

UNITED STATES TRANSURANIUM AND URANIUM REGISTRIES
ANALYTICAL PROCEDURE MANUAL

USTUR 080: Cleaning of Labware

Purpose	Cleaning of Labware	Method Number	USTUR 080
Original Date	3/1/00	Author	USTUR Radiochemistry Staff
Revision Number	1	Approved By	James T. Elliston
Revision Date	2/11/03	Approval Date	2/11/03

SAFETY NOTE: Before beginning this procedure, read all of the Material Safety Data Sheets for the chemicals listed in Section 3 of this procedure.

1. Principle of Method

- 1.1. The following procedure describes the process of cleaning and decontaminating labware. It is essential that all traces of radioactive isotopes be removed from labware to prevent cross-contamination between samples. It is particularly critical when samples with higher levels of radioactive materials are analyzed along with samples with very low levels.
- 1.2. Labware that is used with radioactive materials is segregated from labware strictly used for making reagents or other general chemical work. Plastic bins near laboratory sinks are marked for the appropriate labware.
- 1.3. The soaking solutions in the bins are changed weekly or as needed.
- 1.4. The 10% nitric acid bath is changed on a quarterly basis or as needed. The spent nitric acid solution is disposed of in a Hazardous non-radioactive waste container.

2. Apparatus

- 2.1. Plastic bins for soaking glassware.
- 2.2. Covered high-density polyethylene bin for acid-soaking of glassware.
- 2.3. Brushes, various sizes.

3. Reagents

- 3.1. Acetone or 70% Alcohol.
- 3.2. Radiacwash or equivalent cleaner for radioactive decontamination of labware.
- 3.3. Alconox or equivalent all-purpose labware cleaner.
- 3.4. Nitric acid (concentrated, 69-71%, reagent grade).

- 3.5. 10% nitric acid solution -- add 1 liter of concentrated nitric acid to 5 liters of deionized water and complete dilution with 4 additional liters of deionized water for a 10 liter total volume.

4. Cleaning Labware

- 4.1. Remove label markings from all labware using either acetone or 70% alcohol, prior to soaking in bins.
- 4.2. Non-radioactive labware
 - 4.2.1. General labware is soaked in a plastic bin filled with Alconox solution (following manufacturer's recommended dilution) for at least two hours. It is then scrubbed and final rinsed with deionized water 3 times and allowed to air dry.
- 4.3. Radioactive Labware
 - 4.3.1. Labware used with radioactive materials is cleaned and decontaminated through a series of two soakings with Radiacwash, one with deionized water, and a final soaking in 10% nitric acid solution for non-metallic labware.
 - 4.3.1.1. Labware is soaked in the "step 1" bin filled with Radiacwash solution (following manufacturer's recommended dilution) for a minimum of four hours.
 - 4.3.1.2. Labware is scrubbed and rinsed 3 times with deionized water, then placed in the "step 2" soaking bin filled with Radiacwash solution for a minimum of four hours.
 - 4.3.1.3. Labware is again scrubbed and rinsed 3 times with deionized water, then placed in the "step 3" bin filled with deionized water. Labware is left to soak for a minimum of four hours.
 - 4.3.1.4. All metal labware is then thoroughly rinsed and allowed to air dry.
 - 4.3.1.5. All other labware, after being thoroughly rinsed, is placed in the covered soaking bin of 10% nitric acid overnight. Use protective goggles, latex gloves, and a plastic apron when working with the 10% nitric acid bath.
 - 4.3.1.5.1. The 10% nitric acid bath should be kept filled to the marked level with additions of 10% nitric acid as needed.

4.3.1.5.2. The 10% nitric acid bath is changed on a quarterly basis. The spent nitric acid solution is disposed of in a Hazardous non-radioactive waste container.

4.3.1.6. Remove and rinse labware with fresh 10% nitric acid solution over the 10% nitric acid bath. Then briefly soak the glassware in a tub filled with nanopure water, drain, and allow to air dry.

4.3.1.7. For labware used previously in high activity cases a 10% nitric acid bath may be used prior to the first Radiacwash step.

5. Etched Glassware

5.1. Any glassware that has become heavily scratched, etched, or otherwise permanently stained is segregated from normal glassware storage and is engraved with a large "E".

6. Room 215 Glassware

6.1. In order to keep a supply of beakers available for ashing of samples in room 215, all beakers engraved with the letter "R" should be returned there after washing.

7. New Glassware

7.1. Rinse new glassware thoroughly with deionized water.

7.2. Soak new glassware in 10% nitric acid bath overnight.

7.3. Remove and rinse new glassware with fresh 10% nitric acid. Then briefly soak the glassware in a tub filled with nanopure water, drain, and allow to air dry.