments that have already been scheduled.
 - iv. Other projects as established in consultation with the Pilot Plant Manager.
- c. **Scheduling Procedure**

- i. Fill out the “Information Form” on the Food Science & Technology website under the California Processing Tomato Industry Pilot Plant. The Pilot Plant manager will be in touch regarding project feasibility, scheduling and cost.
- ii. Scheduling of the CPTIPP is for equipment use and facilities support ONLY. No inference is made to offer technical support in any capacity. Technical support must be arranged by separate agreement between the person/company engaged in activity in the CPTIPP, and the faculty member(s) themselves. See Section 11 (b). for more information regarding faculty managed industry projects.

5. Dress and Personal Hygiene Requirement:

- a. General:
 - i. Faculty, staff, and students should dress in a professional and hygienic manner at all times. Shorts, sandals, open toed shoes, should not be worn in the pilot plant. All jewelry, watches, rings, necklaces, ear rings, etc. should be removed before entering the CPTIPP. Good Manufacturing Practices should be followed, which includes no eating or drinking in the CPTIPP. The area is a food production facility and shall be treated as such.
- b. Disease control:
 - i. Any person who, by medical examination or supervisory observation, is shown to have, or appears to have, an illness, open lesion, including boils, sores, or infected wounds, or any other abnormal source of microbial contamination by which there is a reasonable possibility of food, food-contact surfaces, or food-packaging materials becoming contaminated, shall be excluded from any operations which may be expected to result in such contamination until the condition is corrected. Personnel shall be instructed to report such health conditions to their supervisors.
- c. Cleanliness:
 - i. All persons working in direct contact with food, food-contact surfaces, and food-packaging materials shall conform to hygienic practices while on duty to the extent necessary to protect against contamination of food. The methods for maintaining cleanliness include, but are not limited to:
 - 1. Wearing outer garments suitable to the operation in a manner that protects against the contamination of food, food-contact surfaces, or food-packaging materials.
 - 2. Maintaining adequate personal cleanliness.
 - 3. Washing hands thoroughly (and sanitizing if necessary to protect against contamination with undesirable microorganisms) in an adequate hand-washing facility before starting work, after each absence from the work station, and at any other time when the hands may have become soiled or contaminated.

4. Removing all unsecured jewelry and other objects that might fall into food, equipment, or containers, and removing hand jewelry that cannot be adequately sanitized during periods in which food is manipulated by hand. If such hand jewelry cannot be removed, it may be covered by material which can be maintained in an intact, clean, and sanitary condition and which effectively protects against the contamination by these objects of the food, food-contact surfaces, or food-packaging materials.
5. Maintaining gloves, if they are used in food handling, in an intact, clean, and sanitary condition. The gloves should be of an impermeable material.
6. Wearing, where appropriate, in an effective manner, hairnets, beard covers, or other effective hair restraints.
7. Storing clothing or other personal belongings in areas other than where food is exposed or where equipment or utensils are washed (lockers are available in the men and women's restrooms or leave belongings in the classroom).
8. Confining the following to areas other than where food may be exposed or where equipment or utensils are washed: eating food chewing gum, drinking beverages, or using tobacco.
9. Taking any other necessary precautions to protect against contamination of food, food-contact surfaces, or food-packaging materials with microorganisms or foreign substances including, but not limited to, perspiration, hair, cosmetics, tobacco, chemicals, and medicines applied to the skin.

6. Main Processing Area in CPTIPP:

a. Safety:

- i. The most common safety risks for new persons in the pilot plant are the hose stations. These are mixing stations for cold water and steam. The red knob is steam, NOT hot water. Every person must learn the proper and safe operation of the hose stations before working in the pilot plant.

b. Equipment:

- i. The equipment in the main processing area is divided into three categories:
 1. Equipment that is directly operated, maintained, and scheduled by the Pilot Plant Manager.
 - a. The major pieces of equipment in the CPTIPP that are operated and maintained by the CPTIPP are the *freeze dryer, the blast freezer, the steam jacketed kettles, the sorting line, the lye line, the Atlas Pacific Peach Pitter, the Odenberg flash steam peeler, the Key Technology Blancher, the still retort, the rotary steritort,*

the APV homogenizer, the Dixie double seamer, the Hoyer KF80 and the Hoyer/Tetra Pak addus, the Hobart dicer, and the Rossi Style Evaporator.

2. Equipment that is directly used, operated, and maintained by a research group as part of a specific faculty research program.
 - a. Other equipment in the CPTIPP has been purchased and is supervised and operated by individual research programs. The use of this equipment is under the direction of the faculty member program responsible for that equipment. Current example of this type of equipment is the APV lab spray dryer. Use of this equipment needs to be approved in writing directly with the individual faculty member responsible for the equipment.
 3. Equipment that is owned by private companies under contract with the CPTIPP and under the supervision of the manager or working in conjunction with and under the supervision of a faculty member (currently no equipment in this category, but maybe in future).
- c. Utilities:
- i. Connection of all equipment and allocation of space for equipment is under the direction of the Pilot Plant Manager. Any unsafe utility connection or failure of any mechanical or other utility service should be reported immediately to the Pilot Plant Manager or UC Davis Facilities (530-752-1655).
- d. Security:
- i. The AAB III building will be opened from 8am-5pm Monday-Friday. The CPTIPP hours are 7:30am-4:30pm Monday-Friday. The CPTIPP and storage areas will be locked, if access is necessary best to work out schedule in advance with Pilot Plant Manager. The doors should not be propped open. Authorized users of the CPTIPP will be issued a card key to the CPTIPP processing areas and storage rooms. No one should be entering the facility from the doors on the south side of the facility that lead directly outside. All entry should be from the hallway doors located inside the building. Minimal exiting through the doors that go directly outside is allowed for trash removal or other similar tasks, but these doors shall not be used for routine exiting of the facility.
- e. CPTIPP Activities in Off-Hours:
- i. All off-hour (i.e., after 4:30 pm and before 7:30 am) activity needs to be scheduled and approved by the Pilot Plant Manager. If the off hour activity involves the use of a hose station or operation of processing equipment, then for safety reasons two people must be present at all times during the activity. One to carry out the activity and one to call for emergency help if there is an accident.

- f. Clean Up:
 - i. There is no contract cleaning in the CPTIPP. Groups generating trash are responsible for removing their own trash to the dumpster OUTSIDE in the trash area (South side of the building).
 - ii. Groups are also responsible for cleaning of equipment and areas that they use to include exclusive use or partial-use storage rooms, unless prior arrangements are made and agreed upon. Research, teaching, and extension are expected to clean up the area and the equipment they use. This includes product on the floor, product caught in drain traps, and product on the surface of equipment.
 - iii. If equipment is not cleaned properly, then CPTIPP staff will re-clean the equipment and the program leaving the equipment or area dirty will be billed for cleaning. Routine cleaning of floors, walls, steam pipes, etc. is the responsibility of the CPTIPP staff.
 - g. Storage:
 - i. The CPTIPP is a food processing, production, development, and research laboratory. As such it is designed to be an activity center, and not a storage location. Therefore, space in the CPTIPP shall not be used for storage of excess equipment or supplies. Providing storage other than outlined in Section 6 below, is not the responsibility of the CPTIPP or staff.
- 7. Equipment Storage and Dry Storage Areas (CPTIPP):**
- a. General:
 - i. Due to limited space, all storage areas will be maintained and monitored by the Pilot Plant Manager unless 'exclusive use' agreements are in place.
 - ii. Requests for storage of equipment should be made to the Pilot Plant Manager's office and removal of equipment from the storage area should be approved.
 - iii. Metal storage rack (1) on wheels is provided for plastic buckets and other containers used routinely in the main processing area. These utensils are to be cleaned after use and stored on the rack. They should not be placed on top of, or hung on, steam lines, electrical lines, or on processing equipment.
 - iv. Storage of dry ingredients and supplies for specific research and teaching program must be approved by the Pilot Plant Manager and these items must be kept in the spaces designated for their storage.
 - v. All food ingredient materials must be kept in sealed containers. An opened bag of ingredients or packaging material in storage areas is unacceptable. Opened bags of ingredients and packaging materials need to be sealed in plastic or metal containers to avoid attracting insects and rodents. These containers need to be provided by the owner of the ingredient. All materials should be dated and labeled with the name and contact information. Open or improperly stored materials in dry storage areas will be removed and discarded during routine cleaning.

- b. Dry Storage Room- 1101D:
 - i. There is one dry storage area for the CPTIPP that is located off of the vestibule at the west end of the pilot plant (room 1101D).
 - c. Equipment Storage Room- 1101G:
 - i. There is one equipment storage space that is also located off the vestibule at the West end of the pilot plant (room 1101G).
 - 1. The equipment storage area (1101G) is for storage of parts and frequently used support equipment and supplies for the processing area. Carts on wheels, tools, chemical cage, and related small items should be stored in this area not in the pilot plant main processing space. Small equipment parts that are not attached to assembled equipment should not be kept in the main processing area. This area is for equipment storage only, and is not to be used for general purpose storage or storage of laboratory supplies.
- 8. Cold Rooms and Freezer (CPTIPP):**
- a. General:
 - i. The cold rooms 1101B, and 1101F (temperature adjustable from 33°F-53°F) in the CPTIPP and freezer 1101C (temperature adjustable from (-4°F-(-18°F)) are used by the CPTIPP. These are locked areas and may be designated for specific projects and activities.
 - ii. All items stored in the CPTIPP cold rooms and freezer rooms should be food grade; the department of Food Science & Technology has cooler and freezer space at the Cruess Hall facility that is specifically designated for nonfood use.
 - iii. Storage of items in these areas must be approved by the Pilot Plant Manager.
 - iv. All items must be labeled with the name of the individual, the initial/removal storage date, identification of the item, and faculty member responsible for the material and emergency contact number in case there is a refrigeration failure.
 - v. The temperatures in environmental rooms and freezers are adjusted and maintained by the Pilot Plant Manager and/or University utilities maintenance staff. These are not to be adjusted by users. If a user observes a problem with one of these systems, it should be reported immediately to the Pilot Plant Manager or UC Davis Facilities (530-752-1655).
- 9. Receiving Area's:**
- a. CPTIPP Receiving Area:
 - i. The receiving area is a on the South side of the AABIII facility.
 - ii. The first two driveways on the right are for CPTIPP, and Milk Processing Lab operations.
 - iii. The 2nd driveway in is best for receiving items that are associated with the CPTIPP, BWF Food Science Lab or Milk Processing Lab.

- iv. Items should be uncrated in the receiving area or equipment storage room to avoid wood splinters, nails, screws and other objects in the processing areas. The roll-up doors to the receiving area are to be kept closed when not being used.

b. Brewery Operations Receiving Area:

- i. The receiving area is a on the South side of the AABIII facility.
- ii. The 3rd driveway on the right is for ALL brewery operations/deliveries.

10. CPTIPP Charges to Food Science & Technology Department Activities:

a. General:

- i. There will be a charge for using the CPTIPP facility for teaching, research, and cooperative extension, and also for staff time used in support of each activity. The recharge rates and usage fee are available upon request (rates are subject to change over time).

b. Teaching:

- i. Pilot plant staff time to setup, operate, and clean equipment for teaching labs will be charged an hourly labor fee, plus the cost of supplies and ingredients, and equipment. The Pilot Plant Manager will provide the faculty member a cost estimate at the time the laboratory sessions are scheduled.

c. Research:

- i. If a faculty member is conducting a funded industry project, then the CPTIPP will charge for pilot plant staff time and an equipment use charge. The equipment use charge will be estimated when the activity is scheduled by the faculty member with the Pilot Plant Manager.

d. Cooperative Extension:

- i. A nominal pilot plant use (per student or workshop specific) will be charged to all extension workshops and short courses to cover the cost of hair nets, disposable aprons, and cleaning supplies. In addition, pilot plant staff time will be charged at an hourly rate for all support and equipment use charges will added. An estimate of these charges should be made by the Pilot Plant Manager before the faculty or staff member schedules the workshop and these costs should be built into the workshop registration fee. If this is not done, the faculty member is still responsible for the actual CPTIPP costs incurred by the workshop.

e. CPTIPP Charges to Non Food Science & Technology Department Activities:

- i. There will be a charge by the CPTIPP to teaching, research, and extension for staff time used in support of each activity based and an equipment use charge based on the recharge rates and usage fee. These rates are available upon request (rates are subject to change over time).
- ii. If a project is expected to exceed \$10,000, require a confidentiality agreement, or require a nondisclosure agreement, then the Food Science & Technology

Business Manager MUST be consulted to see if any other documentation/involvement is required, and please keep in mind this process has to be approved by a division of UC Davis purchasing and this process can take up to 2 weeks.

11. Industry Projects:

a. General:

- i. The CPTIPP will provide billing information for outside entities using the CPTIPP to the Business Office. All industry projects are billed at the standard rate, to include CPTIPP personnel rates and equipment usage rates; the recharge rates and usage fee are available upon request (rates are subject to change over time).
- ii. Feasibility and Compatibility with Existing Programs:
 1. The first step in deciding if the CPTIPP should agree to do an industry project is the feasibility of successfully doing the project. Both the technical capabilities of the CPTIPP staff and the capabilities of the equipment should be considered.
 2. The second step in deciding if the CPTIPP should agree to do an industry project is the synergy of that project with the teaching, research, and extension program of the department. If the project to be carried out in the CPTIPP is unrelated to the department program, will place a large demand on the facility, staff time, and equipment, then it should be reviewed by the Department Chairman prior to providing an estimate or establishment of an agreement for the project.
- iii. Cost Estimates and Billing:
 1. Each project will be priced for the specific job with a written estimate of all charges (The recharge rates and usage fee are available upon request (rates are subject to change over time), responsibilities, and deliverables. The bid will include the specific date(s) when the work will be conducted. This bid needs to be signed by the company representative or individual and returned at least two weeks prior to the scheduled work. If any cancellation after the bid has been signed the company will be charged for any materials and prep that has taken place prior to the project starting. Please keep in mind the bid process has to be approved by a division of UC Davis purchasing and this process can take up to 2 weeks.
- iv. Limitations of Product Use:
 1. Products produced in the CPTIPP are for internal use within companies contracting for the research. If any of the product will be used for human sensory work, then the contracting company must arrange for

and complete appropriate microbiological and safety testing of the product prior to release of the product to the client.

2. Any sensory work carried out at UC Davis for a client on product produced in the pilot plant needs to be approved by the UC Davis Office of Research. Please refer their website and standard procedures and should be carried out in cooperation with the Sensory Program in the Department of Food Science & Technology.
- v. Reports:
1. The Pilot Plant Manager will provide the client with a written report for each project. The report will include all processing conditions and equipment used, the weights of ingredients used, product formulation, any test results, and any recommendations, problems, or comments. This report will be provided to the client within 21 days after the completion of the work, a copy will be provided to the Department Chair.

b. Faculty Managed Industry Projects:

- i. Some projects with companies or individuals require the specific expertise of a faculty member, use of the processing equipment that is part of a faculty member's research program, and the analytical support of the faculty members program. In this case, the faculty member will work directly with the client on the project. Work carried out in the pilot plant in a faculty managed industry project needs to begin by filling out the CPTIPP "Information Form". The CPTIPP facility, equipment usage fee, and potentially staff time will be billed to the faculty member as if the project had been carried out as a CPTIPP project to keep the billing rates for use of CPTIPP equipment consistent.
- ii. The faculty directed industry project must comply with all the policies and procedures of the CPTIPP, Department, and University.