

## Quinine Sulfate solution preparation for CDOM testing

### A. 1.0304 Molar (M) $H_2SO_4$

- Take precautions to shield yourself from concentrated sulfuric acid splash or spill by working in a hood, wearing goggles and gloves.
- Add 500 milliliters (ml) of deionized water to a 1-liter glass beaker.
- Place the beaker in an ice bath.
- Using a stirring rod, stir the water in the beaker while slowly adding 56 ml of concentrated sulfuric acid (Molarity 18.4) to the water. The beaker will heat up and be unable to touch with bare hands.
- After mixing the solution thoroughly, add 454 ml of deionized water to the beaker to make a total volume of 1000 ml.
- Mix this solution thoroughly with the stirring rod and pour into a screw top glass container. *This solution can be stored indefinitely*

### B. 0.05152 Molar (M) $H_2SO_4$

- Add 500 ml of deionized water to a 2-liter volumetric flask.
- Add 100 ml of 1.0304 M  $H_2SO_4$  to the 2-liter volumetric flask.
- Mix the solution in the flask by carefully swirling.
- Dilute with deionized water to the 2-liter mark on the flask and mix thoroughly.

### C. 1000 parts per million (ppm) Quinine Stock Solution

- Using a balance, weigh 0.1207 grams of Quinine Sulfate Dihydrate onto weighing paper or a small plastic weighing boat.
- Carefully transfer this quantity to a 100-ml volumetric flask.
- With a few squirts from a wash bottle containing deionized water, wash the remaining Quinine Sulfate powder from the weighing platform into and down the neck of the flask.
- Pipette 5 ml of 1.0304 M  $H_2SO_4$  into the flask.
- Make sure to dissolve all the solid material in the sulfuric acid solution by swirling before diluting.
- Only when solid is fully dissolved, dilute to volume with deionized water and mix thoroughly.

### D. 10 parts per million (ppm) Intermediate Quinine Stock Solution

- Pipette 5 ml of 1000 ppm Quinine Sulfate Solution into a 500-ml volumetric flask.
- Add 25 ml of 1.0304 M  $H_2SO_4$  to flask.
- Dilute solution with deionized water to volume and mix thoroughly.

### E. Preparing Quinine Standard Solutions

- Make Standard dilutions using 10 part per million Intermediate Quinine Stock Solution, carefully diluting to volume desired with 0.05152 M  $H_2SO_4$ .
- **Dilution Factor (DF)** is calculated as:  
Total Volume / Volume of 10 ppm Quinine Solution added.

#### Example:

10 ml of 1000 ppm Quinine Sulfate Solution added to 990 ml of 0.05152  $H_2SO_4$  has a DF = 100  
This solution will have a concentration of:  $10\text{ppm}/\text{DF} = 10\text{ppm}/100 = 0.1\text{ppm}$  or 100 ppb