

Student-Trace Element Clean Lab

Position Summary

This is a student position that functions under the supervision of the Inorganic Chemistry Supervisor of the Wisconsin State Laboratory of Hygiene (WSLH), and will work the Trace Element Clean Lab. This position will spend time in the Trace Element Clean Lab where duties include water extraction of samples for the subsequent analysis (ICP-MS) by other chemists for ongoing research projects. Prior to digestion or extraction, samples may require sectioning, compositing and/or weighing according to trace-level clean techniques. Requires detailed documentation of all steps of sample processing, including use of chain of custody sheets, lab notebooks, bench sheets and computer spreadsheets. All duties require strict adherence to trace-level or "clean lab" techniques and standard operating procedures (SOPs) to avoid contamination of samples and ensure worker safety, since concentrated and dilute acids will be used. Cleaning of supplies and any equipment must follow a highly specialized process to minimize contamination of materials that may come in contact with analytical samples. Other responsibilities include discarding completed samples, neutralizing acidified samples following waste disposal guidelines described in the University of Wisconsin Chemical Safety and Disposal Guide, archiving samples, and assisting other chemists, as needed, in all areas of the TECL. The work schedule of this position is Monday through Friday, 7:45 a.m. - 4:30 p.m during the summer.

Goals and Worker Activities

A. 70% Preparation and processing of Samples.

1. Wash Teflon or polycarbonate sample bottles, equipment, Petri dishes, centrifuge tubes, vials and other items using dilute or concentrated hydrochloric and nitric acids by following specific cleaning SOPs.
2. Prepare samples for analysis by utilizing clean technique for the sectioning, compositing and/or weighing of samples.
3. Process various substrates (e.g., Teflon filters or polyurethane foam filters) or sample types (e.g., environmental or clinical) according to SOPs.
4. Utilize chain of custody sheets, lab notebooks, bench sheets and computer (Excel) spreadsheets to document all steps of sample processing
5. Distribute sub-sections or sub-samples to other laboratory departments.
6. Properly store and archive samples, or their digestates.

B. 20% Other Laboratory Responsibilities.

1. Assist in regular verification of various instruments (e.g. balances, pipettes, thermometers, etc) or laboratory conditions.
2. Participate in group meetings and contribute to the improvement of the work area. Work with the group to set goals and priorities.
3. Discard completed samples, reagents and used supplies using appropriate disposal guidelines. Neutralize acid wastes using the automated neutralization system in accordance with the UW safety guidelines and methods.
4. Perform other miscellaneous duties that may be assigned by the unit supervisor, as needed.

C. 10% Water extract different sample matrixes

1. Follow standardized trace-level "clean lab" techniques in all aspects of lab work for the purposes of subsequent trace level metal analysis by ICP-MS.
2. Water extract samples utilizing ultra-pure water, cleaned polycarbonate centrifuge tubes, syringe filters, a shaker table and sonicator following an SOP.
3. Prepare batches of samples for analysis as per SOP by utilizing proper distribution of blanks, duplicates, spiked matrixes and standard reference material.
4. Mix and prepare various solutions and reagents as needed according to protocols.

Knowledge and Skills

1. Knowledge and skills of general and standard good laboratory practices.
2. Knowledge of personal computers and use of scientific laboratory application software, such as spreadsheets, word processing and database operations.
3. Knowledge of theory and practice of laboratory safety.
4. Effective team skills.
5. Exceptional customer service skills.
6. Effective interpersonal skills.
7. Organized, motivated, detail oriented, excellent communication skills and able to work independently.