

## Water Analysis from the Phanuef's Pond

by Vicky Vaughn, Koi Lab/Athens, Georgia

**O**n November 3, 2004, water samples from Phanuef's were submitted to the University of Georgia Soil Analysis Laboratory for pH, hardness and baseline trace element analysis. Samples were run on a plasma spectrophotometer for metal analysis.

- A. Pond water before work was started
- B. Tap water for comparison
- C. Sediment from bottom of pond

Two samples of liner were also submitted for analysis marked sample A and sample B.

Each sample of liner was placed in a sterile 100 ml bottle and 100 mls of sterile double distilled water was added to each. Samples were incubated at room temperature on an orbital shaker for a period of 7 days. Samples were then submitted for analysis.

According to Ed Noga's book, there are two acceptable levels of metal concentrations in water. One is the level associated with fish kills and the other is acceptable continuous exposure levels. This is important, because low levels of trace elements can be harmful, because fish store heavy metals in their liver and spleen which leads to immunosuppression.

My observations are that iron levels in the sediment were shockingly high, aluminum in sediment high, zinc levels in the liner sample A was extremely high. From the pictures that were submitted, there seemed to be an extraordinary amount of sediment in the pond and the pump appeared to be rusted. Any pump that is to be used in a koi pond must be resistant to salt as salt is used as a therapeutic treatment by koi hobbyists. Most koi keepers maintain a 0.1 to 0.3% sodium chloride concentration in their ponds at all times.

The Phanuef's also reported an odor reminiscent of rotten eggs when the sediment was removed from the pond. This is due to the buildup of hydrogen sulfide in the anaerobic pockets in the sludge on the bottom of the pond and underneath the rocks. This gas is extremely toxic to fish and fish should always be removed from the pond while cleaning especially if there is a heavy buildup of sediment on the bottom.

*The actual test results can be found on [www.makc.com](http://www.makc.com). ❖*

