

Injury & Illness Prevention Program
San Francisco State University
CODE OF SAFE PRACTICES

General Area or Specific Job Safety: **Glass Blowing Studio (Room # FA - 171)**
Date Prepared: 11/2/00 Preparer: John Leighton

I. General:

1. Report all unsafe conditions to the instructor.
2. Report all accidents, injuries and illnesses the instructor.
3. In the event of a fire or explosion, sound the alarm, and call campus police (2222).
4. Upon hearing an alarm, stop working, turn off machinery, close furnace and kiln doors, and evacuate the room immediately.
5. Only trained and identified workers may attempt to respond to a fire or other emergency.
6. No horseplay or use of intoxicating substances is allowed in the studio.

Machine (Studio Equipment) Operations:

Workplace Safety Conditions:

1. Hand Tools:

Most burns in the hot glass shop are not the result of touching hot glass, they are from touching hot steel. Remember that blow pipes, punty rods, jacks, sheers, metal molds, and other metal tools can retain heat for several minutes after contact with the hot glass. Serious burns can result from touching the wrong end of such tools.

- Always put recently used pipes and puntys in the proper blow off buckets, with the cool end up.
- Keep your bench neat, with hot tools facing the back of the bench.
- Put handles on graphite paddles and rods.
- Never leave hot tools on the floor or marver.

Remember that as metal cools, any glass which is stuck to that metal will "blow off" with surprising force.

- Keep the level of glass in the "blow off" buckets down to 1/4 full so that flying chips of glass will stay inside the bucket.
- Put used pipes and puntys in the "blow off" buckets immediately after you break your piece off, don't hold them while you talk to other students.

2. The annealing ovens:

Annealing ovens, or lehrs, are heated with high voltage electric coils, the primary dangers are electric shock, burns from hot bricks and metal frames, and flying chips of glass.

- Get help from your partner when putting pieces into the lehr. Whenever possible, use the fire proof gloves to put pieces away.

- If you put a blow pipe or punty into the oven (to pick up color or knock off a piece), DO NOT touch the heating coils - a strong electric shock will result.
- If you remove a hot piece from the lehr, use gloves and put it immediately in the "blow off" bucket.
- If you remove hot bricks for the lehr, use gloves and place them on the floor, out of the way. Draw a circle around them with chalk, and label them with the words "Hot Bricks".
- Never put anything but glass or bricks into a lehr without instructors permission.

3. The Furnaces and Glory Hole:

The furnaces and glory hole are heated by a mixture of forced air and natural gas. To prevent the danger of explosion each is equipped with a safety device called a *Fire Eye*. Each burner has an electronic "eye" aimed at the flame. If the flame changes color, (which happens in a power failure) or if anything passes between the "eye" and the burner, the gas will automatically shut off.

The furnaces and glory hole are also equipped with automatic mixing devices which are similar to the carburetor in a car. To adjust the burners, you need only to turn the air valve up or down, the mixers will automatically adjust the gas flow to keep the flame in balance.

- Keep the metal heat shields, blow pipes, puntys, etc. Away from the burners and *Fire Eyes*.
 - Never attempt to adjust or light the furnaces or glory hole unless you have seen a demonstration and you understand each step in the procedure.
 - Always open the air valve first, (to blow out accumulated gas) before attempting to light furnace or glory hole.
 - Always have a lit flame (newspaper torch) under the burner tip before opening the gas valve or using the "over ride" switch.
 - Always stand to the side, no in front of, the piece of equipment you are lighting
 - Make air valve adjustments very slowly as turning the valve too fast will cause the burner to blow itself out.
 - Never try to fool the *Fire Eye*. If something makes the furnace keep going out get help from the instructor.
 - Never leave the door to the furnace of glory hole open. This can cause them to blow out
- PLEASE: Shut the doors to the furnaces VERY GENTLY.

Safe Work Practices:

1. Steam Burns:

Steam burns are common in the Hot Shop. Remember water and hot glass make very hot steam!

- Cut the corners off wet newspaper and hold the paper so the steam will be directed away from your wrists.
- When blowing in wet molds, make sure your partner is clear of steam which will be released from the mold.

- Blowing in a wet mold makes "back pressure" which can cause the piece and blow pipe to "shoot" out of the mold. You can lose teeth if you aren't careful.
- Never put a hot blow pipe, (unless you cap the end with your thumb) in water as steam will shoot up the pipe and squirt out the mouth piece.
- Use caution when "scraping" old glass into water. Too much hot glass will cause boiling water and steam to slop out of the bucket onto the floor, onto your feet, and it will burn you.
- Wood blocks can also cause steam burns, shake all water out of blocks before you touch them to the glass.

2. Partner Awareness:

The most dangerous part of the blowing process can be your blowing partner!!

- Always know where your partner is while you are working.
- If you are moving through the studio, to assist your partner, or for any other reason, make sure they see you. If you walk behind a blower at the furnace, glory hole, or marver, SHOUT OUT, in a loud clear voice "Behind You".
- Ask your partner if he or she will need your help before you leave the studio. Ask them if they want you to "bench" a piece for a punty, ask if they want you to glove a piece into the lehr, ask how they want a bit, punty or second bubble brought. Make a "dry run" through any new move. Ask your partner before you charge, adjust, or empty a furnace, lehr, or the glory hole. In other words COMMUNICATE BEFORE YOU ACT!
- If you have a fight with your partner, stop blowing, cool off, make up, and try again.
- Do not allow anyone except currently enrolled students into the Hot Shop Blowing Area, NO FRIENDS, NO STRANGERS, NO FORMER STUDENTS unless the instructor is present, NO EXCEPTIONS.
- Be sure the area is clear before you swing out a piece on the blow pipe.
- Never swing out a piece on the punty.

3. Cullett and Batch Charging:

While charging cullett or Batch, the primary dangers are inhaling glass or batch dust, cutting your fingers, and eye hazard from flying chips of glass.

- Always wear a respirator while sifting cullett or charging batch.
- Use a scoop to remove cullett from the barrels, not your hands.
- Use caution and wear eye protection and leather gloves when scooping batch or cullett into the furnace. Use the long handled metal scoop only, to charge batch or cullett.

4. Casting safety:

Sand and mold casting require special safety measures. Do not attempt to cast glass without instructor approval.

- Always sift the sand before you use it.
- Remove all hot sand from the box immediately after casting (save if in a wood or metal container for recycling).

- Clear ladle in a water bucket (see Steam Burns above).
- Do not use metal oxides, lead, aluminum, or toxic materials in a casting.
- Always wear eye protection and gloves while casting or assisting in casting (Leather gloves are best for everything except putting hot castings into the lehr).
- Never bring any "heavy metals" (silver nitrate, cobalt oxide, etc.) into the studio without the instructors permission.
- Never bring anything made from asbestos into the studio.
- Never put anything in contact with hot glass, or in a hot lehr, except bricks or Kugler color, without the instructors permission.
- Never bring food or drink into the studio.
- Rest before each piece, pace yourself, and don't over-do it! especially on hot days!
- Wash your hands after blowing glass.

5. Studio hazards:

The most serious health hazards which exist in our studio are possible lung hazards from glass dust and toxic smoke, eye hazards from heat, flying glass and ultra violet and infer red light, burns from hot glass and metal, cuts from sharp glass, and fatigue from heat and over work.

Personal Protective Equipment:

- Always wear a respirator while sifting cullett, charging batch, sweeping the studio, cleaning the lehr, or while using glass powders.
- Always wear eye protection while in the Hot Glass Shop.
- Always wear leather or fire proof gloves while handling hot glass, ladles, charging scoops, or sharp glass.
- Wear cotton clothing, tie long hair back, and no sandals or synthetics.

SUMMARY

This sounds like a lot of rules to remember, but all are based on common sense. As long as you remain clam, think before you act, and communicate with your partner, blowing glass should be a safe and enjoyable experience. Please don't try any new ideas, even if you think you have found a "better way", until you have asked the instructor.

ONE UNSAFE ACT CAN CHANGE THE REST OF YOUR LIFE.