

## SV GUIDELINES

### Aqua regia waste disposal

#### 1. Dilution and Neutralization:

Before disposing of waste, dilute and neutralize following the steps below.

- a. Use secondary containment for the container in which Aqua Regia waste will be neutralized. (The secondary containment must be free from all organic chemicals/solvents.)
- b. The neutralization container should be a glass beaker and must never be more than 2/3 full (even after the dilution is complete). See below to determine the required size of beaker.
- c. Before diluting the Aqua Regia, calculate the total volume of water needed. This should be approximately a 7.5x dilution (e.g. 3 L of water would be needed to dilute 400ml of Aqua Regia).
- d. Calculate the amount of magnesium hydroxide needed. This should be 0.533 g per ml of Aqua Regia (e.g. 213 g of magnesium hydroxide would be needed to neutralize 400 ml of Aqua Regia).
- e. Inside of a fume hood, add the total volume of water to a glass beaker (use secondary containment), keeping in mind that the beaker should be no more than 1/2-2/3 full of water. Place the beaker on a stir-plate and add a stir-bar to keep the solution well mixed.
- f. Add the magnesium hydroxide and a dash of bromothymol blue solution to the beaker. For bromothymol blue (BB) preparation: add 0.8g BB to 100 ml of water and a small drop of sodium hydroxide.
- g. SLOWLY add the Aqua Regia to the full volume of water, carefully avoiding overheating. The bromothymol blue indicator will turn yellow if you overshoot neutral pH. If your solution turns yellow, but there is still undissolved magnesium hydroxide, let the solution stir longer to equilibrate. Test the pH using a pH strip, and add more magnesium hydroxide if necessary. (pH must be between 6 and 9 for waste pickup or drain disposal.)
- h. Allow solution to cool to room temperature before moving the container, capping the container, or transferring the solution.

#### 2. Disposal:

After the solution has cooled to room temperature, submit waste to OESO unless approved for drain disposal. (Approval for drain disposal will depend on what is dissolved in the Aqua Regia.)

Follow the SB sorting out table to find the correct OMOD code.

- If the neutralized solution does not contain any cyanide, mercury or any other metal:  
OMoD code is 07 01 01.
- If the solution does contain mercury:  
OMoD code is 06 04 04
- If the solution does contain cyanide with a concentration >50 mg/kg : the solution should be neutralized at a  $8.0 < \text{pH} < 9.0$ :  
OMoD code is 06 03 11
- If the solution does contain other metals:  
OMoD code is 06 04 05