



# U.S. DEPARTMENT OF **ENERGY**

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**FOR IMMEDIATE RELEASE**  
April 26, 2012

## **Heath Middle School Science Students Study Environmental Issue at DOE's Paducah Site**

Twenty-six of Heath Middle School's brightest science students spent the 2011-12 school year helping the U.S. Department of Energy try to resolve a real environmental issue at the Paducah Site.

Mentors assigned to each grade – sixth, seventh, and eighth – taught students investigative techniques as the school year progressed. The students used data and information to produce a presentation with tables, graphs, and charts. Three groups of students, representing their respective grades, presented their findings and recommendations April 20.

"Maybe we will see some of you out at the site after you get your college degrees," DOE Paducah Site Lead Reinhard Knerr told the group.

Over the past year, the Department and cleanup contractor LATA Environmental Services of Kentucky have taken actions to try to reduce elevated levels of zinc harmful to tiny aquatic organisms in one engineered ditch, known as an outfall, near the site entrance road.

Working with seven mentors from DOE, LATA Kentucky, University of Kentucky College of Engineering-Paducah, and Kentucky Department for Environmental Protection, Heath Middle students observed the outfall and reviewed data to conclude why zinc levels were elevated.

Students hypothesized the problem stemmed from water runoff from a nearby storage yard containing depleted uranium hexafluoride (DUF<sub>6</sub>) cylinders, some of which are covered with paint containing zinc. They recommended solutions to lower zinc levels, including planting cattails and evergreens, installing a filtration system, and constructing a water-retention basin.

Heath Middle is near the Paducah Site, and the project is an outgrowth of the students' first-ever field trip to the site in May 2011. They identified environmental issues, created maps, simulated monitoring wells, and observed groundwater sampling and treatment operations.

"Had we not been the closest school, we might not have gotten to participate in this project," seventh grader Evan Shepherd said. "We've really learned a lot this year."

Teacher Tammy Weitlauf said the science project was a perfect example of the types of community- involvement and leadership activities that the school seeks.

"We're all the time trying to bring the real world into the classroom," Weitlauf said, "but these mentors brought the real world to us."

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Last fall and winter, students visited the site to look at the outfall, which the Department and Kentucky Division of Waste Management jointly sample to be sure the water meets state-regulated discharge standards.

Students briefly visited a facility that Babcock & Wilcox Conversion Services operates to convert  $\text{DUF}_6$  into more stable material. They returned to visit a laboratory that the U.S. Enrichment Corp. operates. The lab is similar to commercial labs that do environmental and operational chemical analyses.

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Kelly Layne of the LATA Kentucky team tells Heath Middle School students how to use zinc pennies in an experiment with differing known and unknown solutions. Facing, from left, are students Atherton Milford, McKenzie Moss, Trevor Kendall, Max Kolb, and James Michael Dodd.