

# Anheuser Busch InBev Pilot Brewery

## Safety Orientation Manual

The Food Science & Technology Department Anheuser Busch InBev Pilot Brewery (Pilot Brewery) is one of the finest facilities of its kind in the country. Occupying 5,000 sq. ft. of space, it has capabilities in nano-scale (5 gallon capacity) and pilot scale (1.7 hL) brewing operations including yeast propagation, industry-standard chemical analysis, temperature controlled fermentations, filtering, packaging, malting, and cold storage.

### Policy

Use of the pilot brewery 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 Brewery 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. Supervising faculty and Brewery Management are personally responsible to ensure that staff, outside company personnel, and/or students are adequately trained in safety procedures and safe operation of equipment. **DISCLAIMER:** Failure to follow proper safety protocol may lead to revoking of brewery access, serious injury, or death.
4. Only OSHA certified forklift operators are allowed to use the forklift.
5. Only trained personnel are permitted to operate the overhead crane system.
6. 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 unless specifically authorized through University-sanctioned approval.

### Scheduling and Access to the Facilities

1. Any activity in the Brewery, Winery, & Food Pilot Plant Facility should be scheduled with the Pilot Plant Manager by filling out the appropriate "[Use Request Form](#)" found on the [BWFPP website](#). The Pilot Plant manager will contact you regarding your project after receiving the form.
2. Other specific authorizations include:
  - a. Only certified forklift operators are allowed to use the forklift.
  - b. Only trained personnel are to operate the analytical equipment.
  - c. Only trained personnel are to operate packaging equipment.
  - d. Only trained personnel are to operate the nano-scale or pilot brewhouses.

## August A Busch III Brewing & Food Science Laboratory

3. 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.

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

## Using Services and Equipment

While the Pilot Brewery 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, including the use of steam generated hot (80 °C) water
- DI water

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

- Electricity (110v and 208v, single & three phase)

**WARNING: Check carefully for any frayed cords or loose connections. If noticed, stop immediately and notify the Pilot Brewery Manager.**

- Compressed air (adjustable psi, valve tag (CA))
- Compressed carbon dioxide

**WARNING: Contains liquid and gas under pressure – may explode if heated. Can cause rapid suffocation. May cause dizziness, drowsiness, nervous system damage, or frostbite.**

- Industrial steam (150 psi)

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 Pilot Brewery.**

**NOTE: The steam to the pilot brewhouse should be shut off daily. This procedure is to be performed by trained pilot brewhouse personnel only.**

- Corrosive and Oxidizing Chemicals

Completion of the [Use Request Form](#) is mandatory. Fill out your name or the company's name, the name of the equipment, and the number of hours you wish to use 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.**

Standard Operating Procedures (SOPs) should be provided for all pertinent operations within the brewery. Check with Brewery Management for these documents or direct instruction PRIOR to beginning any operation.

### **Hazardous Equipment Usage:**

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

- C.I.P. chemicals to be used by trained pilot brewery personnel only.
- Pressurization of any vessel in the pilot brewery is to be performed by trained personnel only.
- Use of the forklift in the pilot brewery requires a certified operator.

### **Personal Gear:**

1. Clothing - Long pants are required in the Pilot Brewery. 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. Coverall can be made available with prior notification and sizing information.
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 pilot brewery can be extremely slippery.**

3. Safety Glasses – It is recommended that safety glasses be worn during certain brewing operations. They are supplied for you in the safety cabinet and at the pilot brewery workstations when they are set up for classes. Please wipe down safety glasses before and after use.
4. Ear Plugs – The UC Davis Environmental Health and Safety Services (EH&S) performed a noise audit of the pilot brewery on August 25, 2014 and reported that the noise levels encountered in the pilot brewery were well below any Cal/OSHA regulatory levels but recommended hearing

## August A Busch III Brewing & Food Science Laboratory

protection be offered to those working in the pilot brewery to use at their discretion. Ear protection is available at the safety cabinet. The full report is available upon request.

5. Insulated Gloves - Rubberized insulated gloves are in the safety cabinet and at the pilot scale brewery and should be used whenever you are working with hot liquid and handling hot equipment.
6. Jewelry should not be worn in the Pilot Brewery. Ring and watches should be removed. Plain wedding bands are acceptable.
7. Long hair should be tied back.
8. For operations involving [exposure to large volumes of Carbon Dioxide \(CO<sub>2</sub>\)](#), a breathing apparatus is recommended. Both CO<sub>2</sub> monitors and respirators are available within the brewery.

## Hygiene and Other Common Sense Matters:

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

- Handle food only with clean hands or gloves.
- Wash hands thoroughly before returning from the restroom (hands should be underwater and scrubbed with soap for at least 20 seconds; rinse well and dry).
- There should be no food in the pilot brewery area; no chewing gum.
- Do not sit on the worktables.
- Lock the casters of any worktable or equipment you are using.
- No smoking in any building on campus. Per [CA Labor Code 6404.5](#), smoking is not permitted within a detectible distance of any food-grade facility.
- All personnel working within the brewery space must have appropriate, up-to-date safety certification through [EHS](#).

## Chemical Usage:

When handling hazardous chemicals, you must:

1. Have ready access to and follow precautions in Safety Data Sheets (located in room 1109C).
2. Notify others in the area of any potential hazards.
3. Know locations and proper operating procedures of eyewash stations, safety showers, hazardous spill equipment, and safety meters/alarms.

Properly label every container with the compound(s), concentration, hazards (flammability, health, reactivity/instability, and special), and the name of person who either prepared or is using the container.

Chemicals stored in the pilot brewery should be in a secondary container, locked container. Bulk chemicals are stored in the CIP/glycol chiller room, 1109E.

If any issue related to chemical safety arises, prioritize your safety, inform others within the hazard vicinity, and immediately notify brewery management.

## Failure to Follow Safe Practices:

Upon failure to observe safe practices, an individual will:

1. Be immediately notified by the Pilot Brewery Manager and the incident recorded.
2. Upon continued failure, be reported to their direct supervisor.
3. Upon further problems, be referred to the Department Chair.

## Personal Injury Accidents

Accidents happen when doing repetitious jobs or when taking shortcuts or when 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 Brewery Manager (Joseph Williams, 530-754-5766, [joewilliams@ucdavis.edu](mailto:joewilliams@ucdavis.edu)).
2. There are first aid kits in the Write Up Room (1109A), in the safety cabinet, and on the parts rack by the sink.
3. Safety shower and eye wash stations are located on the west wall of the pilot brewery between the main entrance and the Write Up Room **AND** in the CIP room, 1109E.
4. A fire extinguisher is located on the east wall of the pilot brewery in the south east corner between the Cold Room, 1109D, and the CIP room, 1109E.

## Food Safety and Food Storage

### Sensory Evaluation Products and Record Keeping:

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

Again, use common sense and follow good hygienic practices. Use clean, wholesome food. Clean and sanitize the equipment and utensils. Clean as you go. Dispose of unwanted or unusable foods properly.

Notify the Pilot Brewery 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 them properly and thoroughly wash any reusable container.

## Products Used for Sensory Evaluation:

1. All allergens must be clearly labeled.
2. Use only food grade additives in products to be consumed.

## 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 large amounts of solids down the drains. The bulk of spent grain, yeast, and hops should go into the compost bins.

**WARNING: Be careful not to spray water onto electric motors or cords, and ensure that electrical outlet covers are reinstalled when not in use.**

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

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

Thoroughly wash, scrub, rinse, and sanitize equipment. Allow to air dry before reassembling.

## General Safety Considerations:

**Use common sense and work carefully at all times. 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 when around electricity.

Be very careful around boiling liquids and steam.

## Lockout/Tagout Protocol:

The lockout/tagout program is designed to prevent the continued use of damaged or malfunctioning equipment. Lockout devices are in the pilot brewery, see the Pilot Brewer Manager for access. Pilot Brewery personnel are to lockout and tag any piece of equipment they believe 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.

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## Miscellaneous Information:

Phone numbers:

Glen Fox: Anheuser-Busch Endowed Professor of Malting and Brewing Science

Office: 530-752-9476

Email: [gpfox@ucdavis.edu](mailto:gpfox@ucdavis.edu)

Joseph Williams: Pilot Brewery Manager

Office: 530-754-5766 or CELL: 530-219-4524

Email: [joewilliams@ucdavis.edu](mailto:joewilliams@ucdavis.edu)

Jordan Beaver: Assistant Brewer

Office: 530-754-7629

Email: [jwbeaver@ucdavis.edu](mailto:jwbeaver@ucdavis.edu)

Pilot Brewery: 530-752-1352

Facilities: 530-752-1655

Restrooms are located down the hallway from the Pilot Brewery.