



Workers prepare to lower detection instruments into the Waste Isolation Pilot Plant to test radioactivity levels inside the mine. (Photos courtesy of the DOE)

# WIPP: The road to recovery

## ***Crews descend into the Waste Isolation Pilot Plant as the DOE begins Phase 3 of its recovery process.***

The Department of Energy continues to assess conditions at the Waste Isolation Pilot Plant following a radiological release incident on February 14. Workers first reentered the mine on April 2, and on April 14 the DOE announced that it has begun the third phase of its recovery operation, during which WIPP employees will enter the mine several times a week as they work to locate and identify the source of the radiological release. The DOE anticipated using two teams during each entry into the underground facility during this phase.

Located near Carlsbad, N.M., WIPP is the DOE's deep geologic repository for the nation's defense-related transuranic (TRU) waste. The waste is disposed of 2,150 feet underground in panels (cells) carved out of a rock salt formation. The DOE closed the facility and suspended the receipt of waste shipments after the release of airborne radioactive material was detected.

Five days after the incident, the Carlsbad Environmental Monitoring and Research Center (CEMRC) confirmed that 0.64 becquerels (Bq) of americium-241 and 0.046 Bq of plutonium-239+240 were found on an air monitor filter

about a half mile from the plant, indicating that a small amount of airborne radiation had been released into the environment. According to CEMRC, later sampling of an air filter located near WIPP's ventilation exhaust, secondary to the vent's HEPA filter, showed a moderate amount of radioactivity, measuring 1.81 Bq/cubic meter (m<sup>3</sup>) of Am-241 and 0.224 Bq/m<sup>3</sup> of Pu-239+240. As that filter had been installed the morning of the incident and was not removed until February 18, CEMRC said that it is representative of the total amount of Am-241 and Pu-239+240 that may have been released into the environment over the four-day period. The actionable level of radioactivity set by the Environmental Protection Agency is 37 Bq/m<sup>3</sup>.

Over the weekend of March 7 and 8, the DOE began the first phase of the recovery effort when it lowered radiological and air quality instruments down into the mine to check for airborne radioactivity and to determine air quality. According to the DOE, the preliminary findings indicated no detectable radioactive contamination in the air or on the equipment that had been lowered and returned to the surface. Air quality results were also normal, the DOE



*WIPP recovery workers put on protective clothing and are fitted with positive air respirators before entering the underground facility.*



*Recovery teams survey conditions within the mine, installing four portable continuous air monitors that provide early detection and monitoring of airborne radiation.*



*A transuranic waste shipment from Los Alamos National Laboratory arrives at the Waste Control Specialists facility in Andrews County, Texas, where it will be temporarily stored until WIPP resumes disposal operations.*

said, as had been expected, since the mine shafts that were sampled were not in the air flow path coming from the area where the radiation release had originated.

Speaking at the 2014 Waste Management Conference on March 3 in Phoenix, Ariz., David Huizenga, senior advisor in the DOE's Office of Environmental Management (EM), said, "We really don't know what happened underground." Huizenga added that a February 5 incident involving an underground truck fire was "completely unrelated" to the radiological release. EM released its investigation of the truck fire accident on March 13. The report identified problems with WIPP's preventative and corrective maintenance program, as well as its fire prevention program, as contributing factors to the incident.

Christine Gelles, director of the EM's Office of Disposal Operations, further noted that the truck fire occurred in the north part of the mine, more than 2,300 feet from WIPP's Panel 7, where the central air monitor alarm was activated and the radiological release is thought to have originated. Gelles said that Panel 7 was open to receiving waste prior to the release.

During an April 17 town hall meeting, Tammy Reynolds, the DOE's deputy recovery manager, said that workers found surface contamination in the area of Panel 7 during a fourth trip into the mine the previous day. "The more they got into Panel 7 it became more widespread," she said. On April 18 the DOE confirmed that based on the location of a continuous air monitor alarm and the information gathered during the previous entry, the event likely occurred in Panel 7.

In an April 18 letter to area residents, Jose Franco, manager of the DOE's Carlsbad Field Office, said that recovery crews did not detect airborne contamination as they moved toward the waste disposal area. "This confirms our ventilation system is working as designed," he said.

Franco also said the DOE is working with experts in the industry to develop immediate and long-term plans. "While we know the plan will change as we learn more from future entries, we want a plan that guides us beyond

initial recovery actions and paves the way for us to begin accepting and disposing waste again," he said.

The DOE said that it was continuing to gather the results of bioassay testing of employees who may have been exposed during the release. As of March 28, the DOE found that 21 employees tested positive for just over background for contamination in fecal samples. This includes 13 employees who were initially tested immediately after the event, as well as other employees who had been subsequently tested. According to the DOE, there has been no detectable contamination in urine samples, which indicates that contamination was not inhaled into the lungs.

According to the DOE, the levels of exposure are extremely low, and none of the employees is expected to experience any health effects from the exposures. The four most recent positive results were at a barely detectable level (about 0.1 disintegrations per minute), the DOE said.

Regarding shipments of waste to WIPP that have been put on hold, Gelles said that other DOE sites, including Los Alamos National Laboratory (LANL) and Idaho National Laboratory, are continuing to process TRU waste but that it was not known how long it would take for WIPP to resume waste acceptance.

To help maintain LANL's deadline for removing 3,706 m<sup>3</sup> of TRU waste from the lab by June 30, 2014, the DOE and Nuclear Waste Partnership (NWP), the management and operating contractor for WIPP, are temporarily storing the waste at Waste Control Specialist's low-level waste facility in Andrews County, Texas. Up to 100 shipments from LANL may be required, and after an initial ramp-up period, as many as 10 shipments per week will be scheduled. According to the DOE, NWP has a one-year contract with Waste Control Specialists valued at \$8.8 million.

Also during the week of April 19, recovery crews completed training to learn how to operate robots from Sandia National Laboratories and LANL that are on standby to support the Phase 3 operations. The robots will be used only if workers cannot access the suspected contamination source, the DOE said.—*Tim Gregoire* ■