

“Arsenic Team” Detailed Task List Spring 2013

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Obtaining and Disposing Arsenic

Finish by 02/08/13

- How do we obtain arsenic for the lab? **Imtiaz**
- Working on a system to properly dispose of the spent arsenic sludge formed through testing.
- We will look into working with Cornell EH&S (and possibly other agencies) to find a procedure which will allow for the safe removal of the arsenic from the laboratory.
 - General how-to’s- Safety and training certification, practices, safety equipment **Himmy**
 - Identifying the different wastes and the disposal **Katie**
 - Labeling, storage (fridge, shelf-life), lab testing equipment, pick-up locations **Carrie**

Water Type

Finish by 02/15/13

- The contents of each water may impact the way in which the arsenic is removed as there could be competing compounds which we may need to consider. Other factors to consider include the pH of the water and water temperature.
- Our team needs to decide the different stock water types that we should use during the experimental process for comparison in arsenic removal. Some examples will include deionized water, tap water, and maybe other kinds of mineral water.
- The contents of each water may impact the way in which the arsenic is removed as there could be competing compounds which we may need to consider. Other factors to consider include the pH of the water and water temperature.

- Interaction w/other metals Imtiaz
- Groundwater composition (both in Bangladesh and Ithaca) Carrie
- Lab prep and conditions (pH, temp, etc.), interaction w/organics Himmy
- Previous studies, research Katie

Coagulant

Finish by 02/22/13

- Different coagulants may prove to be either better or worse than others at removing arsenic. We need to find a way to see which coagulants would be viable for testing. We will have to consider the chemistry and binding mechanisms of how the coagulant will aid in arsenic removal.

Measuring Techniques

Finish by 03/01/13

- In order to check if anything is actually happening within our system, we would need methods and devices to help us measure changes in arsenic levels. One big challenge will include measuring the low concentrations of arsenic that we will be adding to the system.
- We also have to decide which parameters will be useful for us to keep track of.

Data Collection Methods

Finish by 03/08/13

- We need to come up with a system which will enable us to decipher the performance of various types of data we will be collecting. Hopefully a good system will clearly show trends of what we decide is important to analyze.

Floc Blanket

Finish by 03/29/13

- Having a floc blanket within the system greatly improves the chances of capture of the target colloid. If we can work out the mechanism for the arsenic attachment to the coagulant, then we can see if the creation of a floc blanket is possible.

Small Scale Systems

Finish by 04/14/13

- This will be last on our agenda, though as everything comes together we can develop a small scale system which we can (or the team in the future) can use to run the tests on the different combinations of water, arsenic, and coagulant to see which produces the most promising results. We realize that there may be scaling issues with this, but some mechanisms should hold true no matter what scale we are working on. As mentioned in the problem description, we will be looking at processes such as what occurs at the water-wall boundaries. Some things that we will consider at the water-wall boundary include the influence of shear on the particles, and may if there is any absorption of particles onto the wall. We may also try setting up the system using different materials such as plexi-glass, pvc, metal, and concrete to see if there are any effects of material on performance.