

From: Waggoner, Larry O

Sent: Tuesday, May 09, 2006 4:34 AM

Subject: ALARA Center Activities for Week of May 1, 2006

Attachments: ALARA PROTECTIVE MEASURES USED AT ARGONNE LABS TO D.doc;
Chemical Decon Websites.doc; Zip Patch.doc

Visit our website at <http://www.hanford.gov/rl/?page=974&parent=973>

1. Field engineer from WCH stopped and looked at our Blade Plunging Cutter. He wants either a hydraulic or battery powered tool to cut piping in the 300 area. Loaned him a videotape showing the Blade Plunging Cutter chopping up concrete, piping, and door hinges and recommended he look at the DOE Innovative Technology Report at:
<http://apps.em.doe.gov/OST/pubs/itsrs/itsr2953.pdf> Recommended he visit these websites.
Champion Rescue Tools - www.championrescuetools.com/index.php
Mega-Tech Services - www.mega-techservices.biz
Recommended he call Mike Douglas at (509) 430-7089 for a demonstration of the Nucut battery-powered shear. Nucut - www.trutechllc.com/nucut.htm
2. Conducted PHMC ALARA Council meeting for May. Jerry attended a kick-off meeting for the Self-Assessment Team who will be looking at "Design and Control" over the next month. Had some inquiries recently on decontamination methods used at Hanford. Made up a list of websites on chemical decontamination in case there is any interest. See Attachment. Forwarded info to Solid Waste Radcon on Zip Patch made by Devcon. Zip Patch is a 4" X 9" "Band-Aid" that can be used to patch holes in all types of metal, plastics and wood, even if the surfaces are wet. See Attachment or <http://www.devcon.com/devconcatsolution.cfm?catid=23> This might work as a temporary patch if corroded waste drums are uncovered.
3. CH2M engineer stopped by and looked at HEPA filtered vacuum cleaners for work at the 200 East Evaporator. After much discussion, he decided to purchase a Nilfisk GM-80. Provided copies of brochures and the GSA Contract. WCH Radcon stopped by and we gave them a sample of Polymeric Barrier System (PBS) sealant to control contamination spread inside a containment device. Forwarded Power Point presentation to CH2M personnel working on Tank Farm Improvements. The presentation was written by Unitech and compares the performance of the ProTech 2000 coveralls to the Orex disposable clothing.
4. Columbia Basin Hotsy dropped off their Model 871 Heated pressure washer for display at the ALARA Center. This unit is rated at 2400 psi @ 2.7 gal/m. WCH has recently bought two larger trailer mounted units for their work. Hanford and other DOE sites has had great success using the Hotsy with their detergents to decontaminate heavy equipment, tanks, floors, etc. Contact JoAnn at Columbia Basin Hotsy to arrange a free demonstration (943-6022 or www.cbhotsy.com).
5. SWSD Radcon called with a problem with "Fibercast" piping. The piping is made with fiberglass and one flange has fixed contamination that becomes removable (loose) every time it rains. Presently, the flange is covered with a large plastic sleeve. Contacted the company that makes fibercast piping and they said we could apply any kind of paint on the flange without causing it to deteriorate. Recommended they use Polymeric Barrier System (PBS) sealant which will not degrade in sunlight. The ALARA Center will donate the PBS.
6. Talked to J. Cornelison from Safety to discuss a recent problem where a worker cut his finger while working in a glovebag. Worker was using a double-sided knife and cut his finger when his hand slipped. He was not wearing leather gloves over the glovebag gloves, as required. The ALARA Center has been asked to assist in evaluating several samples of "puncture-resistant" gloves and make recommendations of which ones provide the best protection. Several varieties of gloves and hand tools will be delivered next week.

Larry Waggoner / Jerry Eby
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FOR YOUR INFORMATION

1. The Flanders Filter Corporation has some very good manuals on HEPA filters, testing HEPA filters, etc. See <http://www.flanders-csc.com/manuals.htm#>. D&D personnel have made plans to install misters on the roofs of adjacent buildings near Building 232-Z which is scheduled to be demolished soon. Plan is that if anything becomes airborne during the demolition, it will be trapped in the mist and taken to the ground. Misters were purchased from FogCo at <http://www.fogco.com/commercialgallery.asp>. System consists of 3/8" tubing with misters every two feet. The tubing will be installed in the gutters of the surrounding buildings shooting the mist in, towards 232-Z. Additional lines with misters will also be laid across the roof of 232-Z and sacrificed during demolition. Contact Earl Lloyd at 373-6541 if you more details.
2. Went back through some old records and found a report written ten years ago on the D&D of 61 gloveboxes located in 9 laboratories at Argonne Labs. While it is a little dated, there's still some good info for anyone that is currently planning D&D of a facility. The entire report can be read at website <http://www.osti.gov/bridge/servlets/purl/426980-7nKgwi/webviewable/426980.pdf>. I have condensed the info about ALARA and attached it to save you time. See attachment
3. While looking for something else I found a website for a measuring tool that can measure pipe wall thickness without removing insulation. It is much faster than Ultrasonic Testing or Radiography. There are some good pictures in this article that show piping that may be similar to the old piping we have at Hanford. Read about it at <http://www.tubenet.org.uk/technical/lixim.html>
4. Received a new tool from Tri-Tool for chipless tubing/pipe cutting. The cutting blade, similar to a can opener, rotates around a stainless steel pipe and cuts the pipe without any metal chips. Upon break-thru, no debris falls into the pipe. We were able to cut a 1/2" stainless steel pipe in about 30 seconds. The pipe is cut off "square" with almost no burr that would require dressing with a file. Once the pipe was cut, the cutter fed in a few more revolutions and then automatically reset, ready for the next cut. We have to return this tool in two weeks so if you want to try it out, stop by soon. Contact Daryl Anderson at his new email at d.anderson@tritool.com See <http://www.tritool.com/pdfs/550Flyer.pdf> or www.tritool.com for more info.
5. There is an electronic magazine for Radiation Safety Officers and it can be found at <http://www.radpro.com/RSOfront-86.pdf> They want \$20 to subscribe but it may be worth it to some of you. Found an interesting Website on D&D. Go to <http://www.decommissioning.info/> I clicked on "Hanford- C Reactor" and then selected "Final Innovative Technology Summary Reports" at the bottom of the page and was able to read 20 reports written by Bechtel on the tools and equipment they used to D&D "C" Reactor.
6. Steve Hathaway is looking for some fogging equipment to borrow for a short time. If you have any to loan please call him at 372-0382.

LESSONS LEARNED

T-Plant was selected to treat sludge removed from the K-East Basin Fuel Pool and prepare it for shipment to the Waste Isolation Pilot Plant (WIPP). The sludge had been placed in Large Diameter Containers (LDCs) and sent to T-Plant. Plan was to pump the sludge from the LDCs into a buffer tank, pump metered quantities into 55 gallon drums, and grout the sludge. The sludge contained significant amounts of Cs137 and Sr90 as well as alpha emitters such as Pu239 and Am241. Dose rates on the

LDCs exceeded 100 mrem/h. In addition, as the sludge dried out, it produced considerable airborne and surface contamination. Several ALARA Protective measures were used and these included shielding, remote handling, remote monitoring, automated handling, confinement ventilation, pre-staging, secondary containment, special tools, system walkdowns, mock-ups and dry runs.

Lead shielding was attached to the outside of the LDC and a 4" thick steel shield covering the processing system. In addition, a 2" thick steel shield was mounted in front of the mixing enclosure to reduce the worker's dose but allow access when needed. This shielding was installed during assembly of the components in areas that were not radiation areas. A crane was used to install the LDC into an overpak. The crane is located behind a 5' thick concrete wall. All pumps, valves, mixing motors, etc are operated remotely. Closed circuit TV cameras were used to monitor tank levels and the work steps. A mini-camera was mounted to the spray wand to monitor the inside of the LDC during pumping. Other cameras were used to monitor drum weights, verify containers are empty, and observe the entire process from a control room. Radiation levels were also monitored remotely.

Automated pumping controls were used to pump sludge and water to the buffer tank. An automated positioning device was used to position the drum in the exact location for filling. Three HEPA filtered portable ventilation units were used to provide negative ventilation. Absorbent material was loaded into "pillows" and placed in the bottom of each drum to absorb excess liquid, rather than mixing the absorbent with the grout. Test equipment was fabricated outside radiation areas. Grout was pre-packaged in drums and placed near the equipment to reduce the preparation time in radiation areas.

An extension wand was used to operate valves to increase the distance workers had to be from the equipment. A strain relief cable was attached to make the wand easier to operate. A secondary containment was erected to confine contamination spread, if there was a leak. A special tool was developed to reduce the time required to install a drum lid ring to secure the drum. Another tool was used to vibrate the grout loading funnel and tilt the drum to reduce the time to fill the drum. System walkdowns were used to train personnel and capture their best ideas on how to make the process more efficient. Mockups were constructed to provide realistic training for operators and support personnel. Dry-runs of the equipment were conducted prior to introducing contaminated material into the system.

Dose avoided was estimated to be 27-30 person-rem due to the implementation of these ALARA Protective measures. Rough estimates on the cost to implement ALARA was \$200,000 to \$400,000 or a cost of about \$10,000 per person-rem. [Point of Contact is Dave Andrews at \(509\) 373-0815.](#)

UPCOMING EVENTS

Hanford Health and Safety Expo May 23 & 24 at TRAC in Pasco

Health Physics Society Annual Meeting Jun 25-29 in Providence, RI

Health Physics Society Mid-Year Meeting Jan 21-24, 2007 in Knoxville, TN
on D&D and Environmental

World of Concrete (for D&D personnel) Jan 23-26, 2007 in Las Vegas, NV

Waste Management Symposium Feb 25-Mar 1 in Tucson, AZ

Health Physics Society Annual Meeting July 8-12, 2007 in [Portland, OR](#)

[American Nuclear Society Topical on Decommissioning, Decontamination and Reutilization & Technology Expo](#) Sept 16-19, 2007 in Chattanooga, TN

International Symposium on Packaging Oct 21-26, 2007 in Miami, FL
and Transportation of Radioactive Materials
(Sponsored by DOE)