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WIPP Opens the Door to Energy Exploration For Middle School Science Programs

CARLSBAD, N.M., July 13, 2011 – Energetic middle school students across Southeastern New Mexico will have a lot to learn about energy next year thanks to the efforts of the Department of Energy's (DOE) Carlsbad Field Office (CBFO) and its contractors.

The DOE oversees the Waste Isolation Pilot Plant (WIPP). Located near Carlsbad, N.M., WIPP is America's only deep geologic repository for the permanent disposal of defense transuranic (TRU) radioactive waste generated from research and production of nuclear weapons.

The kits, targeted for the eighth grade level, introduce students to a variety of energy concepts, including nuclear, but take no editorial stance, said Jimmy Derrick, executive director of the Southeastern New Mexico Educational Resource Center (SNMERC).

"It encourages the discovery process," he said. "It introduces energy programs, what they are and what their impact is."

Science topics include the basics of electricity, energy sources, conservation, producing and using electricity from conventional and renewable sources including, nuclear energy. There are also corresponding math, language arts and social studies components covered in related kits.

In addition to sponsoring the eighth grade energy kits, CBFO also sponsored refurbishment of the other kits for elementary students.

“Two years ago, we approached WIPP asking for assistance with new hands-on science kits that addressed all of the state standards and benchmarks,” said Derrick. “The schools did not have the funds, so DOE helped purchase science kits for kindergarten through fifth grade that covered all the benchmarks.”

CBFO, through an existing funding plan with Sandia National Laboratories, sponsored revising the kits to meet new benchmarks and goals. SNMERC contracts with area school districts to provide educational material support. A kit is a collection of lesson plans that includes worksheets, posters and hands-on materials for doing basic science demonstrations and experiments. One kit can provide a teacher with activities for several weeks.

“Elementary teachers were spending money out of their own pockets on all manipulatives (hands-on kit contents) and consumables,” Derrick said. “We’ll drop these kits off at the 11 school districts in the area and they’ll really help teachers, especially those with no background in science.”

At the same time, Roger Nelson, DOE Chief Scientist, requested the creation of a brand-new science kit that focuses on energy. Lyn Nordstrom, director of the Center for Hands-On Learning, worked with Janis Trone, an employee of Sandia National Laboratories, Carlsbad Programs Group, in putting together an energy kit appropriate for eighth graders.

“What I really like is the new kit includes the four core subjects of science, English, social studies and math,” said Claudia Krause-Johnson, principal at Alta Vista Middle School. “Middle school learning is supposed to have thematic units, which this does. My teachers will now be able to plan at the end of the school year how they are going to use this for next year.”

One of Alta Vista’s science teachers, Damian Armijo, also happens to be New Mexico’s science teacher of the year. In the past, Armijo said his energy lessons, at the eighth grade level, have involved examining the flow of energy and some discussion of conservation.

“This will be nice, because it will be able to let us get a little more in depth,” he said. “We want to have students look at their individual life to see how they are using energy and what it is costing to use energy. “

Krause-Johnson noted that many of her school’s students are not exposed to science outside of the classroom, so there is a critical need for additional science support.

“I believe, this will pique their interest,” she said. “When they get to high school, after the freshmen academy, they are really supposed to focus on what kind of career they want to choose. I hope this will help them get interested in science or engineering fields.”

“For some kids, their primary focus is survival,” Armijo agreed. “That doesn’t mean we don’t have budding scientists out there – we just have to provide them with the opportunity.”

The “Energy 2040” kit is based partially on *The GeoPolitics of Energy*, a book by Dr. Judith Wright and Dr. James Conca. Conca was previously the director of the Carlsbad Environmental Monitoring and Research Center, which is independently operated by New Mexico State University.

Krause-Johnson said she expects her teachers will use the kit to at least introduce the basic concept of the WIPP underground repository.

Armijo stressed the science kits will incorporate language arts, social studies and math concepts.

“For example, we will look at issues of wind turbines and bird migrations, but we’ll also teach students how to evaluate (the objectivity) of different pages on the Internet.”

The teacher did say he expects his students to conclude the unit with some goals in mind.

“Be prepared for these guys to start petitioning for solar panels and wind turbines,” he noted.

Cutline: Sciencekits 1: Claudia Krause-Johnson, Jimmy Derrick and Damian Armijo stand in front of Alta Vista Middle School as they show off one of the posters that will be provided to eighth graders in a new science kit. The Department of Energy’s Carlsbad Field Office and its contractors sponsored the kit.