Anatomy Lab Safety Plan

I. Anatomy Program

The Anatomy program is run by the Biology Department at SFSU to provide an in depth understanding of the human body through study and practical experience.

Contact	Name	Telephone No.	Office	E-Mail
Anatomy Lab Coordinator	Dr. Stan Williams	x8-1695 / x8-3037	HH 216	williams@sfsu.edu
Biology Stockroom	Michael Fong	x8-1091	HH 540	mfong@sfsu.edu
Animal Care Coordinator	Diane Elliott	x8-6336	HH 816	delliott@sfsu.edu

II. Anatomy Lab Safety Policy

Work in anatomy labs, while illuminating and worthwhile, does pose some health and safety risks that need to be considered and addressed. Below is a list of work practices that MUST be followed during all lab sessions and prep work.

1. Only two uncovered cadavers may be exposed during any lab session. The ventilation system can only accommodate two gurneys.
2. Check to make sure ventilation hoods are "ON" before starting work. Do NOT unzip or open cadaver or specimen bags for a class if you don't think the hoods are working.
3. Keep cadavers covered in zipped body bags when they are not being studied.
4. Do not eat, drink, apply lip balm, or touch your face while in the Anatomy Lab.
5. Wear examination gloves when handling specimens, cadavers, or waste material.
6. Change gloves when damaged and periodically as needed.
7. Wear eye protection when working with cadavers and preserved specimens.
8. Wear a lab coat or scrubs when doing dissections to protect your clothes. For significant splash hazards, wear an apron over the lab coat.
9. Dispose of all scalpel blades and other sharps in red "SHARPS" containers.
10. Wash hands and any exposed skin immediately on contact with embalming fluid and before leaving the dissection area.
11. All waste containers must be kept closed when not actively being filled. Do not overfill.
12. Report injuries or problems to the laboratory supervisor as soon as possible.

III. Cadaver Care

All human anatomy students are responsible for the proper care of our human cadavers. When work is not actually being conducted, zip up the body bag to both avoid excessive odors and to prevent the cadaver from drying out.

- ☑ DO NOT…remove the identification tag on the cadaver
- ☑ DO NOT dissect or remove body parts without permission from the instructor.
- ☑ Keep the body bag closed when cadaver is not being used.
- ☑ Do not open more than two cadaver bags at a time

IV. Laboratory Hygiene Practices

A. Required Personal Protective Equipment (PPE)

Lab Coat	☑ Always, when working
Latex or Nitrile Gloves	☑ Always, when working
Safety Glasses	☑ Always, when working

Rubber/Plastic Apron	☑ Significant splash hazard
Heavy Rubber Gloves	☑ Extended contact/immersion
Face shield	☑ Significant splash hazard

B. Care of Personal Protective Equipment (PPE)

- ☑ Lab Coat
  - Wash your lab coat when it gets dirty in a washing machine—not with your regular clothes. Add bleach as an added precaution.
  - Lab coat should not be soaked with fluids. If it is, you should toss the coat in with the hazardous lab trash.
  - If a significant splash hazard exists for a specific task, wear a rubber or disposable apron over the lab coat.
- ☑ Gloves
  - Remove disposable gloves and discard in lab-waste container. Do not re-use.
  - Check gloves before donning to make sure there are no holes or tears
- ☑ Eyewear
  - Store safety glasses in a bag, box, or container to prevent contamination
  - Store face shield in a clean container/area and decontaminate after each use with a solution of 10% bleach.

C. Additional Recommendations

- ☑ Avoid wearing contact lenses when working with cadavers. In all cases, wear eye protection over contact lenses.
- ☑ If pregnant, consult with your physician before continuing with the Anatomy Lab
- ☑ Close lab doors during class sessions.

V. Potential Hazards and Preventive Measures

Working in an Anatomy Lab is a valuable educational experience, but is not without risk. Fortunately, good work practices and common sense can minimize the risk of injury and exposure to embalming fluid and biohazards. Examples include keeping containers closed when not directly working with specimens, not being sloppy, and consistently wearing latex or nitrile gloves when handling cadavers or specimens.

A. Implementation of Preventive Measures

The Anatomy Lab Coordinator is responsible for communicating lab policy to the teaching staff and for making sure established work practices are being followed. Anatomy lab staff must contact the Biology Stockroom to report problems with ventilation and waste pickup.

B. Review of Hazards and Established Work Practices

Hazard Type	Established Work Practices
Chemical Health Hazard Headache, nausea Potential toxic effects Eye and throat irritation	• Keep specimen and cadaver bags or containers closed when not directly working with them. • Work neatly and clean up spilled embalming fluid promptly. • Dispose of saturated wipes, absorbent pads, and paper towels promptly • Keep chemical and biohazardous waste containers securely closed when not adding waste • Close and tie/tape waste bags closed when ¾ full to prevent overfilling and bag breakage. • Do not work with cadavers when the ventilation system is not working or while the ducts are loose.
Biological Health Hazard Potential exposure to human pathogens Potential exposure to mold, fungi, or bacterial growth Nausea	• Only use cadavers that have been properly embalmed and without known pathogens • If decomposition is evident, return the cadaver to its body bag and do not use. • Do not remove human or animal parts from the anatomy lab • Keep biological waste containers closed when not in use.
Sharps Cuts and punctures Potential injection of chemical or biological fluids into the body	• Instructor must demonstrate the safe use of scalpels, needles and how to change blades • Avoid carrying around scalpels with blades or storing in pockets • Put used blades, knives and syringes in the red "sharps" boxes, not in plastic bags or trash can
Surgical Saw Serious cuts and gashes Splashes or squirts of fluids	• Only the anatomy lab coordinator and staff designated by him/her may use the surgical saw without supervision • A student may use the surgical saw only if trained and personally supervised by the lab coordinator or designated lab staff • A rubber/impervious apron should be worn over the lab coat when cutting open the cadavers • Use of the surgical saw in this lab poses no threat of flying bits of bone

VI. Material Handling Protocols

A. Human Parts and Cadavers

UCSF cadavers are embalmed to provide safe specimens for students to dissect. SFSU doesn't accept cadavers known to have pathogenic organisms. If decomposition occurs resulting in fungal, mold, or bacterial growth, the cadaver is sealed up and removed from further study.

- ☑ Identification tags and body parts must be kept with the cadaver.
- ☑ No parts may be removed without permission from the instructor
- ☑ Body bags are kept closed when not being used
- ☑ Only *two* cadavers may be worked on at any one time due to the capacity of the ventilation hood area

B. Embalming Fluid

The liquid used to preserve animal and human tissue contains chemicals that can be hazardous if mishandled.

- ☑ Preservatives such as ethanol, phenol, and formaldehyde are flammable so avoid open flames and ignition sources
- ☑ Phenol and formaldehyde are toxic even in small quantities so proper handling of waste fluids and functioning ventilation are essential to avoid overexposure
- ☑ Inhalation of vapors, injection through cuts/punctures, or ingestion by eating or licking contaminated lip balm can cause unwanted exposure. Keep food, drinks, gum and cosmetics out of the anatomy lab and make sure fluid collection containers are closed.
- ☑ The formulation of embalming fluid has changed over the years. New formulations are using smaller concentrations of formaldehyde and other toxic chemicals.

  As of 2007, this represents the formulation of the embalming fluid used:

61% Water	*5% Commercial Formalin*
20% Ethanol	*3% Lysol*
10% Glycerin	*1% Phenol*

Note that the formula is subject to change.

C. Preserved Specimens

Preserved organs, tissues, or body parts typically pose no health hazard as long as they are stored in a closed or sealed container. If a container leaks or breaks, the preservative inside could be hazardous once it's released.

- ☑ Preserved specimens must be kept in closed museum jars
- ☑ Tissues from cats and other animals must be collected in a designated container that must be kept closed.
- ☑ Cabinet doors must be labeled "Preserved Specimens" to identify contents.

VI. Waste Disposal

The protocol for handling and disposing of Anatomy Lab waste depends on the type of waste. It is important to keep the different types separate in order to handle the waste materials according to the differing regulations. Contact the Biology Stockroom for more information.

A. Human Parts and Cadavers

At the end of the semester, cadavers are picked up by a licensed contractor and taken to a crematorium for disposal.

- ☑ Do not commingle human waste with animal waste or other materials
- ☑ Collect human body parts in a plastic bag and place it inside the cadaver body bag between the legs. Cadaver parts from other sources may be commingled.
- ☑ The Anatomy Lab Coordinator must notify the Biology Stockroom at the end of the semester when the class is finished with the current group of cadavers.

B. Animal Specimens

Tissue from cats and other animal-study materials such as hearts and brains must be kept in tightly closed containers separate from human remains. Animal waste is picked up by a licensed contractor and taken to an incinerator facility.

- ☑ Drain excess preservative into a collection container and close tightly. This waste is now "chemical" hazardous waste and requires a filled out waste ID tag securely attached.
- ☑ As hazardous waste, embalming or preservative fluid waste may only be stored in the lab up to 60 days from the date the container was first used.

  Call the Biology Stockroom for a pick-up before the 60-day expiration date.
- ☑ Collect animal specimens and body parts in a closeable bag or container and affix an identifying label.
- ☑ Contact the Animal Quarters Coordinator at x8-6336 to arrange for disposal.

C. Embalming Fluid

Used up embalming fluids and preservatives are treated as "chemical" hazardous waste, not biological waste.

- ☑ Collect embalming fluid (usually mixed with "body" fluids) from cadavers in 5-gallon carboys.
- ☑ Modify a lid to accommodate a drainage hose to keep unwanted vapors contained. Keep the lid sealed on the carboy.
- ☑ Preservative fluid from display samples and specimens may be added to the cadaver carboys.
- ☑ Allow the carboy to fill until about ½ to ¾ full, then close it up and tag it as hazardous waste. Do not overfill carboy and clean up any spills promptly.
- ☑ As hazardous waste, embalming or preservative fluid waste may only be stored in the lab up to 60 days from first use.

  Call the Biology Stockroom for a pick-up before the 60-day expiration date.
- ☑ A spill kit is available in the lab for cleaning up minor spills. Contact the Biology Stockroom to refill the spill kit or to report significant spills.

D. Hazardous Lab Trash

Dry waste from regular lab activities ("Lab Trash") includes used gloves and paper towels that might have chemical or biological residue on them. Lab trash must be treated as hazardous waste.

- ☑ Wear gloves when handling lab trash
- ☑ Obtain supplies such as waste containers, waste ID tags, biohazard bags, and heavy-duty opaque trash bags from the Biology Stockroom.
- ☑ Clearly label collection containers and store them in the "Satellite Accumulation Area" for hazardous waste.
- ☑ Keep collection containers securely covered to minimize odors and vapors.
- ☑ Tie plastic bag inside container closed when about ¾ full and attach a completed waste ID tag. Only use heavy-duty opaque plastic bags for hazardous waste.

E. Sharps Waste

"Sharps" waste includes broken glass, used syringe needles and blades. The sharp points and edges pose a significant risk of punctures and cuts to people handling the waste materials.

- ☑ Do not overfill waste containers. Close up and tape containers when about ¾ full and prepare for disposal appropriate to waste type.
- ☑ Place scalpel blades and needles in red designated plastic boxes labeled "Sharps".
- ☑ Deliver "Sharps" container to Biology Stockroom when ready. Box must be closed, labeled and with no protruding parts. Do not over fill the container.
- ☑ Broken glass that is not contaminated with blood or other biohazards may be placed in a cardboard or plastic box labeled simply "Broken Glass". Tape the box closed before putting it in standard trash cans or garbage bins.
- ☑ Broken glass from a dropped preservative or other chemical container must also be handled as "Broken Glass". However, instead of disposing in the standard trash, put the sealed up box in with the hazardous "lab trash".
- ☑ Clearly label collection containers and store them in the "Satellite Accumulation Area" for hazardous waste or biological waste collection area, as appropriate.

"SATELLITE ACCUMULATION AREA" FOR HAZARDOUS WASTE	BIOLOGICAL WASTE COLLECTION AREA