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Department of Energy Hosts Heath Middle School Science Students

*By Joe Walker
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Twenty-five of Heath Middle School's brightest science students visited the Paducah Gaseous Diffusion Plant last week to investigate an environmental spill by the Big Squeezy Lemonade Company.

The fictional Big Squeezy exercise marked the first time in recent memory that a school group conducted field activities at the 59-year-old plant to enhance learning. Working with representatives of the U.S. Department of Energy and cleanup contractor LATA Environmental Services of Kentucky, the Heath Gifted and Talented students in grades 6-8 identified hazards, created maps, simulated monitoring wells, and sampled groundwater to understand and treat the contamination.

"It is very important that we work with young students to promote experimentation and exploration in the field of science," said Reinhard Knerr, the Department's Paducah Site Lead. "Middle school is an excellent age to start connecting science in the classroom with science at the Paducah Site."

Knerr arranged for the May 19 visit at the request of Brandy Roberts, a sixth-grade science teacher at Heath Middle. Roberts accompanied the students to the uranium enrichment plant, located on roughly a 3,350-acre reservation near the Heath community.

Sixth-grader Evan Shepherd peppered the hosts with questions and came away convinced that hands-on learning is better than reading books and taking tests.

"You learn a ton of different things that most people would never get to learn," Shepherd said. "I really liked the demonstrations. I'd say this was equivalent to visiting the Challenger Center (at West Kentucky Community & Technical College)."

Heath Middle students learned that past use of the degreaser trichloroethene, or TCE, contaminated about 2,100 acres of groundwater extending from the plant nearly to the Ohio River. While providing free municipal water to homes and businesses in that area, the Department banned TCE use at the plant in the 1990s.

Students visited one of two pump-and-treat facilities that together since the mid-1990s have cleansed about 2.75 billion gallons of groundwater to meet National Drinking Water standards.

They saw how both the Energy Department and Kentucky Department of Environmental Protection sample many of the 350 monitoring wells currently or formerly in use to ensure that pump-and-treat systems are working properly.

Students also visited one of the effluent-discharge locations regularly sampled to be sure that creek water flowing from the plant is safe for aquatic life and insects.

They used 5-gallon buckets and PVC pipe to simulate a field of eight monitoring wells for the Big Squeezy spill. They sampled the water and used acidity testing to track the flow of the lemonade to determine the best place to clean it up.

“I hope we can come back and see more of the plant in the future,” Shepherd said. “Reading books can be so time-consuming, and kids my age have to stay focused.”

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Ken Davis, geologist with Department of Energy cleanup contractor LATA Kentucky, uses an aquarium model to demonstrate the earth's water cycle to Heath Middle School Gifted and Talented science students. The students were briefed prior to visiting the Paducah Gaseous Diffusion Plant. Background, left to right, are: front row – Alli Germain, Mesa Trimm, Ty Youngblood; second row center – Madeline Magness.



Jeff Snook of the Department of Energy's Paducah Site Office explains to Heath Middle School science students how to use a field measurement tool to determine if groundwater is acidic, basic, or neutral. Left to right are students Mesa Trimm and Caleigh Propes, teacher Brandy Roberts, and student Alli Germain.



Plume Operations Manager Danny Guminski of Department of Energy cleanup contractor LATA Kentucky tells Heath Middle School science students how a pump-and-treat facility works at the Paducah Gaseous Diffusion Plant. Two pump-and-treat stations have cleansed about 2.75 billion gallons of groundwater at the plant since the mid-1990s. Student Andrew Alvey (face showing) is in the background behind Guminski.