

Goldwater Environmental Lab Guidelines and Policies

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****Instrument and Equipment Use***

Access is categorized into the following levels of approval based on the amount of training and experience the user has with a particular instrument or piece of equipment.

Level 1 (Customer/Assistant) - user is limited to delivering samples for analysis and/or assisting Goldwater Environmental Lab (GEL) staff in setting up and performing analyses.

Level 2 (Analyst) - user may operate instruments/equipment under the supervision of GEL staff . When proficiency is developed, users may work unsupervised during or after normal business hours.

Users may remain at Level 1 status and may request that analyses be performed for them by GEL staff.

Frequent, routine users of any instrument/equipment are required to be trained (or provide a technician or graduate student to be trained) to Level 2 status by the GEL staff. Contact Tom Colella for the procedures involved with training on a specific instrument.

****Procedure for Using the Facility for Analysis***

1. New users must complete [User Registration](#) . Level 2 users must complete the OSHA required *Lab Chemical Safety* and *Fire Safety and Prevention* courses offered by Environmental Health and Safety. See the "Safety" section below for details.

2. Check the [reservation schedule](http://calendar.yahoo.com/public/gwenvlab) (<http://calendar.yahoo.com/public/gwenvlab>) for instrument/equipment availability and determine when you would like to perform an analysis.

3. To make a reservation:

- Click "Sign-In" at the upper right of the calendar page.
- The "user ID" is GWENVLAB and the password is "RESERVE" (case sensitive).
- Enter instrument name as "Event"
- Enter your name and contact info under "Notes"

Level 1 use requires the coordination of both instrument scheduling and GEL staff availability

Level 2 use requires only an instrument reservation. This limitation makes advanced planning more critical for Level 1 users.

Reservations are based on a first-come first-served policy.

4. Prepare samples: grind, weigh, filter, extract, digest, etc. The facility offers sample prep equipment. Any prep requiring consumables such as filters, dialysis membranes, etc. should preferably be performed in the users lab with user's materials prior to bringing the samples to the Environmental Lab. Some instruments have autosamplers that require samples to be poured / weighed into specialized vials / capsules. Consult the instrument descriptions for more detailed information on sample prep. Also, see the Sample Handling and Storage Recommendations page which can be quite useful in planning your analyses.

5. Perform analysis. Be sure to complete a Log entry via the GEL Database for each analysis you perform.

6. ***Clean up glassware, reagents, instrument / equipment, countertop(s), and anything else that you have dirtied. The ISSAC door system tracks each lab entry. This has been useful in identifying those responsible for messes left during after-hours use. Please be considerate of others and maintain clean & safe working conditions.*** Dispose of samples if applicable. Consult Lab Manager for proper method of washing glassware and for proper handling of hazardous waste.

7. Collect data in hardcopy and / or e-file format.

****General Laboratory Procedures***

Safety

1. All routine users of the laboratory facilities must complete the OSHA required *Lab Chemical Safety* and *Fire Safety and Prevention* courses offered by Environmental Health and Safety.. Go to <http://www.asu.edu/uagc/EHS/trainingschedule.htm> or call (480) 965-4751 for scheduling information and registration. **Upon completion, users must provide Lab Manager with proof of attendance to be kept on file.**

2. Users must comply with all laboratory safety policies. Non-compliance will result in discontinuation of GEL use. Users must also **read and sign** the [Goldwater Environmental Lab Chemical Hygiene Plan and General Laboratory Safety](#) document indicating that they understand and agree to abide by the safety policies set forth.

3. Lab Certification placards are located outside the entrance to each lab. These provide information about the hazards found in each lab, emergency contacts, and location of MSDS binders and electrical circuit boxes. A complete chemical inventory can be found in front of each MSDS binder.

4. Users should become familiar with all emergency procedures, evacuation routes, location of First Aid station and emergency (eyewash, showers, fire extinguishers & alarms) and personal protective equipment. See the [GEL Emergency Evacuation Plan and Emergency Equipment Locator](#) for this information.

Handling Glassware

To prevent contamination, never touch inside or the rim of any test tube, beaker, flask, or bottle. Do not touch stoppers (glass or otherwise) or the inside of caps. Avoid resting stoppers on the bench top as they can pick up unwanted contaminants.

General Glassware Usage

1. **All users are responsible for cleaning their own glassware immediately after use.** See "[Glassware Washing Procedures](#)" for instructions. Soap should never be used to clean general-use glassware.
2. Users must clearly label glassware with their initials and the contents before use. Use a Sharpie but DO NOT mark on the white spot. No tape labels are to be used.
3. Glassware cabinets must be closed immediately after removing glassware.
4. Glassware should be rinsed with either Nanopure water or liquid to be contained before using.
5. DO NOT use surfactants in general-use glassware.

Special Purpose Glassware

1. Glassware dedicated to contain a certain solution or reagent, *especially those containing surfactants*, should be kept separate and not used for anything else. Glassware should be marked as such with marker (and not washed off) or diamond pen. In most cases, these require only rinsing between usage, not acid washing.
2. Glassware used for organic analyses such as TOC, TN, TP, GC (except volumetrics) should be heat-treated as per analysis protocol.

Adjustable Pipettors

Before using pipettors, users must either demonstrate proficiency or receive proper training from GEL staff.

1. Use pipettors labeled "Standards Only" to obtain best results when preparing calibration standards. Even though they are calibrated routinely, it is **strongly** recommended that accuracy be checked using Nanopure water and the analytical balance (calibrated first) before using. **DO NOT** use these for repetitive pipetting (e.g. dilutions) or for dispensing reagents.
2. Fill pipet tip with smooth release of plunger from first stop so as not to cause

"splashing" of reagent into pipettor. Dispense with even, smooth motion, to second stop for accurate volumes. Depending on the style of pipettor, pipet tips may either be ejected by depressing plunger to third stop or by depressing a separate tip eject plunger.

3. Whenever possible, tips should be rinsed at least once with the solution to be pipetted; this is especially important for standards.
4. **NEVER** lay pipettor down with liquid in tip....not even small droplets!
5. **NEVER** pipet directly from a stock solution...always pour an aliquot into a temporary vessel to pipet from.
6. Keep pipet tips in closed containers. Store pipettors upright on rack.
7. Read the instructions and practice using autopipettors before use.

Acids / Bases

1. All acids /bases >1N are to be stored in the respective cabinet under the hoods in Lab 675.
2. Handle concentrated acids /bases only with proper gloves. Work in hood and follow all safe handling practices (wear protective clothing, equipment, etc.). Rinse outside of bottle before and after use - and remember - **ADD ACID TO WATER ONLY.**

Dry Chemicals

1. Most dry chemicals are stored alphabetically in GWC 675 above balances.
2. Record the date a new chemical is received /opened on its container.
3. Use clean spatulas or (better) tap chemical onto weighing paper or weigh boat. Do not put excess chemical back into stock bottle; dispose of properly. Return chemical to proper position on shelf when finished.
4. **Clean bench and balance properly (brush, wipe) when finished weighing.**

Liquid Reagents

1. Never place anything (pipets) into a stock reagent bottle. Pour a small amount into cap or beaker and then measure out what you need. Do not return the excess to the bottle--discard it.
2. Date and initial all reagents that you prepare. Also include the full name of all ingredients and concentration / expiration date where applicable. Do not use expired chemicals.
3. Always discard old reagents and rinse bottle with a small amount of fresh reagent

before refilling bottle with fresh reagents.

4. If you inadvertently fail to refrigerate a reagent that needs it, discard and remake.
5. After pouring a reagent, carefully wipe any drips from the outside of the bottle, especially the neck and the threads. Be careful not to contaminate the reagent with the material used to wipe.
6. Users are required to prepare reagents that must be made fresh daily at the time of their analysis. If given ample advance notice, Lab personnel can prepare reagents that can be stored for ≥ 1 week. Users must note on whiteboard and alert GEL staff when a reagent is getting low.

Standard Solutions

1. In preparing stock standards, use utmost precision in weighing out chemicals, clean (acid-washed, ashed, etc.) amber bottles, and clean glassware. Stock standard solutions are only to be made up by laboratory personnel.
2. Users are required to prepare standards that must be made fresh daily at the time of their analysis. If given ample advance notice Lab personnel can prepare standards that can be stored for ≥ 1 week. Users must note on whiteboard and alert Lab Manager when a standard is getting low.
3. See "[Preparation of Standard Solutions](#)" for instructions on how to prepare working standards.
4. After pouring a standard, carefully remove any drops from the neck, threads, and cap since these will crystallize and affect the concentration of the next volume poured from the bottle. Be careful not to contaminate the standard with the material used for cleaning.

Lab Supplies/Consumables

1. Supplies required for performing standard analyses are provided by GWEL and account for a portion of the instrument charge. Users are responsible for providing any additional or specialized supplies required for their own analyses.
2. When a consumable supply is getting low, list it on a white board under "To Be Ordered" or "To Be Prepared" and alert GEL staff so that it can be restocked.

Refrigerators

1. Keep all refrigerators clean and uncluttered.
2. No uncovered vessels, food or drinks to be stored here.

Sample Storage

1. All samples must be stored in an organized manner (within a box, etc.) and must be clearly labeled with the date, owner's name, and telephone number.
2. Storage facilities are provided for users only while samples are being processed. Long term storage is not available in the Environmental Facility. Users must remove samples when all analyses have been completed. Unclaimed samples will be disposed of by lab manager 30 days after notification.
3. Refrigerated samples are to be stored on metal shelving units. Room temp samples are to be stored in cabinets or on shelves, NOT on bench top.

****Lab Hours / Access***

Normal working hours are generally from 8:00 AM - 5:00 PM, Monday – Friday. All of our lab doors are equipped with the ISSAC door access system. According to University policy, all lab doors must be kept closed and locked at all times. Propping doors open is not permissible.

Level 1 users must be supervised and, therefore do not need individual ISSAC authorization. Level 2 users must request ISSAC authorization from Tom Colella. This will require a new version Sun Card with microchip.

GWEL Policy Agreement

I have read and understand all aspects of the Goldwater Environmental Lab Guidelines and Policies document and I hereby agree to abide by those policies and guidelines set forth while working in the GWEL facility.

Name (print) _____

Date _____

Signature _____