

## **“Awesome Eyeballs” – an amazing group of students visit Y-12 and ORNL, part 2**

This continues the report provided by an adult leader of the “Awesome Eyeballs,” a group of four 10-12 year old students who are experimenting with a process to produce fish food that will remove mercury from fish. The rest of the report follows:

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Very few people see this level of equipment until college at the earliest. I think that since the kids had already prepared samples in solution using a mortar and pestle and measured mercury with test strips, they were particularly appreciative of how much easier and accurate the equipment was in the lab. I was thrilled that she took the time to show the kids all the details, including how she marked each sample with a logical code and wrote the results in her log book.

We then moved to the conference room where Teresa showed the kids how she related the light readings from the spectrometer to the micrograms of Hg. The kids enjoyed predicting what the 28,000 would be in micrograms! They will be putting their results in a graph this week and sending it back to Teresa to finish their homework.

I heard Michael explaining to his father last night that 28,000 referred to the area under the curve created by the light intensity. Teresa did a fantastic job explaining everything and answering their questions. The kids had spent some time understanding Dr. Matthew's research and relating it to what they had already studied. She rewarded them by discussing the topic as if they were fellow scientists. Thank you!

We enjoyed lunch and a walk around the pond with Teresa and Mark. During the walk, they found the different fish we had discussed and pointed out differences in the pond vs. the stream we had been in previously. The kids also skipped rocks and ran around, of course. We then boarded their "personal bus" back to Y-12.

Our meeting with Dean Little (and Eric, Ben, Tammy, and Vicki) was also terrific. The kids enjoyed Dean's stories and background information about Mercury. They took some notes when he was explaining how to organize their plans using a fishbone diagram. He guided them through different parts of the fishbone, including machinery (a fish feeder), manpower, and methods.

He talked to them about the different ingredients he had used to make some fish food (which the kids had used earlier to feed fish) and they discussed different methods for binding foods, making the foods taste good to the fish, and ensuring that the food is healthy. As we were winding down, the kids discovered that conference chairs spin and can be adjusted up and down.

It wasn't until I realized that we had already been talking for two hours, that it occurred to me that most adults would not have sat still that long. Dean really had their attention! I asked the kids about each event in the evening. They were very specific in telling me that it was very interesting until I started talking. Kids are pretty honest. They each confirmed they had their four-leaf clovers as they got out of my van last night.

The "boring" part that included me talking mostly to Dean was regarding next steps and the people in Y-12 and ORNL who would be most involved in those next steps. I will apologize to Dean for taking some of his time away from the kids, but I didn't want to walk out of Y-12 without understanding a few things as their coach. I will summarize what Dean and I discussed as part of a different note.

Vicki Hinkel was kind enough to arrange a behind-the-scenes tour of Conservation Fisheries with a marine biologist on Wednesday evening. This was very interesting to us, particularly to understand how we might handle fish here in Ohio for the next steps in testing. Rebecca Xiques, our marine biologist tour guide, will likely be a source for us for ordering a fish tank and filter, etc. We have already started looking into these details.

Vicki rode with us to conservation fisheries and also joined us for dinner in Knoxville. We took a stroll around Market Square with the kids, ate at a hibachi restaurant, and the kids jumped through the water fountain. I must continually remind myself that it would be no fun to study fish with kids who didn't enjoy getting wet.

Thursday morning, the Awesome Eyeballs had breakfast at Panera in their Y-12 shirts and eyeball helmets. We took the Thank You picture at the Thank you sign at the Panera drive-thru before heading to Kentucky for zip lining. The kids enjoyed a several hour zip line adventure, including a half-mile long line over a 350 foot gorge. We ended the day at Gameworks in Newport, Kentucky playing arcade games until 10pm. Friday morning, the kids toured Newport Aquarium. This was a particularly fun experience with kids who are used to looking at fish and find them all interesting. We don't have a very good aquarium in Cleveland. We made it to Solon, OH on Friday around 6pm.

Thank you, again, to all of you for making this trip an incredible experience. I want to stress that it would be hard in most cases for a kid who just took their first ride on a 2,000 foot zip line to even remember what happened the day before. You all made a very important impression on these kids.

The Awesome Eyeballs will be meeting this Wednesday to put together a draft test plan (details in another note). They are looking forward to continuing this project and returning to Y-12 to someday soon implement a positive change for the local fish.

With great respect & admiration, Nadine Otterman and the Awesome Eyeballs

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Thank you, Nadine. What a wonderful experience for the students AND for us folks who work at Oak Ridge and realize amazing young people, like these, will make up the next generation of scientists. I look forward to seeing where their research goes and hope to see it help address the problem of mercury in fish.