

Update 10/2/03

Shipments expected this week: Hanford (1), RFETS (11), SRS (6) |

TRU TeamWorks

A weekly e-newsletter for the Waste Isolation Pilot Plant team

October 2, 2003

The Big Story

Laboratory setup at CEMRC is teamwork in action



Topics

[Characterization News](#)
[Transportation News](#)
[Disposal News](#)
[Safety News](#)
[Working Smart](#)
[Announcements](#)
[Our Team](#)

Tools

[Acronym List](#)
[Archives](#)
[Back to Main Page](#)
[WIPP Home Page](#)
[Links](#)

Feedback

Contact us with feedback or submit your e-mail address for updates. Click [here](#) to e-mail.

WIPP Shipments (as of 10/2/03 at 7:44 a.m.)

Shipments
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18

Total shipments
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2,059

team-work ('tEm-"w&rk); *noun*; circa 1828: work done by several associates with each doing a part but all subordinating personal prominence to the efficiency of the whole.

Teamwork in its finest form is taking place at the Carlsbad Environmental Monitoring and Research Center (CEMRC), where three laboratories run by three separate organizations have successfully combined their operations at one location. CEMRC has opened its doors to provide vitally needed laboratory and office space to LANL/CB and WTS.



The center has long been an independent observer of WIPP, providing third-party monitoring of WIPP's effects on the environment and population. That support has evolved in a new collaborative effort with the DOE, explains Dr. Deborah Moir, CEMRC interim director. "Through a cooperative agreement with DOE, LANL/CB and WTS, lab operations have been incorporated into the CEMRC facility. This move consolidates the experience that was already present in each of our organizations. Now all members of these three excellent staffs will gain from shared knowledge and collaboration while working side-by-side."



Top: Dr. Marian Borkowski prepares WIPP brine samples for spectrophotometric measurements in the LANL/CEMRC actinide chemistry laboratory. Bottom: Okka Maung, WTS, prepares glassware for use in the lab.

LANL/CB moved its actinide chemistry and analytical laboratories and five employees to CEMRC over several months. Jim Conca, team lead for LANL/CB actinide analysis, comments on the move. "This has been an excellent opportunity for us, made even more attractive by the CEMRC team's scientific collaborations and commitment to making the change work. They have graciously provided the space we need to continue our lab work in the most effective manner. It is a win-win situation for everyone because as we share space, we will also share knowledge."

WTS laboratory operations and seven employees moved to CEMRC last month. WTS now performs radiochemistry and destructive analysis at CEMRC. WTS also maintains counting facilities at the site for times when a quick turnaround of emergency samples is needed. "CEMRC has provided top-notch facilities for our laboratory needs," comments Mansour Akbarzadeh, WTS laboratory manager. "Our move to the center is an example of teamwork with external and internal organizations. After the move, our lab was operational two weeks ahead of schedule thanks to the efforts of WTS employees John Garcia, Candice Jierre, Scott Cassingham, Jeff Knox, Curtis McAvoy, Steve Childress and Randy West. Everyone involved worked to ensure the transition was seamless for our staff and the personnel at CEMRC. The move was a great success and we now look forward to continued excellence in operation."

In the news



An inside look



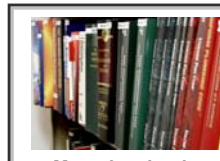
It's big



WIPP Trivia



Payloads swiped



More than books



Our Team News

Real-time radiography (RTR) - the inside story



Topics

[Characterization News](#)
[Transportation News](#)
[Disposal News](#)
[Safety News](#)
[Working Smart](#)
[Announcements](#)
[Our Team](#)

Tools

[Acronym List](#)
[Archives](#)
[Back to Main Page](#)
[WIPP Home Page](#)
[Links](#)

Superman has nothing on Central Characterization Project RTR operators. The hero used X-ray vision to clean up crime; skilled RTR operators employ X-ray technology to clean up TRU waste. RTR is a nondestructive examination technique that uses X-ray scans of 55-gallon waste drums to identify what's inside.

When a characterization process line is set up at a waste generator site, 100 percent of the drums go through the RTR process to verify acceptable knowledge records. A representative sampling of the waste drum population is run through the RTR process, then undergo visual examination (VE). During VE, drums are opened inside a glovebox and a complete inventory of their contents is prepared. Thus, the VE process is used to verify the RTR accuracy.

From these checks and balances, an RTR miscertification rate (e.g., prohibited items found) is established. This miscertification rate determines the number of waste drums that will be subjected to both RTR and VE as a part of the characterization process for that waste population. For example, the current SRS miscertification rate is approximately two percent. Based on that rate, the RTR on 27 drums from the total population of 2000 + drums must be verified through VE. The rate is re-evaluated annually.



The CCP RTR system is set up inside a trailer. A forklift is used to move a drum and place it on the conveyor at the rearmost position of the trailer. The drum is then moved forward into the RTR line. Inside the trailer, the RTR operator begins the process of viewing the drum contents on a monitor. Each drum in RTR is videotaped and recorded. **Left: A forklift delivers a drum to the RTR trailer at SRS.**

RTR operators examine drum X-rays with three main goals in mind: verification of waste matrix code, identification of prohibited items and determination of material parameter weight. In a typical 12-hour shift, operators can expect to complete data reports on 15 to 17 drums. If prohibited items are identified, operators must record the variance and complete the necessary paperwork so that the drum can be remediated through VE and article removal. At SRS, the cost to perform RTR is \$275 per drum, based on an output rate of 180 drums per week.

"RTR is a safe and effective way to determine drum contents," states Adela Cantu, CCP site project manager. "Operators are able to determine what's inside the drums without personal exposure to the waste. If a drum must be remediated, the VE technicians can rely on the RTR data to warn them of any sharp edges or other potential hazards within the drum."

Because accuracy is vital, operators are trained to detect variables in the waste. Skilled RTR operators can set up and calibrate equipment and evaluate RTR data results. They know the capabilities of their equipment, as well as its limitations. RTR operators must earn qualification cards and successfully complete site-specific exams that address RTR procedures, documentation and characterization. An operator qualified to perform RTR at INEEL could not perform RTR at SRS without additional qualification. To maintain qualification cards, operators must pass an annual eye examination and bi-annual performance examinations. Complete recertification is required every two years.

Would you like that order biggie-sized?

Is bigger always better? If you've got large TRU waste items to ship, the answer is yes. TRUPACT-III, a large-sized shipping container (6' X 6.5' X 14.8' payload cavity), is currently being evaluated for use at WIPP.



Topics

[Characterization News](#)
[Transportation News](#)
[Disposal News](#)
[Safety News](#)
[Working Smart](#)
[Announcements](#)
[Our Team](#)

Tools

[Acronym List](#)
[Archives](#)
[Back to Main Page](#)
[WIPP Home Page](#)
[Links](#)

Like the Type B TRUPACT-II container, TRUPACT-III must first pass a series of tests before receiving Nuclear Regulatory Commission (NRC) approval. There are some striking differences between the two shipping containers. First, TRUPACT-III is rectangular rather than round. Second, it provides a single level of containment; TRUPACT-II is double-contained. Finally, the waste is loaded into the TRUPACT-III horizontally through a removable lid at one end, while TRUPACT-II is loaded vertically from the top.

The TRUPACT-II has been such a successful shipping container, why does WIPP need the TRUPACT-III? Round TRUPACT-IIs only have the capacity for 55-gallon drum 14-packs, standard waste boxes and similar-sized payloads. They cannot handle large bulky waste. Due to the volume of oversized TRU waste items in DOE's inventory, engineers began work on a larger shipping container.

TRUPACT-III was developed by Packaging Technology, Inc. (PacTec) on behalf of WTS and DOE. It is designed to be transported by flatbed trailer or railcar. Sandia National Laboratories ran tests on the TRUPACT-III prototype from September 15 through 19 in Albuquerque.

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Rigorous certification testing included two drop tests from 30 feet (at left) onto a concrete pad and one drop from 12 inches. Certification testing was preceded by a single 30-foot engineering drop test. All tests were performed with the prototype container chilled to minus 20°F to maximize the impact loads.

On completing the Albuquerque tests, the drop-tested TRUPACT-III was sent to Carlsbad for further impact testing. The package underwent penetration tests at Washington Group International's Engineered Products Department. The half-scale prototype was dropped from 40 inches onto a 3-inch diameter puncture bar in three separate tests.

According to Robert Johnson, WTS technical project representative, "With only one puncture test to go, the seals on the TRUPACT-III have been demonstrated to be leak tight. However, final measurements and analyses have not been completed." Once results are fully assessed and documented, PacTec plans to submit the certification application to the NRC.

**What you always wanted to know about WIPP waste
But were too busy working to ponder**



Topics

- [Characterization News](#)
- [Transportation News](#)
- [Disposal News](#)
- [Safety News](#)
- [Working Smart](#)
- [Announcements](#)
- [Our Team](#)

Tools

- [Acronym List](#)
- [Archives](#)
- [Back to Main Page](#)
- [WIPP Home Page](#)
- [Links](#)

Total Waste Disposed Underground at WIPP

(as of 10/2/03 at 7:44 a.m.)

CH drums 44,914
CH standard waste boxes 2,108
CH ten-drum overpacks 423
Cubic meters 15,299

Special thanks to Steve Offner, WWIS database administrator, for his assistance with this article.

We've accelerated its disposal, X-rayed and sorted through it. Databases track TRU waste's physical, chemical and radiological properties to ensure compliance and safety. Yes, WIPP waste has been looked at from every angle – except one. Call it WIPP trivia. Following are some not-so-known facts about emplaced TRU waste.

Comparisons



The total amount of methane in the headspace gas of waste containers underground is equivalent to a cow burping for six hours or 35 two-liter soda bottles of methane.



Rubber waste underground is equal to 3,890 17-inch tires or enough to outfit 972 cars.



We have disposed 5,188 tons of iron-based and other metals, the amount of metal one might find in a ten-acre lot of passenger cars parked side-by-side and bumper-to-bumper.



If all the cellulosics (such as wood-based products) disposed underground were converted to lumber, there would be enough to build 40 single family dwellings of 2,450 square feet.



If all plastic materials disposed underground were molded into hard hats, each resident of Carlsbad could have 51 hard hats in his/her closet. For a family of four, that's 204 hard hats in the house.



Sorry numismatists, the total silver in disposed homogeneous wastes is only enough for 11 one-ounce coins.

Averages

- 55-gallon drum - 285 pounds (heaviest on record 785 pounds)
- Pipe overpack - 349 pounds
- 85-gallon overpack - 576 pounds
- SWB (overpack) - 1,168 pounds
- SWB (direct load) - 1,685 pounds
- Ten-drum overpack - 2,875 pounds

Based on waste emplacement data through September 25.

And which TRUPACT-II has seen most service? Why, that would be TRUPACT 132.

WIPP payloads swiped...



Topics

[Characterization News](#)
[Transportation News](#)
[Disposal News](#)
[Safety News](#)
[Working Smart](#)
[Announcements](#)
[Our Team](#)

Tools

[Acronym List](#)
[Archives](#)
[Back to Main Page](#)
[WIPP Home Page](#)
[Links](#)

What is a swipe? A small round piece of cotton twill. When TRUPACT-II transportation containers arrive at the WIPP gate, radiological control technicians (RCTs) "swipe" the outside of each TRUPACT-II four times to determine if there is removable contamination above permitted limits.

The swipes are counted using a Tennelec machine that measures both alpha and beta contamination. Swipes are taken over an area of approximately 16 square inches or 100cm². Removable contamination results are reported in disintegrations per minute (DPM/100cm²).

Tested-clean TRUPACT-IIs are transferred to TRUDOCKS in the CH Bay of the Waste Handling Building where the waste payload will be removed. RCTs swipe the inside of the outer lid as it's opened. Swipes are also taken on the outside of the inner lid before it's removed. Waste handling technicians place a vent hood over the TRUPACT-II inner containment vessel (ICV) lid and then lift the lid so that swipes can be taken under the lid and on top of the payload. Once those swipes are analyzed clean, the inner containment lid is removed and more swipes are performed.



**RCT swipes
TRUPACT-IIs at gate.**

When the payload is removed from the ICV, more swipes are taken, in addition to gamma and neutron dose rates. If no contamination is detected, the 55-gallon drums, standard waste boxes (SWB), or ten-drum overpacks (TDOP) are placed in the corner of the CH Bay on a facility pallet before downloading underground for permanent disposal. RCTs average 37 swipes per TRUPACT-II and waste packages while in the CH Bay. Underground, the facility pallet is swiped at least three more times under each payload after it is removed from the transporter. These swipes are processed on portable counting machines.

On average, each TRUPACT-II and its waste package is swiped approximately 44 times. Based on 60 TRUPACT-IIs per week, WIPP conservatively uses 137,280 swipes per year. If, for example, RCTs find or suspect anything out of the ordinary, more swipes are taken to ensure: (1) no further contamination is identified or (2) that contamination has not been spread.



**RCT swipes the
inside of the OCV lid.**

What happens to used swipes? Clean swipes are thrown away as trash. A "dirty" swipe, one that shows contamination above permitted limits, is sent to the WIPP radiochemistry lab for analysis. The lab will count it again on the Tennelec machine before performing a gamma spectroscopy. The spectroscopy sorts out radionuclides by the energy they emit. If needed, a dirty swipe can be subjected to destructive analysis to identify the activity from specific nuclides.

Dirty swipes, not subjected to destructive analysis, can be safely stored at WIPP as long as necessary. In time, they will be disposed of in the WIPP underground as site-derived TRU waste.



**RCT swipes the
inside of the ICV lid
and the top of the
payload.**

"In addition to the swipes taken during the waste handling process, RCTs perform numerous gamma and neutron radiation surveys. Resulting dose rates (measured in millirems per hour) provide the RCTs with the information they need to post the radiological areas as required and keep personnel exposures ALARA," says Roger Groves, WTS radiological control technician.

WIPP's Technical Library It's Not Just for Books Anymore!



Topics

[Characterization News](#)

[Transportation News](#)

[Disposal News](#)

[Safety News](#)

[Working Smart](#)

[Announcements](#)

[Our Team](#)

Tools

[Acronym List](#)

[Archives](#)

[Back to Main Page](#)

[WIPP Home Page](#)

[Links](#)

Technical resources are never more than a few steps, a phone call or mouse click away, thanks to one of WIPP's not so universally familiar resources.

The WIPP Technical Library, boasting both on-site and Skeen-Whitlock Building locations, has been a project fixture since the early 1980s in various Carlsbad locations and part of the genesis of WIPP with the Department of Energy in Albuquerque in earlier years. Some of WIPP's historical documents are only available in Technical Library archives.



At left: One of the many shelves of reference materials available in the WIPP Technical Library.

Working Smart

Library resources can save a worker an average of 94 information-gathering hours per year, according to American Library Association studies.

Lata Desai, who began as a temporary employee in 1986, coordinates library operations. Adele Garcia staffs the on-site location. Desai spent 1987 (much of it on Saturdays) unpacking, cataloging and shelving WIPP's technical documents and other resources into a consolidated, professional on-site library. The collection has grown to more than 4,000 research reports; 1,500 books; 50 journals and newsletters; at least a half-dozen industry standards, as well as a sizable group of regulations directly associated with WIPP.

Simply clicking the library homepage (<http://bellview/WCOMM/LIBRARY/>) "search" button can take you to exactly the right resource, with the power of electronic search capabilities at your fingertips. This is a library without walls. For example, Desai obtained a site license to make the CyberRegs online technical resource (<http://whts.citation.com/>) available to all project participants. Other online services include Dialog, Lexis/Nexis and National Fire Codes. Library staff will conduct Internet searches for employees.

Desai routes publications to nearly 100 employees and responds to as many as 124 research requests monthly. The Library Materials Request Form is employees' passport for ordering reference materials that meet requirements of the Technical Library Procedure WP 15-PS3108.

"I love researching anything," says Desai, a former history and languages teacher who emigrated from India. "If people want something, I have to find it. I don't ever want to say I couldn't find it!" The thrill of research is Desai's perfect job. She can also give you *at least* 10 reasons why the Internet is no substitute for a library!

**Topics**[Characterization News](#)[Transportation News](#)[Disposal News](#)[Safety News](#)[Working Smart](#)[Announcements](#)[Our Team](#)**Tools**[Acronym List](#)[Archives](#)[Back to Main Page](#)[WIPP Home Page](#)[Links](#)**Public communications require CBFO review**

In keeping with DOE Order 1340.1B, all technical papers, presentations and abstracts must be reviewed by CBFO prior to public release. Public communications publications prepared by or printed with DOE funds should meet the following guidelines:

- Consistent with DOE policy
- Essential to the mission of the Department
- Uses accurate and current information
- Substantive and well written
- Free from any suggestion of being self-serving
- Sole source of information and not similar to materials, free or for sale, available from DOE, other government agencies, private or community organizations
- Cost effective
- Fills a substantial need to respond to public inquiries

The steps for obtaining CBFO approval are:

1. Submit your publication to Dennis Hurtt, CBFO Public Affairs, at least 14 working days prior to deadline (Mail Stop 220, or call Ext. 7327). Identify the appropriate DOE technical reviewer and due date.
2. Publication will be routed to the DOE technical reviewer and comments transmitted back to author for resolution.
3. The author will be notified by e-mail or letter when the publication is approved for release.
4. A copy of the publication and approval will be retained by CBFO Public Affairs.

-- From Dennis Hurtt, CBFO

**Stoller ranks number 7 on 2003 Mercury 100 list**

The Lafayette-based S.M. Stoller Corporation was ranked 7th on the 2003 Mercury 100 list published by the Boulder County Business Report.



The Mercury 100 List ranks the 100 fastest-growing companies in Boulder and Broomfield counties for the previous calendar year. Stoller ranked 7th based on revenue growth from \$10.6 million in 2001 to \$22 million in 2002. President Nick Lombardo accepted the Mercury 100 Award on Stoller's behalf at a special reception at the Shelby Museum in Boulder, Colorado. Stoller supports WIPP through contracts with LANL, SNL, WTS and CTAC.