**From:** Waggoner, Larry O
**Sent:** Thursday, March 09, 2006 10:47 AM
**Subject:** ALARA Center Activities for Week of March 6, 2006

**Attachments:** Ventilation Ducts - An Underrated Fire Hazard.htm; Ridgid Hot Tap.jpg
Visit our Website at www.hanford.gov/rl?page=974&parent=973

1. SWSD Radcon stopped and looked at the waste drum we have sprayed with polyurea. They have some work coming up where they have to remove corroded waste drums from a trench and the drums are laying horizontally. The drum sides and ends are expected to be corroded and connecting rigging will be a problem. Dose rate estimates are very high. SWSD Engineering is working on solutions. Loaned mannequin, waste bags, black light, sneak thief powder, signs, labels, and tags to Boy Scouts for a merit badge conference.

2. Submitted want ad to the excess property website at http://www2.rl.gov/rapidweb/phmc/procweb/EPBulletinBoard/placeAd.cfm. The ALARA Center is looking for tools and ventilation equipment that can be recycled to facilities to save money on D&D costs. This bulletin board is intended to facilitate the onsite reuse of Hanford tools and equipment. This makes getting something from Excess simpler than before. Facilities are encouraged to review this website often and claim tools and equipment they need to reduce costs or submit a Want Ad.

3. Forwarded info to WCH Field Engineer on the Notice of Construction DOE/RL-96-75 on using portable HEPA filtered Vent units. Also sent him link to the Nuclear Air Cleaning Handbook at http://www.eh.doe.gov/techstds/standard/hdbk1169/index.html. WCH is preparing to purchase several 1600 CFM portable vent units. Loaned poly bottle, HEPA filter and adapter to PFP so they can draw a liquid sample.

4. The Grainger and Ridgid Tool Reps stopped and looked at the tools and equipment. They decided to leave a "hot tapping" tool for two weeks so that we could demonstrate it. The tool is the RT3422 Tapping tool and the tech manual and pictures of the tool are at http://www.ridgid.com/Manuals/RT3422TapToolManual.pdf See attached photo. This tool can be mounted to a pipe by either strapping a saddle around the pipe or welding and adapter to the outside of the pipe. The tool is then threaded into the saddle or adapter and then the cutter in the tool can cut an opening in the pipe. Once the hole is cut, any pressure in the pipe is relieved and any liquid is drained out. We will set up a demo of this tool next week after we get an adapter welded to a pipe. Ridgid also has pipe cutting safety tips at http://www.ridgid.com/parts/safety/PipeCutters.pdf

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FOR YOUR INFORMATION

1. For those of you that use the RMIS database to look up lessons learned, documents, MSDS, etc recommend you install the RIMView program from Software Distribution and put an Icon on your computer. You can click on the Icon and it will automatically display the last 25 documents you looked up in RMIS. Real helpful.

2. The Society for Protective Coatings is a non-profit association that is focused on the protection and preservation of concrete, steel, and other industrial and marine structures through the use of high performance industrial coatings. This association is the leading source of information on surface preparation, coating selection, coating application, environmental restorations, and health and safety

issues that affect the protective coatings industry. Recommend anyone doing D&D work check out the following website: http://www.sspc.org/. To purchase books about protective coatings see: http://sspc.micronexx.com/cgi-bin/SoftCart.exe/STORE/bookstoreenter.htm?E+sspcstore We are using protective coatings at Hanford to fix contamination and to eliminate the need to accomplish costly repairs of concrete structures.

3. The Department of Environmental Management issues a bi-weekly Operating Experience Summary report that summarizes incidents that have occurred at DOE Sites. Report #2005-16 contains an article on what is "Cold and Dark" when we refer to the end-state condition of a deactivated facility. If you're involved with D&D work we recommend you read this article. It is important that everyone at a facility understands what "Cold and Dark" is and what services are still energized. See this report at http://www.eh.doe.gov/paa/oesummary/oesummary2005/OES2005-16screen.pdf In addition the National Environmental Policy Act has a website with Lessons Learned. See them at http://www.eh.doe.gov/nepa/lessons.html

4. The sealant NuCap will be demonstrated at HAMMER on April 5. Nucap is a sealant, similar to polyurea that is more expensive but the manufacturer claims it has more applications. Tentative plans are to spray the product about about 9:00 AM and then do testing that includes a drop test in the afternoon. They have several companies sending representatives from Canada, Nevada, New Mexico and Utah that will be attending the demo. Apparently they wrap the corroded drum with fiberglass cloth and then spray their sealant. Earlier, the ALARA Center had obtained two rusty drums for the demonstration. If any facilities have a really bad corroded drum that isn't contaminated please call us. We would like to see a worst-case demonstration.

5. Central Engineering has established a HEPA Filter Website. Check it out at: http://www2.rl.gov/rapidweb/phmc/eng/index.cfm?PageNum=41

## LESSONS LEARNED

Fire is the dominant public risk accident in nuclear facilities. One of the most serious things that could happen at Hanford is a fire in a radiological work facility. If contamination were spread during the fire it could add years to the cleanup and the political ramifications could last much longer. As we continue down the road to D&D we are concerned about all the Industrial Safety issues that exist in facilities that are in the D&D process.

It behooves all of us to be alert for potentially hazardous conditions that could either create a fire or sustain a small fire. By its very nature, decontaminating, decommissioning, and demolition work puts facilities in "harms way" of having an incident involving fire. See attached bulletin and the article below

Chapter 10 of the Nuclear Air Cleaning Handbook is on Fire Protection and can be found at http://www.eh.doe.gov/techs/standard/hdbk1169/index.html. It has about 30 examples of fires that have occurred in ventilation systems and gloveboxes in radiological work facilities. The following information was copied, in part, from Chapter 10 or from DOE Lessons Learned. I have paraphrased some of the wording for brevity.

Recommendation: Please check for fire hazards as you do your facility tours:

Fires in nuclear facilities have been caused by a variety of energy sources, including electrical energy and spontaneous combustion of pyrophoric metals. While fixed fire suppression systems or operator intervention have limited the size and consequences of most of these fires, some did propagate and cause significant damage and material release. Hopefully, the lessons learned from these fires will not be forgotten or ignored.

1. In 1957, pyrophoric ignition of plutonium in a production line at Rocky Flats ignited combustible cellulose filters in a production box and spread from there via laminated Plexiglas window materials and other unknown combustible materials in the ventilation system to involve and destroy combustible HEPA filters in the final filter stage. Actions to fight the fire were delayed due to radiation safety concerns and delays in using water due to criticality concerns. These delays allowed the fire to grow. It was extinguished soon after water was used but a buildup of combustible vapors and dusts in the ventilation ductwork and the final filter stage ignited and resulted in a small explosion. Result was a significant release of plutonium off-site. As a result of this incident, fire-resistant glass fiber HEPA filters were developed and put into service in the nuclear industry.

2. Another fire occurred at Rocky Flats in a production line glovebox. The exact cause of the fire is unknown but its point of origin included a storage cabinet that contained small metal, open containers filled with Pu machine tailings. Heat detectors originally installed inside the glovebox had been moved to the underside of the glovebox floor to accommodate the installation of the storage cabinet. A fire detector alerted the fire department and when they arrived they found the building filled with smoke. Localized contamination spread outside the building but none off-site.

3. In 1955, a fire occurred in a large bank of wooden framed paper HEPA filters at another facility. Fire was caused by welding sparks. It re-ignited 2 days later. 2.5 tons of carbon dioxide was used to control the fire. Suppressing this fire was difficult due to the reactivity of the dust in the ductwork with water. *Evaluate the need for spark arrestors and metal ducting if using ventilation to remove sparks or smoke. See item 7 below and contact the ALARA Center for information.*

4. In 1957, vapor from a flammable lubricating and rust preventative chemical being used on a machine in the glovebox line circulated through all the boxes, and sparks from an electric brush used on another machine ignited the vapors and caused an explosion.

5. In 1965, a methanol-air mixture in a glovebox ignited and exploded, pressurizing the glovebox and tearing off six gloves. Pu-Oxide discharged from the open ports spread throughout the operating areas of the building.

6. In 2003, exploratory cutting operations on the top of a glovebox ignited legacy combustible materials in the bottom of a large, two-story glovebox. Fire extinguishers were used to extinguish the fire, but upon stirring of materials by the workers, it re-ignited. Fire Department arrived and used 600-800 gallons of water to fully extinguish the fire.

7. At the East Tennessee Technology Park filters in a portable HEPA filtered vent system caught fire when debris generated during plasma arc cutting ignited combustible material, probably a piece of tape. The material passed through the vent system and into a bank of polyester/paper cartridge filters. The filters caught fire and spread to the downstream HEPA filters. *Normally, plasma arc cutting is done with spark arrestors installed in the ventilation hose to remove sparks. Spark arrestors are usually a series of screens that are offset so the air takes a tortuous, winding path through the screens. Since the airflow path changes directions several times, the sparks are removed from the air stream when they strike the screen. The facility took action to procure spark arrestors that could be easily inspected and flame-retardant tape. Note: Metal ducting/hose should be used if flammable debris or sparks are present. Once the air flow gets past the spark arrestor, other types of ducting can be used. For info on purchasing spark arrestors or other ventilation equipment or fittings, see www.rpsct.com If you're interested in fire retardant cloth duct tape, see www.shurtape.com and look for PC 21F tape.*