

## GENERAL OPERATING PROCEDURE

**PROCEDURE TITLE:** Preparing Solutions from a Liquid and/or Solid Phase

**APPLICABILITY:** Branch of Aquatic Ecosystem Health, Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin.

**PURPOSE:** To assure that all employees are preparing solutions accurately and correctly.

### PROCEDURE

#### A. Preparing Solutions from a Liquid Source

1. Measure out the required chemical volume using either a graduated cylinder or pipette, depending on the volume required.
2. Using a funnel, transfer the chemical into the flask. If transferring from a “to contain” (TC) calibrated cylinder, rinse the cylinder three times with the solvent to assure that the entire chemical is transferred. If using a pipette, add chemical directly to the flask without the aid of the funnel. Fill to 1” below volume line or approximately 90% total volume and mix (to allow for volume change with different solvents).
3. Bring the flask up to volume with the solvent (see SOP No. AEH 005 “General Procedure for Filling Volumetric Ware”).
4. Place a stopper in the flask and invert the flask 10 to 15 times in order to thoroughly mix the solution.

#### B. Preparing Solutions from a Solid State

1. Weigh out the chemical (see SOP No. AEH 004 “Weighing Chemicals”) on a calibrated balance.
2. Using a funnel, transfer the chemical into the flask. Rinse the weigh boat/paper three times with solvent to assure that the entire chemical is transferred.
3. If the chemical does not go into solution, add more solvent and place the flask in warm water, stir with magnetic stir bar or sonicate. Once the chemical is in solution, cool to room temperature before final volume adjustment. If a magnetic stir bar is used, retrieve the stir bar and rinse with solvent into flask prior to final volume adjustment.
4. Bring the flask up to volume with the solvent.
5. Place a stopper in the flask and invert the flask 10 to 15 times in order to thoroughly mix the solution.

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6. Label flask with solution according to SOP No. AEH 011 (the solution identity, concentration, date prepared, initials of preparer, expiration date, and storage conditions).

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