

WIPP Quick Facts (As of 7-27-11)

9,780

Shipments received since opening
(9,279 CH and 501 RH)

76,334

Cubic meters of waste disposed
(76,081 CH and 253 RH)

148,669

Containers disposed in the underground
(148,169 CH and 500 RH)

CH-TRU waste can be handled by workers without any other additional shielding than the container itself.

RH-TRU waste emits more penetrating radiation than CH waste and must be handled and transported in lead-shielded casks.

A **Panel** consists of seven disposal rooms each measuring 33 feet wide, 13 feet high and 300 feet long. Each room is separated by 100 feet of salt. The maximum permitted disposal capacity for CH and RH-TRU waste in Panel 5 was 19,195 cubic meters (CH – 18,750; RH – 445).

Disposal in Panel 5 complete



The final drums of contact-handled waste are being stacked in Room 1 of Panel 5 on July 7.

Disposal operations in Panel 5 of the WIPP underground are complete. On July 7, the final contact-handled (CH-TRU) waste shipment was emplaced in Room 1 of the panel. The panel took just over two years to complete disposal operations.

All disposal activities for both CH and remote-handled (RH) TRU waste have been moved into Panel 6. CH-TRU waste is now being disposed in Room 7 of Panel 6 while RH-TRU waste disposal operations were moved into Room 6 of Panel 6. RH-TRU waste disposal in Panel 6 began in late March.

“Closing another panel moves WIPP one step closer to completing our overall mission,” URS Washington TRU Solutions Site Operations Manager Wes Bryan said. “Everyone involved in all surface and underground operations continue to help solve the problem of cleaning up TRU waste from sites all over the country and they should be proud of this accomplishment.”

The WIPP underground is configured for eight panels, each with seven disposal rooms. CH waste disposal operations began in 1999 and has been disposed of in each panel. RH-TRU waste disposal began in 2007 and is fully disposed of in Panels 4 and 5.

WIPP Receives 500th RH Shipment

The U.S. Department of Energy’s Waste Isolation Pilot Plant (WIPP) has reached another shipping milestone. Just before midnight on July 13, WIPP safely received the 500th remote-handled transuranic (RH-TRU) waste shipment since RH-TRU waste operations began WIPP in 2007. The shipment originated from Argonne National Laboratory near Chicago, Ill.



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“WIPP now has over four years and 500 shipments of proof that safe and compliant disposition of remote-handled radioactive waste is possible.” said CBFO National TRU Program Director J.R. Stroble. “I want to thank all of the WIPP employees that contributed to this accomplishment. Their dedicated and focused effort on safely characterizing, transporting, and disposing of RH-TRU waste is a tremendous accomplishment for the DOE Environmental Management program. With the accomplishment of milestones like this, WIPP continues to demonstrate to the world that cleaning up the nation’s radioactive waste legacy is achievable.”

WIPP is permitted to dispose of two different types of TRU waste, contact-handled (CH) and remote-handled. RH-TRU waste has a higher dose rate than CH-TRU waste and requires additional shielding during transport and disposal. CH-TRU waste can be safely handled by workers without any necessary additional shielding.

RH waste is transported by trucks in RH-72B shipping packages from generator sites across the DOE complex. To date, WIPP has received RH-TRU waste from six different generator sites. WIPP has received more 9,700 shipments of CH and RH-TRU waste combined since disposal operations began in 1999.

Clausthal University Students



Tim Vöbel

WIPP takes an international approach

The Waste Isolation Pilot Plant (WIPP) has long served as an international model for its safe disposal of transuranic (TRU) waste in an underground repository, but a new program is allowing some students from other countries to get a “hands-on” feel for the project.

This summer, three graduate students from the Technical University at Clausthal in Germany — all interested in radioactive waste management careers — are working with scientists at WIPP. The U.S. Department of Energy’s Carlsbad Field Office (CBFO), which oversees the WIPP program, organized the exchange program. As the program develops, students at universities in the United States or even new employees at WIPP will be able to study in Germany.

“CBFO has an organization called the International Repository Program in which we are trying to reach out to other programs in the world to share our experience,” said Abe Van Luik, CBFO international program manager. “As part of this outreach, we’ve set up an exchange program where we can train students in certain aspects of our operation, and in exchange, they’ll do the same thing for people we want to send over.”



Sebastian Kuhlmann

The three students from Germany — Sebastian Kuhlmann, Sandra Kalanke and Tim Vöbel — have been assigned to Washington TRU Solutions, Sandia National Laboratories and Los Alamos National Laboratory scientists involved with the WIPP project.

The long-term goal is to increase the exchange of ideas in repository science between the United States and Germany, the two countries with the longest history of radioactive waste disposal in salt formations.

“We want to get a cross-culture fertilization of ideas and help each other build a future workforce,” Van Luik said. “Basically, the three students are doing research work related to their master’s thesis.”

Van Luik hopes the students will learn much more than just information within the scope of their fields of expertise.



Sandra Kalanke

“The challenges being faced by a repository program are very similar from country to country,” he said. “It’s a learning experience on how to properly and respectfully deal with societal anxiety, fear and opposition. Of course, the most important thing is the sharing of scientific information and information on characterization, transportation and packaging.”

WIPP Emergency Response Team Competes in Colorado



ERT members (above) include: Edward McGary (Team Captain), Chris Bowden, Matt Carnathan, David Dossey, Jake Jiron, Adrian Munoz, Saul Rascon, Eddie Roybal, Noelia Saldana, Craig Heine

Congratulations to the WIPP Emergency Response Team who recently competed in the Rocky Mountain Coal Mining Institute evaluation in Keystone, Colo. The WIPP ERT attends these trainings to continue to hone their skills in an event of an actual emergency on site or in the surrounding area.

The team was evaluated in a number of categories, including medical, hazardous materials, confined spaces and

Low Background Radiation Experiment Yields Interesting Preliminary Results

New Mexico State University’s Low Background Radiation Experiment (LBRE), which is conducted 2,150 feet below the earth’s surface at WIPP, recently released results about the project’s first two years of experimentation.

The March 2011 edition of Health Physics printed an article titled “Exploring Biological Effects of Low Level Radiation from the Other Side of Background,” summarizing some initial data taken from LBRE and from a sister experiment conducted at the Lovelace Respiratory Research Institute in Albuquerque.

“It’s nice that we got them published, but they are still very preliminary,” said NMSU Professor Geoffrey Smith, the project lead. “It’s a tremendous challenge to pick up the subtle small effects of growing cells in the absence of radiation.”

“That’s why there is such uncertainty about whether low levels of radiation are harmful or not,” noted Roger Nelson, chief scientist of the Department of Energy’s Carlsbad Field Office. “It’s really hard to measure the effects at low levels. Why, for all we know, low level radiation might even be beneficial for living organisms.”

Smith’s experiment involves placing two types of bacteria in the WIPP underground, where levels of natural background radiation are extremely low. Life forms are exposed to background radiation from a variety of sources daily, including the sun.

communication among others. Teams were graded on how well they worked with the incident command systems for each individual event. The team's cumulative evaluation score was 106.5%.

"The team's final score was superior considering there were two new members of the team for this competition," WIPP Senior Training Coordinator Craig Heine said. "Our great final score shows the dedication of all team members and demonstrates that we are prepared for any emergencies that could arise."

A total of 11 teams from a number of states competed in the event, including Montana, New Mexico, North Dakota, South Dakota, Texas and Wyoming.



Tana Saul and Professor Geoffrey Smith conduct research during the summer of 2010 in an underground laboratory at the Waste Isolation Pilot Plant. The Low Background Radiation Experiment will soon begin its third year.

The test is to see whether exposure to "less than average" radiation will be a benefit, a detriment or have no effect on the life forms. The transuranic waste emplaced at WIPP, the U.S. Department of Energy's underground repository near Carlsbad, in no way interferes with the experiment.

The project is about to begin its third year, with Smith and two NMSU students conducting the research at WIPP.

"I really enjoy the work out there," Smith said. "Spending summers sweating it out in the underground is actually a great break."

The Health Physics article was submitted by Smith, Yair Grof (Soreq Nuclear Research Center), Adrienne Navarrette (Carlsbad Environmental Monitoring and Research Center) and Raymond Guilmette (Lovelace Respiratory Research Institute). The two experiments seek to test the Linear No-Threshold model of radiation dose-response, which assumes that a single ionizing radiation interaction with a cell is dangerous.

Results so far, as reported in the Health Physics article, indicate that the cell growth of the bacteria in the WIPP underground, exposed to less background radiation than the control group, is hampered.

"Initial results from June 2010 show ... the growth of 'radiation starved' cells are (sic) inhibited compared to cells grown in the presence of background radiation levels," the researchers reported.

"The noise in the data is still fairly high," Smith clarified. "It's preliminary, and we still need more data to show it as statistically different."

The experiment has changed slightly over the past three years. During the first year, Smith's control group involved growing the same cultures of bacteria above ground, where they would be exposed to normal amounts of radiation. In the second year, the control group of bacteria was cultivated in the WIPP underground, but radiated to simulate background radiation.

"This year, we're going to do both and double the control treatments," Smith said. "We're also working to increase the sensitivity of our tests and decrease the amount of experimental noise."

Guilmette's experiment at the Lovelace Respiratory Research Institute has yielded similar preliminary results to the experiment at WIPP, the researchers reported. Instead of using the WIPP underground, the Lovelace experiment uses shielding to reduce background radiation exposure for one group of cells. However, shielding at the surface cannot reduce the radiation levels to much less than about a third of that of natural background. Getting close to zero background radiation requires an experiment underground in a salt mine with no naturally radioactive minerals in the rock.

Energy Science Kits Will Soon Make Impact

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, who put together science kits for students to use during the next school year.

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."



Alta Vista Principal Claudia Krause-Johnson (left), SNMERC executive director Jimmy Derrick (middle) and teacher 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.

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

Interested in WIPP?

If you would like to be notified when TRU TeamWorks is updated with the latest information about WIPP, send an email message to: TRUTeamWorks@wipp.ws.

In addition to sponsoring the 8th grade energy kits, CBFO also sponsored refurbishment of the other science 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 a revision of the kits to meet new benchmarks and goals.

At the same time, Roger Nelson, DOE chief scientist, requested the creation of a 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.”

The U.S. Department of Energy
Waste Isolation Pilot Plant

[Return to top](#)

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