

# DECONGEL

## DeconGel 1101 Peelable Decontamination Technology (Nuclear Industry D&D)

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

**DeconGel 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 *DeconGel 1101 Product Data Sheet*).

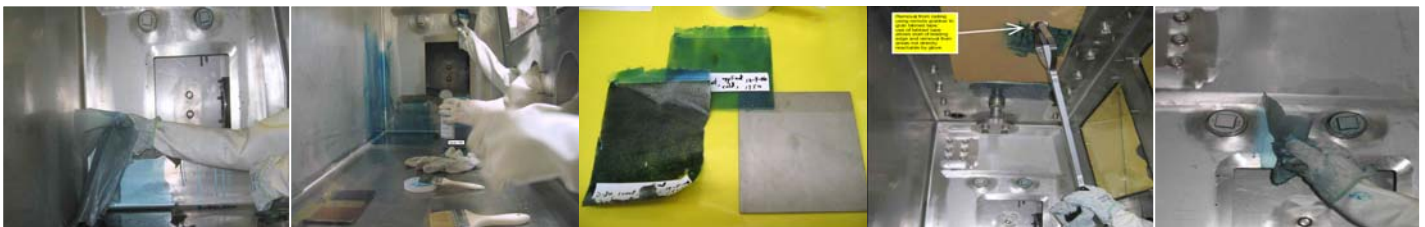
### Decontamination Demonstration with DeconGel



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

**Advantages of DeconGel 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<sup>m</sup>, F-18, C-14, [<sup>3</sup>H]-TdR, [<sup>3</sup>H] NaBH<sub>4</sub>



**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 DeconGel 1101 at Sandia National Laboratories**

- CBI commissioned tests at Sandia National Laboratories using DeconGel 1101 on concrete, carbon steel, stainless steel and Plexiglas coupons contaminated with Am-241 and Pu-239
- The Am-241 solution was AmCl<sub>3</sub> dissolved in 1 N HCl; The Pu-239 solution was Pu(NO<sub>3</sub>)<sub>4</sub> dissolved in 4 M HNO<sub>3</sub>
- DeconGel 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 DeconGel 1101 can decontaminate a variety of surfaces and substrates. For more information on DeconGel 1101 including this test, please contact:**



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