



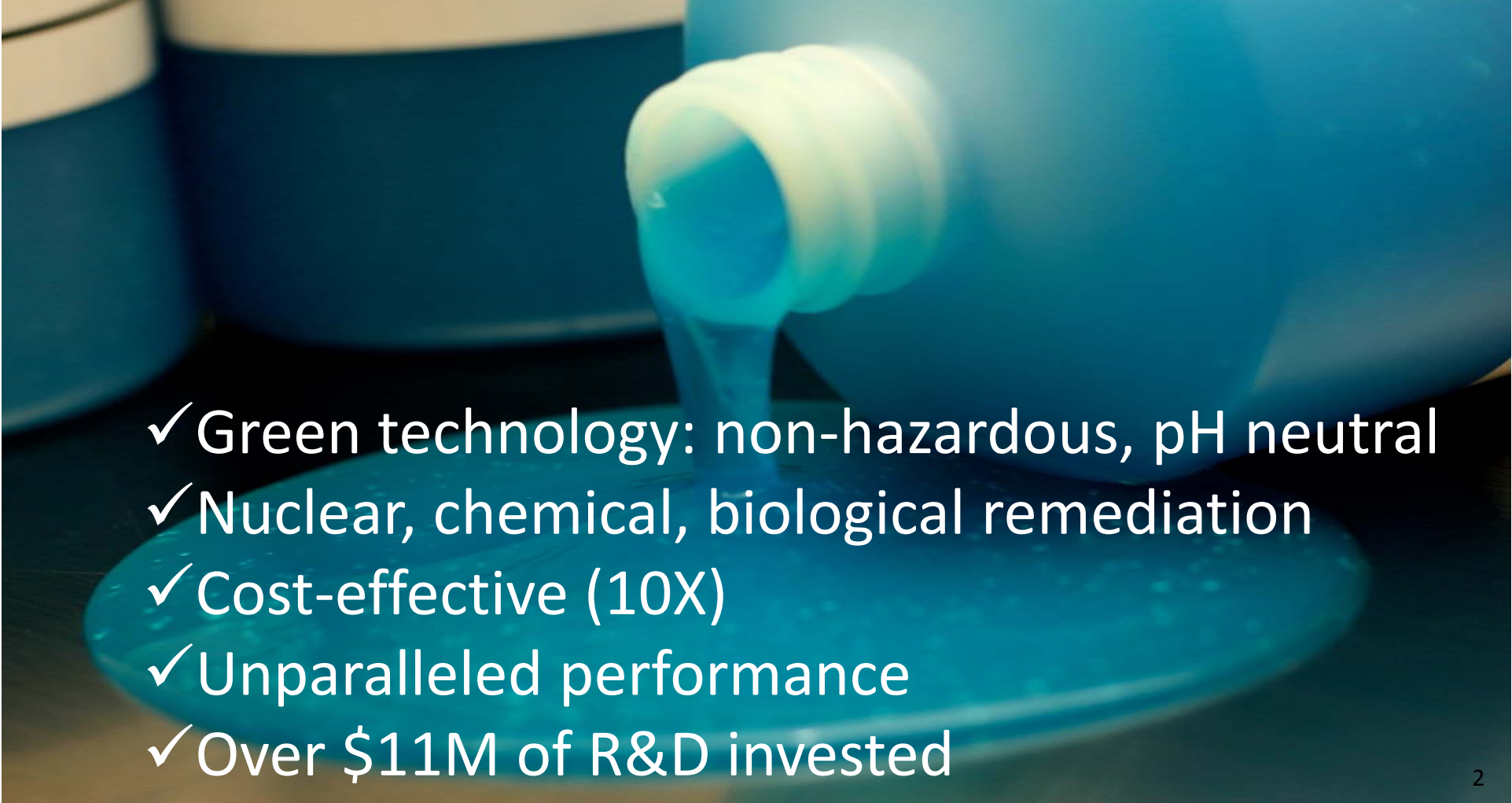
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Product Overview

Stronger. Smarter. Cleaner.

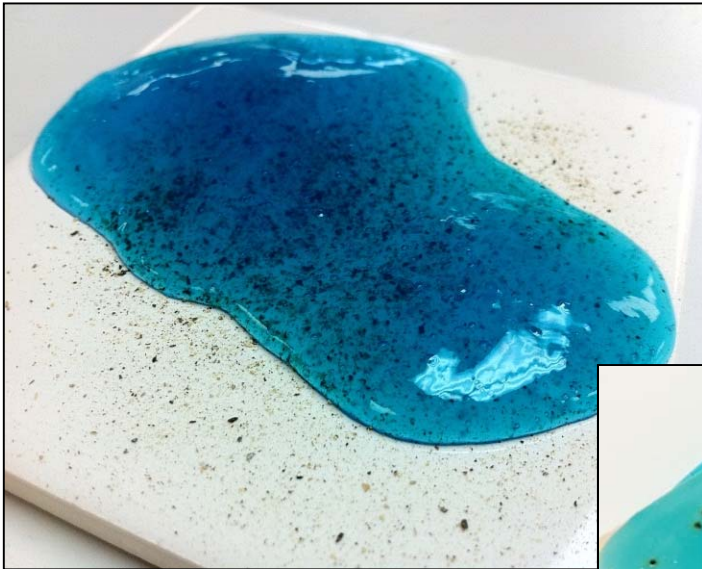
A breakthrough hydrogel enabling *unparalleled* decontamination performance

- 
- ✓ Green technology: non-hazardous, pH neutral
 - ✓ Nuclear, chemical, biological remediation
 - ✓ Cost-effective (10X)
 - ✓ Unparalleled performance
 - ✓ Over \$11M of R&D invested

Next-generation decontamination technology



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- ***Nano-molecular penetration***
- ***Chemically binds*** and ***encapsulates*** surface contaminants
- ***Mechanically lifts*** particulates



- Dries into ***easy-to-peel film***
- Works on many ***complex surfaces***
- ***Brush and spray formulations***



DEC  NGEL[®]
A PRODUCT OF CBI POLYMERS

Next-generation decontamination technology



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- Works on LIQUID and SOLID particulates
- ZERO preparation
- Penetrates and removes contamination from cracks, pores, and voids at the nano-molecular level
- Works on **variety of surfaces** (smooth, rough and painted) and **complex geometries**
- **Minimal odor**, respirators not required during application or peeling unless mandated or in close quarters
- Dries into **high tensile film** that is **easy to peel** (non-sticky) and discard

DeconGel is formulated for the removal of many solid-state contaminants & some liquids



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Radioactive Contaminants:

- Am-241
- Pu-238
- Pu-239
- Pu-240
- Pu-241
- Pu-242
- Cs-137
- Cs-134
- Co-60
- Mn-54
- Fe-55
- Ni-63
- Ni-59
- Sr-90
- Co-58

Heavy Metals:

- Mercury
- Lead
- Cobalt
- Arsenic
- Chromium
- Beryllium
- Thallium
- Zinc
- Nickel

Common Toxins/Other:

- PCBs
- Asbestos
- Oil
- Mold
- Mildew
- Soot/fine particulates

Restoration of cast stone fireplace (fine soot)



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Before

After

Oil decontamination from porous surface



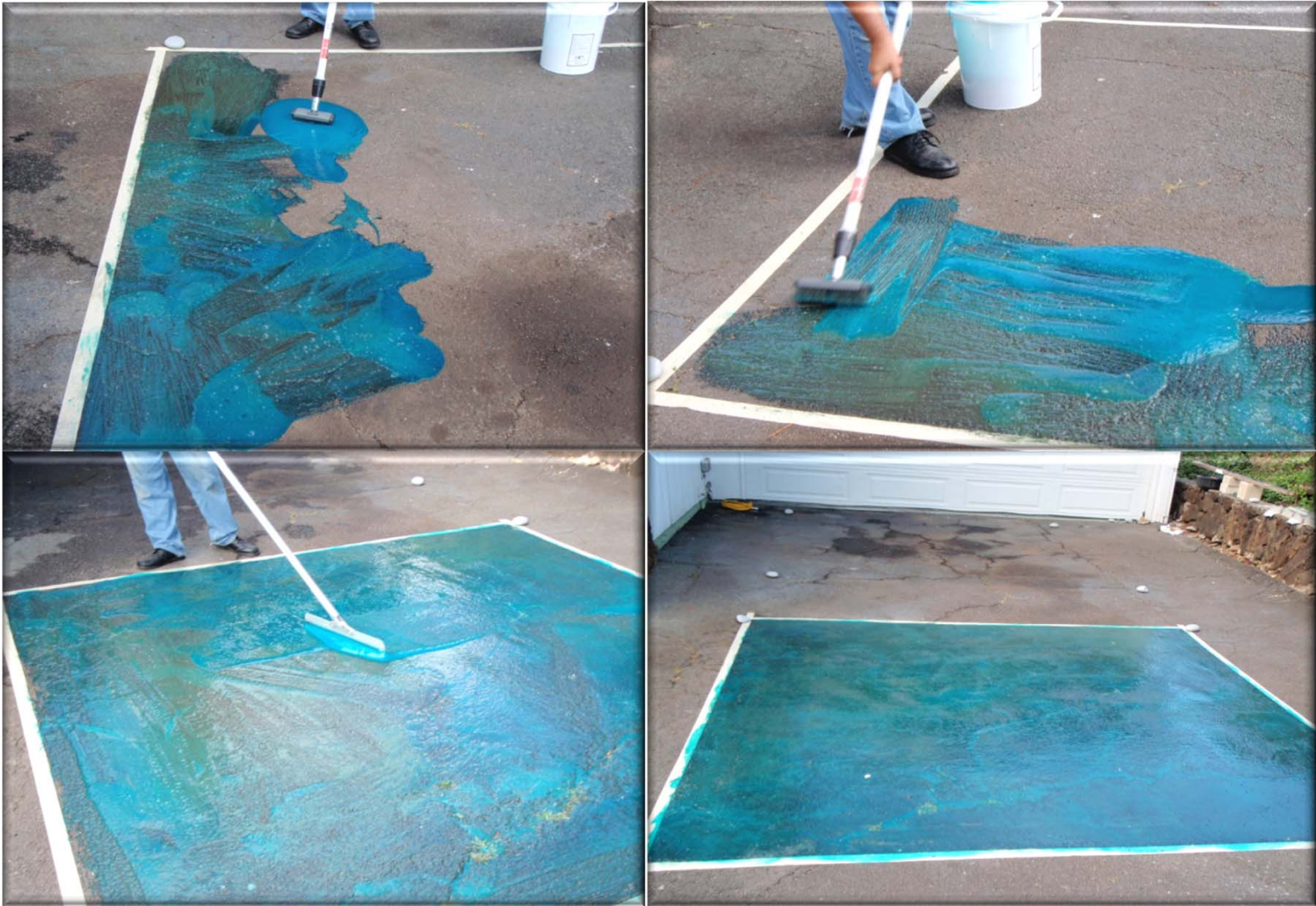
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Apply and let dry



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Then peel...encapsulates all contaminants



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“Decontaminated” vs. “clean”



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Disposal: minimizes waste – 45 lbs. wet; 7.5 lbs. dry (20 Liters)



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- Lower waste equals **cost savings**
- Lower waste equals **reduced manpower**
- Lower waste equals **reduced logistics**
- Lower waste equals **faster turnarounds**

Waste remediation by-product comparison: 100,000 sq. ft. of nuclear contamination



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Waste Generated Using RadiacWash



140,000 lbs. = \$1.1M

Waste Generated Using DeconGel



13,000 lbs. = \$104k

Up to 10X savings in waste disposal costs (typically \$3-\$8/lb.)

DeconGel is also effective against myriad chemical compounds and hazardous materials



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- Aldehydes (Glutaraldehyde)
- Alkaloids (Nicotine)
- Aromatic Liquids (Toluene)
- Aromatic Solids (Naphthalene)
- Arsenic Compounds (Arsenic Trioxide (As₂O₃))
- Elemental Aluminum Powder (Al)
- Aluminum Oxide (Al₂O₃)
- Aluminum Chloride (AlCl₃)
- Aluminum Potassium Sulfate (AlK(SO₄)₂)
- Antimony
- Barium Compounds (Barium Chloride (BaCl₂))
- Barium Carbonate (BaCO₃)
- Beryllium Compounds
- Beryllium Surrogates (Elemental)
- Cadmium Compounds (Cadmium Chloride (CdCl₂))
- Cadmium Oxide (CdO)
- Chromium Compound (Potassium Chromate (K₂CrO₄))
- Cobalt
- Copper Compounds (Copper (elemental), Copper (I) Oxide)
- Crude Oil
- Cyanide Compounds (Potassium Ferricyanide (K₃[Fe(CN)₆]))
- Halogenated Solvents (Tetrachloroethylene)
- Industrial Coolants (Ethylene Glycol)
- Industrial Solvents (m-Cresol)
- Iodine Compounds (Potassium Iodide (KI))
- Iron Compounds (Iron (II) Chloride (FeCl₂))
- Lead Compounds (Lead (II) Oxide (PbO))
- Lead (II) Sulfate (PbSO₄)
- Mercury Compounds (Mercury (II) Chloride (HgCl₂))
- Mercury Oxide (HgO) and Mercury elemental
- Navy Dye Marker
- Nickel Compounds (Nickel Nitrate (Ni(NO₃)₂))
- Organic Acids (Benzoic Acid)
- Organic Bases (Triethylamine)
- Tin compounds (Tributyltin Chloride)
- Methamphetamines
- Molybdenum
- Nickel
- PCB
- Pesticides (DDT)
- Plastics Feedstock (Aniline)
- Phenolic Compounds (Catechol)
- Selenium
- Silver
- Vanadium
- Zinc

Why is DeconGel so effective?



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- **Surfactants** – aggressive surfactants, emulsifies hydrophobic materials, stabilizes metals
- **Chelates** – solubilizes heavy metals
- **Thixotropes** – allows product viscosity to break down under shear simultaneously allowing thick wet films on vertical surfaces and spraying
- **Wetting Agents** – wets out surfaces, particulates and the interior of porosity
- **Defoamers** – increases film toughness, decreases adhesion, re-coat capable (can accept multiple coats)
- **Dye** – allows visualization of wet film thickness and location (e.g. complete coverage)
- **Biocide** – stabilizes product during storage
- **Buffer** – near neutral pH

Focused product suite developed for targeted applications



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- **DeconGel 1102** – Formulated for increased effectiveness on petroleum-based contaminants, including PCBs and oil spills. Applied by brush or trowel; spray on version also available
- **DeconGel 1108** – Formulated for heavy nuclear, toxic industrial chemical (TIC) and toxic industrial material (TIM) decontamination. Applied by brush or trowel
- **DeconGel 1120** - Spray-on version of 1108 for hand held sprayers
- **DeconGel 1128** – Spray-on version of 1108 for industrial sprayers and large coverage areas

General technical information: DeconGel 1108/1128



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- Appearance: Viscous polymer gel
- **Shelf Life:** **5 years, re-certifiable**
- Density: 8.5 lbs. per gallon
- **Percent Solids:** **15%**
- Dry Film Thickness (DFT): 20% of Wet Film Thickness (WFT)
- **Volatile Organic Content:** **Zero**
- Thinner/Solvent: Ionized Water
- **Temperature Use Range:** **40F to 120F**
- Decontamination Factor: up to 100%
- **OSHA Status:** **OSHA Non-hazardous** under (29 CFR Part 1910.1200)
- **Flammability:** **Non-flammable, but incinerable**
Liquid class III B, under OSHA (29 CFR 1910.1200);
flashpoint >200°F
- Melting/Freezing point: 0°F
- Boiling point: 212°F
- **pH:** **5.0 – 7.0**

Proven effective in independent government and customer tests



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- **Environmental Protection Agency** – effective against radioactive isotopes
- **Department of Energy** – effective against radioactive isotopes
- **DOE** - Environmental, Security, Safety and Health Achievement Award/approval for beryllium decontamination
- **U.S. Navy** – Approved for use at Puget Sound Naval Shipyard; also for liquid petroleum contamination in shipboard tanks
- **Naval Air Systems Command** – safe for use on a range of materials
- **Japan** – approved for use at Fukushima Daiichi nuclear power plant and surrounding communities
- **Resource Conservation and Recovery Act (RCRA)** - certified as non-hazardous
- **WIPP-certified**
- Approved for use in **GE reactors**

Key advantages of breakthrough technology



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DeconGel

vs.

The current approach

- ***User-friendly*** application ***reduces total*** decontamination time, labor ***cost***, and ***waste volumes by up to 80%***

- ***Labor-intensive*** pressure washing ***often ineffective***, entails high labor hours and ***significant waste disposal costs***





DeconGel is easy to remove from complex shapes

Broad range of government and industry customers



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Government

- National Institute of Standards and Technology
- Defense R&D Canada
- Idaho National Lab
- VA Medical Center
- Lawrence Livermore
- Oak Ridge
- Perry Nuclear
- Savannah River
- Fermi Nuclear
- Hatch Nuclear
- Pearl Harbor Naval Shipyard
- Naval Research Lab
- Naval Corrosion Lab
- Edgewood Chem-Bio Center
- Dept. of Homeland Security
- Bureau of Reclamation

Industry

- BAE Systems
- TRW Inc.
- Conoco Phillips
- Thermo Fisher Scientific
- Battelle Memorial Institute
- Geisinger Health System
- First Energy
- HTDV Hawaii
- ALCOA
- Levitt-Safety
- Shaw Environmental
- Triumvirate Environmental
- National Geographic
- Safety and Ecology Corp
- VWR Inc.
- Fastenal Inc.
- Matson Shipping

International

- VWR International GmbH, GE
- Atomic Energy CN
- Ontario Power Generation, CN
- Berthold Technologies, EU
- E.ON Group, GE
- Unitech Services Europe, EU
- Biological Health Services, UK
- Southern Scientific, UK
- Dept. of National Defense, CN
- Royal Military College, CN
- National Research Council, CN
- Overplus Global Services, SA
- Nigerian LNG Ltd
- EnviroKorea Co., Ltd.
- Tokyo Electric Power Company
- Japan Aerospace Corporation
- Zen Ei Corporation, JP

Cask end cap – decontaminates complex surfaces without abrasion or damage



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Principle isotopes

Cs-137	Mn-54
Cs-134	Ag-110m
Co-60	Zn-65

Results

Complete removal of biological deposits and **98% decrease** in detectable contamination



U.S. Department of Energy National Lab customers



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*Oak Ridge National Lab
Oak Ridge, TN*

- Savannah River
- Los Alamos
- Pacific Northwest
- Sandia
- Lawrence Livermore
- National Energy Technology
- Oak Ridge

Commercial nuclear power plant customers



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- Perry Nuclear Power Plant
- Bruce Nuclear Generating Station
- Nine Mile Point Nuclear Station
- Braidwood Generating Station
- Ontario Power Generation
- Peach Bottom Atomic Power Station
- San Onofre Nuclear Generating Station



*Bruce Nuclear Generating Station
Ontario, CA*

Live chemical warfare agent (CWA) decontamination



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- Joint Program Executive Office for Chemical, Biological Defense (JPEO-CBD) and Dugway proving grounds performed classified field tests of DeconGel on emerging CWA threats
- JPEO-CBD and Dugway reports that DeconGel to be an exceptional physical decontamination method (data classified)
- In-house tests on VX and sulfur mustard simulants showed decontamination to levels below limit of detection across a variety of surfaces
- DHS R&D contract currently exploring a highly effective bio-kill implementation of DeconGel

Remediation of bilge sludge and petroleum fuel deposits



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Before



After



In an independent evaluation of bilge cleaning costs, DeconGel demonstrated cost savings of over 50% compared to the current solution

DeconGel cost benefit analysis – Navy DDG

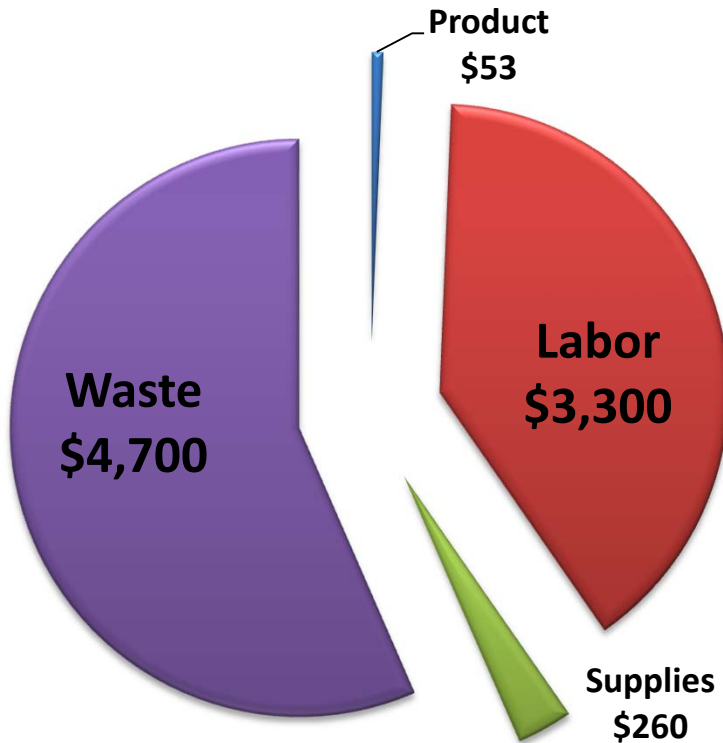


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*Data from U.S. Navy

1069 ft² Gallon Tank - Traditional Cleaning Process

1069 ft² Gallon Tank Cleaned w/DeconGel 1102



Total Cost: \$8,313 – 2 men/4 days
\$7.77 per square foot
5,000 gallons waste water and solid waste

Total Cost: \$1,745 – 2 men/2 days*
\$1.63 per square foot
Saves \$6.14 per square foot
Cost savings per DDG ≈\$500,000**



*Personnel trained in product application yield labor savings

**1200 ft² avg. tank size x \$6.14 x 67 spaces on avg. per DDG

Remediation of PCB contamination aboard USS Missouri – 60% cost savings



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Decontamination Performance

Application	Stainless Steel	Aluminum	Concrete*
DeconGel 1102 (Non-Brushed)	>94%	>94%	>87%
DeconGel 1102 (Brushed)	100%	100%	100%

* Represents results of just one application; 2nd non-brushed application 72 hours after first yielded >98.6% efficacy

Cost analysis: decontamination of PCB-contaminated spaces aboard USS Missouri



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EPA Decontamination Process

- **Product and equipment cost:** solvents, clay and PPE (\$732.50)
- **Time required:** 35.5 man-hours over 3 days (\$2,433)
- **Transportation and disposal of waste generated :** 2,127 gallons @ \$0.55 per gallon (\$1,170)
- **Total decon costs: \$4,335 and 3 days**

*Cost analysis done by independent PCB remediation contractor

DeconGel

- **Product and equipment cost:** 5.28 gallons at \$121 per gallon and PPE (\$773)
- **Time required:** 10 man-hours over 2 days (\$685)
- **Transportation and disposal of waste generated:** 2 barrels at \$150 per barrel (\$300)
- **Total decon costs: \$1,758 and 2 days**
- **60% LOWER total costs using DeconGel and 33% FASTER turnaround time**

Decontamination of metal contaminants at electronic recycling facility



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Contaminant*	Swipe Before DeconGel	Swipe After DeconGel® "Troweled"	Decontamination Efficacy (%)	Swipe After DeconGel® "Scrubbed"	Decontamination Efficacy (%)
Antimony (Sb)	386	74.8	81%	74.5	81%
Barium (Ba)	3630	223	94%	65.7	98%
Cadmium (Cd)	113	5.1	96%	1.7	99%
Chromium (Cr)	276	14	95%	9.9	96%
Cobalt (Co)	85.6	6	93%	2.9	97%
Copper (Cu)	3600	149	96%	50.1	99%
Lead (Pb)	5890	339	94%	106	98%
Molybdenum (Mo)	55.8	2.9	95%	1.6	97%
Nickel (Ni)	1970	93.8	95%	29.9	98%
Selenium (Se)	2.1	ND	100%	ND	100%
Silver (Ag)	338	26.5	92%	19.9	94%
Vanadium (V)	21.8	1.7	92%	1.1	95%
Zinc (Zn)	10300	909	91%	237	98%
Mercury (Hg)	7.3	2.6	64%	0.79	89%

Lead dust remediation at Pearl Harbor Naval Shipyard - Building 6



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- 52,000 sq. ft. foundry complex vacated due to lead dust contamination
- Initial DoD decontamination efforts determined to be not cost justified
- EPA DeconGel field test demonstrated excellent efficacy and cost savings:
 - **Over 95% decontamination to below OSHA acceptable limits**
 - **Demonstrated cost savings of over 36%**
- GEL now working with NAVFAC for remediation of entire complex



Cleanup of hydraulic/jet fuel fluid spills on USS O'Kane flight deck



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Cleanup of hydraulic/jet fuel fluid spills on USS O'Kane flight deck



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Problem: recurring deck rust and corrosion



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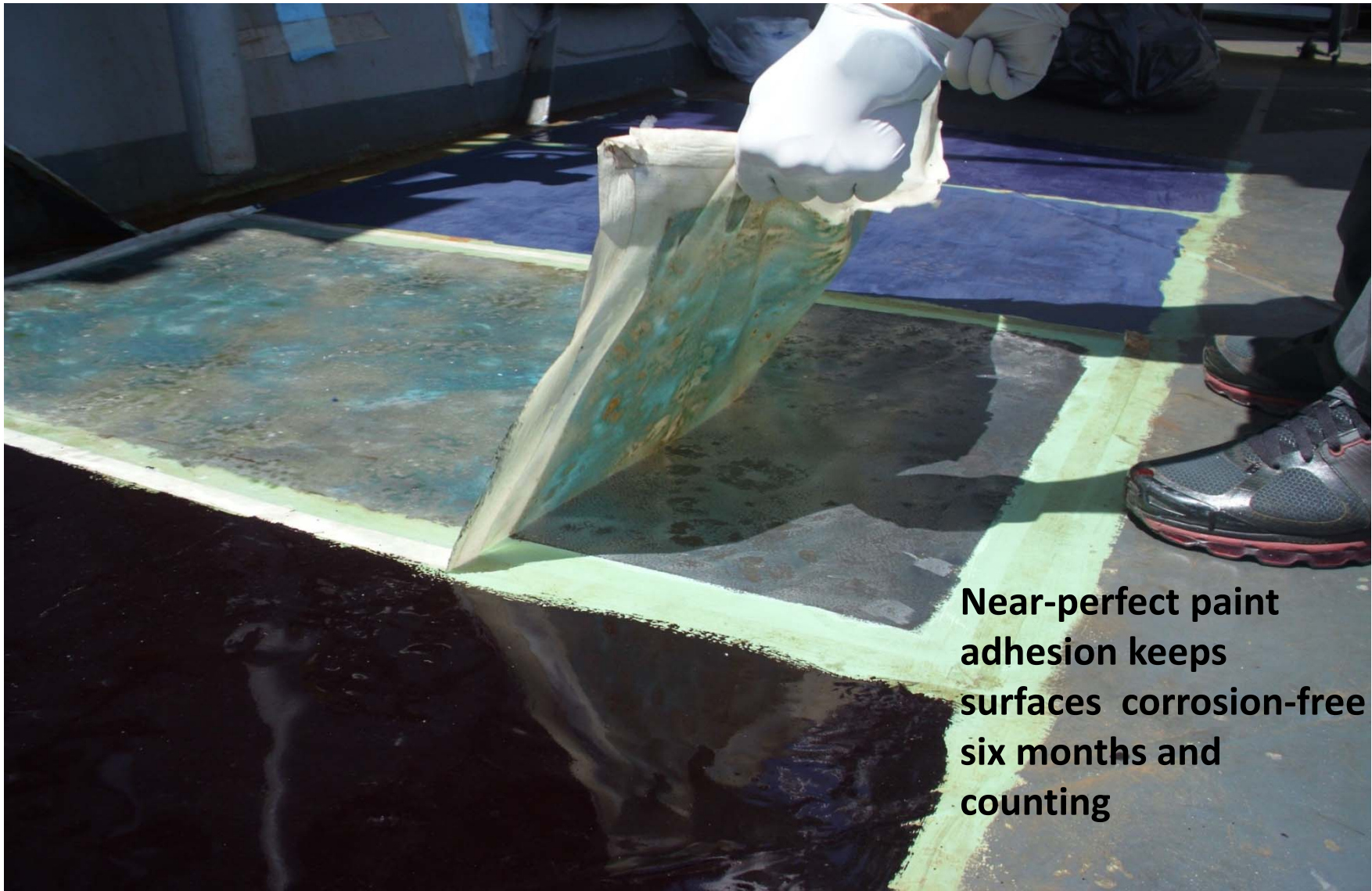


- CBIP asked to demonstrate utility of DeconGel as **surface preparation tool**
- Object of test was recurring corrosion and rust on DDG
- 8 panel areas were selected
- All surfaces prepared with grinding, **then DeconGel 1102 as the “wiping process”** to remove chlorides and metal particles and other contaminants

DeconGel used to clean panels prior to primer application



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**Near-perfect paint
adhesion keeps
surfaces corrosion-free
six months and
counting**

Summary



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- DeconGel is a proven and tested product and represents the latest technology for decontamination of hazardous and radioactive materials
- Hazmat applications are infinite, but require client knowledge of operational processes and environmental safety and health regulations
- Proposed changes to U.S. Navy regulations for use in bilge tank cleaning and other ship cleaning applications in process; products approved for use at Puget Sound Naval Shipyard
- Can provide competitive edge with highly effective, differentiated products that can save 40+% in total project cost
- Application training for major clients; comprehensive product briefings available upon request

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An exclusive master distributor for CBI Polymers, Inc. focused on defense, D&D, DoE and related industries:

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 - email: lhoover@alchemyglobalcapital.com
- Call us for pricing, order processing, and additional technical information
- Custom training appointments available in Annapolis, MD, depending on client order commitments
- Detailed, in-person product briefings also available upon request