

Fluor Hanford ALARA Center

Weekly Activity Report for December 17 and 24, 2007

Assistance, Demonstrations, Research, and Tours Provided by the Center

1. The ALARA gave a Basic Containment Class, 020729 to three CH2M Hill six employees and one FOWLR employee. For request for future classes, please contact Brian Killand, at 372-3020 or email at Brian_L_Killand@rl.gov.
2. Nick Clyma of GE Inspection Technology was at the Center December 20th to discuss remote cameras. Nick left a 6 mm remote camera package for display. Presently, a Pan and Tilt with zoom camera has been on display at the Center.
3. A Washington Closure Hanford Radiological Engineer visited the ALARA Center to discuss a job at 100 N where they will need to cut 2-inch pipe in a confined space with a 30 R/Hr hot spot located on the pipe. We suggested a Tri-Tool (www.tritool.com) Chip less Cutter with an extension arm (photos below). We also contact CS Unitech (www.csunitec.com). They believe that a customer developed an extension arm their reciprocating saw. They are contacting their customer to see if that extension arm would work for this application.
4. LEF operator visited the Center, looking for information on Orex clothing and a new Lithium battery for the 3M PAPR. Gave him literature on Orex, web site www.orex.com and the PAPR units and batteries from 3M, web site. www.mmm.com.
5. An HPT from CH2M Hill evaporator project visited the Center. He had not been to the Center for a couple of years and was bringing himself up to date with the new items shown at the Center. Suggest that HPT's and field workers visit the Center occasionally to see what is new.

New Process, Tools, or General ALARA Information

1. Fluor Hanford has issued a new document, written by the ALARA Center. The Document Number is HNF-35658. The Accession Number: DA06286751 / IDMS ID: 87355765 for those inside the firewall at Hanford. Title: CONTAINMENT GUIDELINES BEST WORK PRACTICES Originator: EBY JL Can be found at:
[URL: http://APDRMWEB.rl.gov/RIMVU/default.aspx?doctype=&id=DA06286751](http://APDRMWEB.rl.gov/RIMVU/default.aspx?doctype=&id=DA06286751)
The document will be placed on the external ALARA Center website, in the near future for those outside the site firewall.

Decommissioning and Deactivation Activities and Information

1. Two engineers from FFTF came to the Center looking for information on an upcoming project. Used facility components are being sent to ERDF for radioactive material burial, some from Decon room #2 and others from the bay area. Suggested they contact the ERDF group for the best disposal directions. In addition, the Center gave them information of the Evolution Circular saw, Bartlett PBS fixative and Soil Cement. The group also discussed Perma-Con enclosures for separate work areas in both the Decon room #2 and the bay area for prepping material for disposal. The group discussed various options of prepping the material for disposal and minimizing the handling of the material, probably to be place into an ERDF container or an IP-2, Type I container. One concern that came out of FFTF's Post Job Review for the X-59 Removal Package was the buildup of metal chips and fines in the Side Dust Cover on the 7" Evolution Metal Cutting Saw. During cutting, the chips and fines were jamming up the workings of the saw blade guard and preventing it from retracting out of the way during a cut and then returning to the guard position at the end of a cut. Evolution Power Tools was contacted and information was obtained about a vacuum cleaner port that could be attached to the saw to remove the fines. This attachment will not increase the saw width or be an additional interference during saw operation.

Fluor Hanford ALARA Center

Weekly Activity Report for December 17 and 24, 2007

The Dust Cover with vacuum cleaner attachment port can be obtained through Norco in Pasco. The contact there is Danny at 543-2022. The Evolution Part No. is HTCSPMC18074. It sells for ~\$13.64. This information was furnished by FFTF, David Gerkenmeyer.

2. Memo for D&D Personnel: Pulled up the DOE Information Bridge at <http://www.osti.gov/bridge/> and Searched for "Demolition." Found the following reports that appear to be worth reviewing: NOTE: There are about 2,500 documents listed and most were written since 1990. If you are doing D&D, recommend you look at the entire list. This is only a sampling. **Suggestion: Make this website a "favorite"**

<http://www.wmsym.org/abstracts/2003/pdfs/507.pdf> Use of Air Modeling to Reduce Facility Demolition Costs
<http://www5.hanford.gov/pdwdocs/fsd0001/osti/2003/I0038026.pdf> Experiences in D&D of Former Pu Concentration Facility at the Hanford Reservation
<http://www.osti.gov/bridge/servlets/purl/211599-a3t4oo/webviewable/> Demolition of an Analytical Laboratory Hot Cell Facility for Future Refurbishment
<http://www.osti.gov/bridge/servlets/purl/516980-DLqUKC/webviewable/> Demolition of the Waste Evaporator Facility at Oak Ridge
<http://www.osti.gov/bridge/servlets/purl/588572-E2n5LX/webviewable/> Ground Motion Measurements from the Demolition of Steel Towers
<http://www.osti.gov/bridge/servlets/purl/212461-RVoyl4/webviewable/> D&D of a Former Pu Processing Facility's Process Exhaust System, Fire screen, and Filter Plenum Buildings
<http://www.osti.gov/bridge/servlets/purl/895753-uXEJ8o/> Operational Limitations for Demolition of a Highly Alpha Contaminated Building; Modeled versus Measured Air and Surface Activity Concentrations
<http://www.osti.gov/bridge/servlets/purl/896208-xl27XB/> Demolition of Hanford's 232-Z Waste Incineration Facility
<http://www5.hanford.gov/pdwdocs/fsd0001/osti/2004/I0043159.pdf> Demolition of Hanford's 233-S Plutonium Concentration Facility
<http://www.osti.gov/bridge/servlets/purl/955-qPDW72/webviewable/> and <http://www.osti.gov/bridge/servlets/purl/952-8612pD/webviewable/> Technology Assessment of Dust Suppression Techniques Applied during Structural Demolition
<http://www.osti.gov/bridge/servlets/purl/881670-3LPM8I/> Source Term Remediation and Demolition Strategy for the Hanford K Area Spent Fuel Basins
<http://www.osti.gov/bridge/servlets/purl/908296-AyQm2A/> Open Air Demolition of Facilities Highly Contaminated with Plutonium
<https://e-reports-ext.llnl.gov/pdf/325686.pdf> D&D Best Practices - Demolition of a Research Facility Building 431
<http://www.osti.gov/bridge/servlets/purl/656734-E5dgYh/webviewable/> Dismantling Techniques
<http://www.osti.gov/bridge/servlets/purl/875910-m44niY/> Hanford River Corridor Cleanup
<http://sti.srs.gov/fulltext/WSRC-MS-2007-00011.pdf> Demolitions of the SRS Concentrator and Finishing Facilities
<http://sti.srs.gov/fulltext/WSRC-MS-2007-00009.pdf> Decommissioning the Physics Lab Building 777-10A at SRS

3. Found a document on Decontamination Techniques and Fixative Coatings Evaluated in the Building 235-F Legacy Source Term Removal Study. http://www.osti.gov/bridge/product.biblio.jsp?query_id=1&page=4&osti_id=839571 It was written in 2005 by Wayne Farrell at Savannah River and contains valuable information. Currently we are working with Cellular Bio-Engineering and they have developed a peel able product that may be more effective in decontaminating plutonium gloveboxes. See attached bulletins.

4. FYI - The Energy Facilities Contractor Group (EFCOG) working group on D&D recently met at an off-site conference. Minutes of that meeting had the following items of interest:

Fluor Hanford ALARA Center

Weekly Activity Report for December 17 and 24, 2007

A. Three new "Best Practices" documents have been added to the D&D Work Group Website at <http://www.efcog.org/bp/index.htm>. More submissions are pending so this website should grow in the next three months.

B. Hanford ALARA Center has been designated as the D&D Hotline and should be in operation in early 2008 fielding calls about D&D. The Hotline Project team will gather, retain, and make available to field operations D&D information under the primary areas of Characterization, Deactivation, Demolition, and Closure as well as:

- Tools, equipment, and materials,
- Techniques and work practices,
- Specifications,
- Precedents,
- Disposal options,
- Project Descriptions,
- Names/contact info and relative experience of D&D personnel across the complex.

D&D Hotline Points of Contact/Subject Matter Specialists will be established at each DOE Site performing D&D. These personnel will support the Hotline staff in getting answers to questions submitted on the Hotline or website.

C. Bob Wilkinson, the Fluor Hanford D&D Vice President has been assigned action to develop a five minute DVD presentation and a brochure that Contractor and DOE personnel can use in Value Creation settings to advertise the hotline. Access to the Hotline is limited to DOE employees and Contractors.

D. A D&D Website is being developed by Florida International University to work in conjunction with the Hotline. It is called the D&D Knowledge Resource Center and will have a search capability and a place for users to ask questions. Access to the website is open to all users.

E. EM-20 has a D&D Toolbox project that has an objective of combining existing technologies and develop new technologies to address D&D needs.

Contacts

Come visit us at the Fluor Hanford ALARA Center; we are located on the Hanford site at 2101M/200E/226. We will do our best to help you with your radiological engineering, ALARA, and D&D challenges. You can also send us questions, comments, and your lessons learned via e-mail or you can contact us by phone. Contact information is below.

Jerry Eby	(509) 372-8961, Cell (509) 528-3094, jerald_l_eby@rl.gov
Jeff Hunter	(509) 373-0656, Cell (509) 948-5906, jeffrey_l_hunter@rl.gov
Larry Waggoner	(509) 376-0818, Cell (360) 801-6322, larry_o_waggoner@rl.gov

ALARA Center Website: www.hanford.gov/rl/?page=974&parent=973

Please help us keep our e-mail address list current by letting us know if you would like added or removed from our distribution, and by keeping us informed of any e-mail address changes. Thank you for your help. We look forward to hearing from you.

Fluor Hanford ALARA Center

Weekly Activity Report for December 17 and 24, 2007

Attachments



DG1101 Nuclear D&D
Two Pager 110207.px



DG 1101 Product
Data Sheet 110707.p

Decon Gel 1101

Peelable Decontamination Technology (Nuclear Industry D&D)

Decon Gel 1101 is a one component, water-based, broad application, peelable decontamination hydrogel that **lifts, binds and encapsulates** contaminants into a rehydratable polymer matrix.

Decon Gel 1101 is a safe, user and material friendly, neutral-pH, low odor polymer hydrogel for radiological decontamination of radioisotopes as well as particulates, heavy metals, water-soluble and insoluble organic compounds (including tritiated compounds). The product can be applied to horizontal, vertical and inverted surfaces and applied to most surfaces (see the *Decon Gel 1101 Product Data Sheet*).

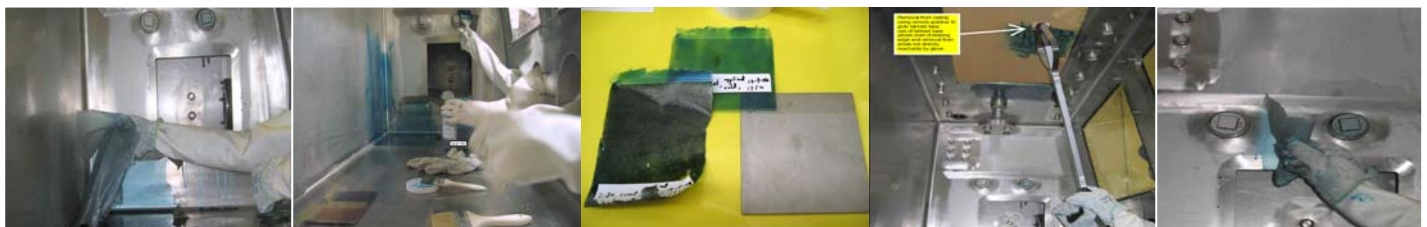
Decontamination Demonstration with Decon Gel



Chalk on a textured ceramic tile shows the lift, bind and encapsulation process of Decon Gel. A white glove test on the film underside came out clean – demonstrating that particulate matter is fully entrapped in the dry film.

Advantages of Decon Gel 1101 as a peelable, broad application decontamination agent include:

- Zero preparation
- Easy application (Apply → Dry → Peel → Dispose)
- Simple decontamination (Lifts → Binds → Encapsulates)
- Penetrates and removes contamination from cracks, pores, and voids
- Works on variety of surfaces (smooth, rough and painted) and complex geometries
- Minimal odor, respirators not required (unless mandated by other job safety concerns) therefore no resultant heat stress
- Dries into tough film that is easy to peel (non-sticky) and dispose
- Minimizes contaminated waste material for easy and safe disposal
- Ability to rehydrate for forensics (wet analysis, filtration of contaminants)
- To date, shown effective in field tests on the following radioisotopes:
 - Cs-137, Pa-233, Np-237, U-238, Pu-238, Pu-239, Am-241
 - I-131, I-125, Tc-99^m, F-18, C-14, [³H]-TdR, [³H] NaBH₄



WINNER 'BEST D&D POSTER' - 2007 Waste Management Symposium
"An Improved Polymer-based Hydrogel for Decontamination of Hard Assets"

Am-241 and Pu-239 Testing of Decon Gel 1101 at Sandia National Laboratories

- CBI commissioned tests at Sandia National Laboratories using Decon Gel 1101 on concrete, carbon steel, stainless steel and Plexiglas coupons contaminated with Am-241 and Pu-239
- The Am-241 solution was AmCl₃ dissolved in 1 N HCl; The Pu-239 solution was Pu(NO₃)₄ dissolved in 4 M HNO₃
- Decon Gel 1101 was spread onto coupons using a spatula; the excess was allowed to drip off
- The coupons were allowed to dry for 24 hours
- All coupons were easy to peel with concrete most difficult; all coatings peeled in a single sheet with none fractured
- The coupons were counted using a Ludlum 43-1 alpha scintillator connected to an Eberline E600

Coupon Name	Initial Counts (k cpm)	Initial Activity (uCi)	Counts after Decon (k cpm)	Activity after Decon (uCi)	% Decon
CAM-1	351	0.980	60.4	0.169	83 %
CAM-2	318	0.888	53.4	0.149	83 %
CPu-1	350	1.005	61.3	0.176	82 %
CPu-2	314	0.902	89.6	0.257	71 %
CSAm-1	333	0.994	3.99	0.012	99 %
CSAm-2	318	0.949	10.5	0.031	97 %
CSPu-1	288	0.983	2.63	0.009	99 %
CSPu-2	286	0.977	6.07	0.021	98 %
SSAm-1	351	0.961	76.5	0.210	78 %
SSAm-2	346	0.947	62.5	0.171	82 %
SSPu-1	326	1.045	56.6	0.181	83 %
SSPu-2	305	0.978	17.3	0.056	94 %
PAM-1	337	1.002	3.59	0.011	99 %
PAM-2	307	0.913	3.96	0.012	99 %
PPu-1	230	0.859	108	0.403	53 %
PPu-2	242	0.903	109	0.405	55 %

Notes:

CAM – concrete, americium; CPu – concrete, plutonium; CSAm – carbon steel, americium; CSPu – carbon steel, plutonium; SSAm – stainless steel, americium; SSPu – stainless steel, plutonium; PAM – plexiglas, americium; PPu – plexiglas, plutonium

$$\% \text{ Decon} = \frac{(\text{Initial Activity} - \text{Final Activity})}{\text{Initial Activity}} \times 100$$

Field testing at DoE D&D sites, ALARA Centers, National Laboratories and other locations continues to prove that Decon Gel 1101 can decontaminate a variety of surfaces and substrates. For more information on Decon Gel 1101 including this test, please contact:

Mike O'Neill, PhD 1-808-949-2208 x113 moneill@cellularbioengineering.com
Chris Helm 1-808-284-6502 chelm@cellularbioengineering.com

Or our Partner



Chesapeake Nuclear Services

Mike Davidson, CHP CHMM 1-410-421-5454 mdavidson@chesnuc.com

Product Data Sheet

Decon Gel 1101

Product Description

A one component, water-based, broad application, peelable decontamination hydrogel.

Recommended Uses

Decon Gel 1101 is recommended for decontamination of radioisotopes as well as particulates, heavy metals, water-soluble and insoluble organic compounds (including tritiated compounds). The hydrogel coating can be applied to horizontal, vertical and inverted surfaces and can be applied to most surfaces including bare, coated and painted concrete, aluminum, steel, lead, rubber, plexiglass, herculite, wood, porcelain, tile grout, and vinyl, ceramic and linoleum floor tiles. When dry, the product locks the contaminants into a polymer matrix. The film containing the encapsulated contamination can then be peeled and disposed of according to appropriate local, state and federal regulations.

Advantages of Decon Gel 1101 “Apply, Dry, Peel”

- Zero preparation
- Easy application
- Simple decontamination
- High decontamination factors
- User, material/substrate friendly
- Minimal odor, respirators not required
- Penetrates and removes contamination from cracks, pores and voids
- Dries into tough film that is easy to peel and dispose
- Minimizes contaminated waste material
- Ability to re-hydrate for forensics
 - Wet Analysis
 - Filtration of particulates

Product Characteristics*

- | | |
|------------------------------|-------------------------------------|
| ➤ Appearance | Blue Liquid |
| ➤ Shelf Life | 12 months |
| ➤ Density | 8.45-8.65 lbs/gal |
| ➤ Viscosity** | 10,000 – 20,000 cps |
| ➤ pH | 6.0-7.0 |
| ➤ Thinner | Water |
| ➤ Decontamination Percentage | up to 100% |
| ➤ Average Coverage | 20 to 50 ft ² per gallon |

* For Reference Only

** Brookfield, spindle 4, 30 rpm, 25°C

Product Data Sheet

Decon Gel 1101

Safety Recommendations

Decon Gel 1101 is safe when used as recommended. Respirators are not required under normal use conditions in well ventilated areas. Please review the product Material Safety Data Sheet for detailed safety information.

Application Procedure

Coating thickness required for good peel characteristics varies with substrate and generally increases with substrate porosity. Dry time increases with wet film thickness and can vary.

It is recommended that first time customers of Decon Gel learn how long the product will take to dry in their own environment and preferred thickness by first testing a small application on the same type of substrate that will be decontaminated.

- Coating can be used straight from the container without any stirring
- **Simply apply, allow to dry, peel, and dispose** according to applicable local, state and federal regulations.

Drying Time

Drying time depends on a combination of the ambient humidity, temperature, type of substrate and applied wet film thickness. This can take from as little time as an hour for thin coats in a dry environment with plenty of airflow, to overnight or longer if thicker coats are applied in humid environments. Dry times exceeding 24 hours may be required for the film thicknesses required for good peel performance on bare concrete, wood and other highly porous substrates. Applying supplemental heat can speed up the drying time.

Recommended Storage Conditions

Store Decon Gel 1101 within a temperature range of 40° to 90° F (4° to 32° C). If frozen, Decon Gel 1101 can be allowed to warm to room temperature and then used as normal.

Ordering Information

To order or learn more about Decon Gel 1101, please contact either Cellular Bioengineering Inc. or our marketing partner, Chesapeake Nuclear Services.



Mike O'Neill, PhD 1-808-949-2208 x113
Chris Helm, MBA 1-808-284-6502

moneill@cellularbioengineering.com
chelm@cellularbioengineering.com



Mike Davidson, CHP CHMM 1-410-421-5454

mdavidson@chesnuc.com