

Using the Highlight® Disinfectant Color Additive to Confirm Coverage and Contact Time for Any Decontamination Process



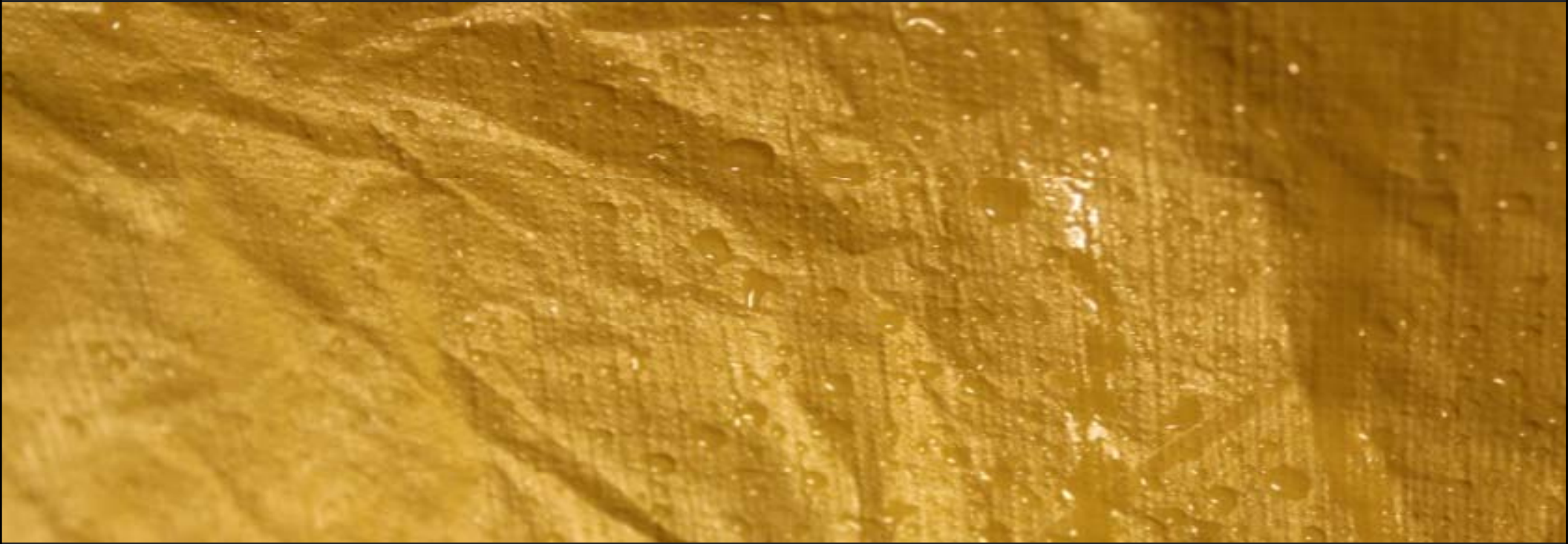
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Problem: High Infection Rates



- 50% of environmental surfaces not properly disinfected
- Ebola crisis: healthcare workers comprised **1/20 deaths**
- US: **1/25 patients get HAIs**, 75,000 deaths + \$28 bn lost annually

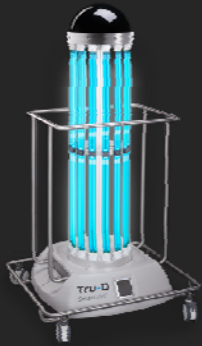
Problem: Ineffective decontamination



- Four C's: chemistry, concentration, coverage, compliance
- Current disinfectants: transparent + droplet formation
- Miss spots + cover only 33% of surface --> **poor coverage**
- No way to ensure **compliance** with contact kill times

Problem: Alternatives

Disinfection Technologies



UVC Light



Electronic Mister

Quality Control Technologies



ATP Bioluminescence



UV Trace

Inhibited by

- **Cost:** expensive and requires extensive training
- **Scale:** cannot be used for every cleaning
- **Use case:** does not replace basic cleaning

Solution: Highlight®

Additive combined with **existing** disinfectants at point-of-use



**Colorizes
Disinfectants**

so you never
miss a spot



**Modifies Liquid
Properties**

to fully cover
surfaces



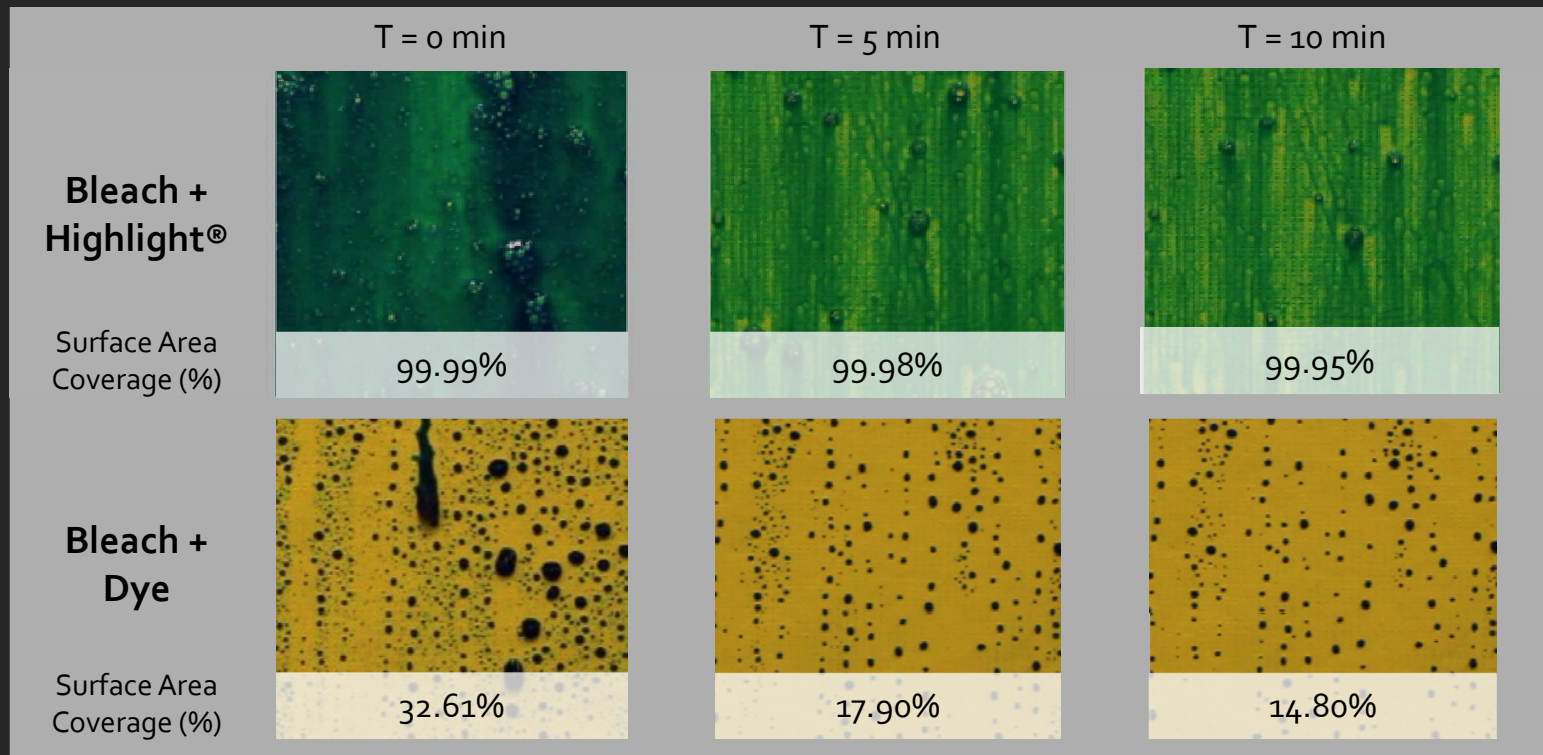
**Fades in Color
Over Time**

to prevent staining and
indicate completion



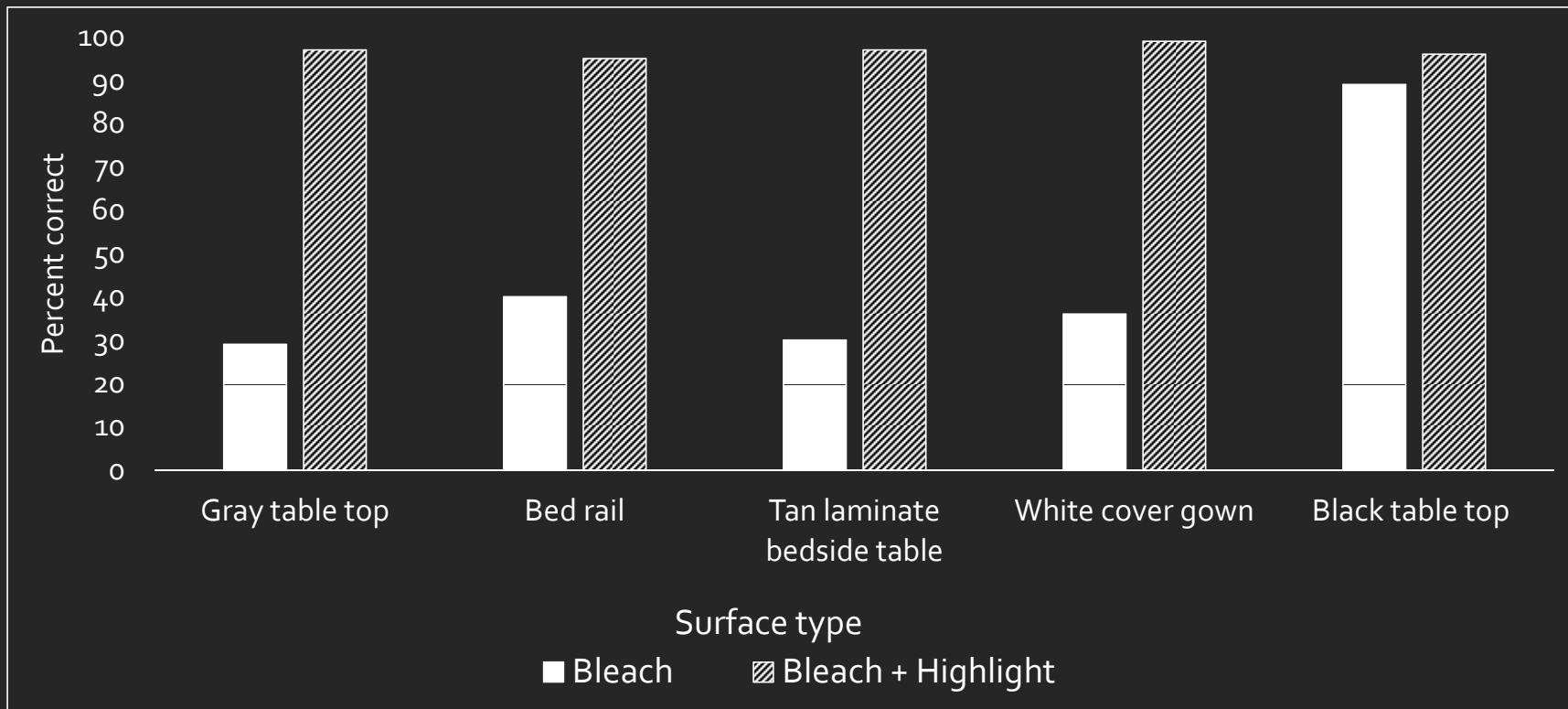


Coverage Data



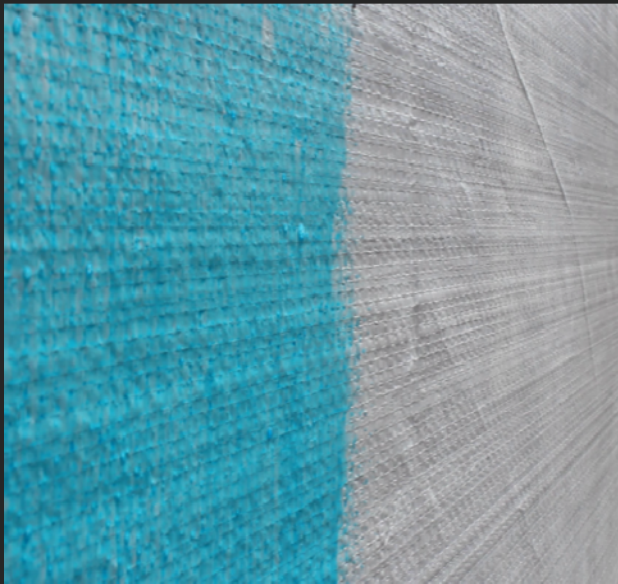
- Non-fading Highlight® formula used to visualize coverage
- Highlight® maintains **>99% surface coverage**
- Bleach alone **forms droplets and rolls off**, loses coverage over time

Visibility Scores

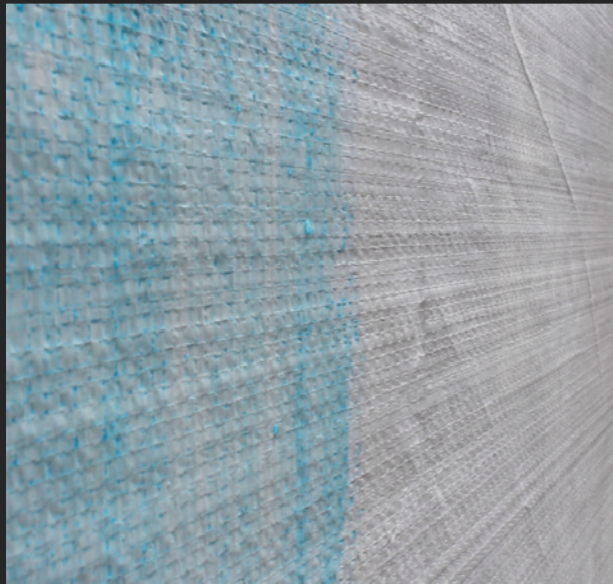


- Healthcare personnel (n=9) participated in blinded comparison
- Identify areas of bleach application after 30 seconds

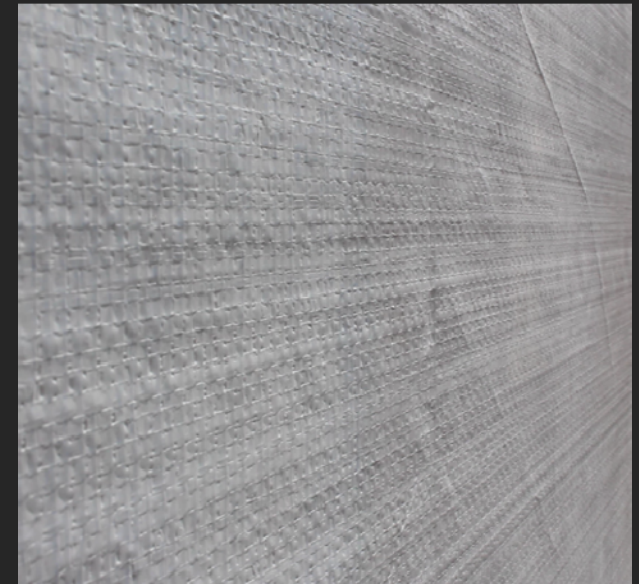
Fading Time and Compliance



0 min



5 min



10 min

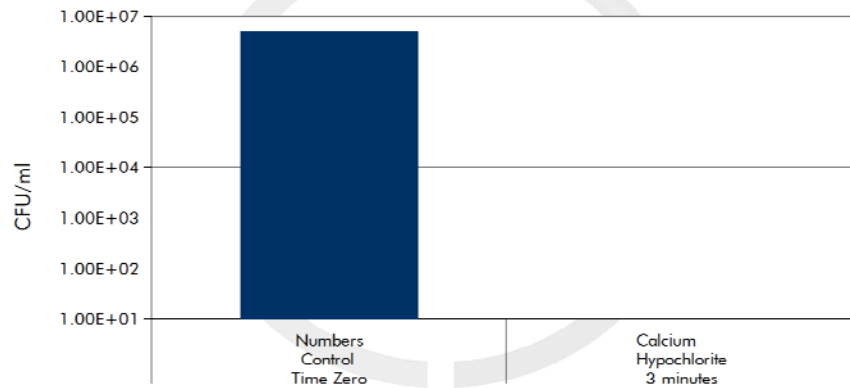
- Color-fading time can be matched to contact kill time for a disinfectant --> **enforces compliance**
- Prevents staining on permanent structures + reusable materials
- Provides **real-time feedback** when a surface is safe to touch

Regulatory

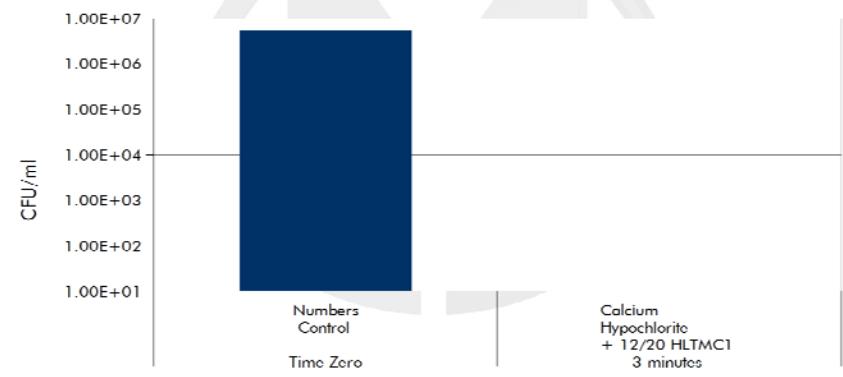
- Patents-pending/trademarks registered
- Considered an **adjuvant** by EPA, no registration label required
- Skin + toxicity testing shows that Highlight® is **not a significant irritant**
- Highlight® **does not reduce efficacy** of disinfectant

Efficacy Data

Test Microorganism	Contact Times	Test Substance	CFU/ml	Percent Reduction Compared to Control at Time Zero	Log ₁₀ Reduction Compared to Control at Time Zero
<i>V. cholerae</i> ATCC 39050	Time Zero	Numbers Control	4.90E+06	N/A	
	3 minutes	Calcium Hypochlorite	5.00E+00	99.999898%	5.99



Test Microorganism	Contact Times	Test Substance	CFU/ml	Percent Reduction Compared to Control at Time Zero	Log ₁₀ Reduction Compared to Control at Time Zero
<i>V. cholerae</i> ATCC 39050	Time Zero	Numbers Control	5.30E+06	N/A	
	3 minutes	Calcium Hypochlorite + 12/20 HLTMC1	<5.00E+00	>99.99991%	>6.03



- Data above for 0.2% calcium hypochlorite on cholera
- Also tested on *C. diff*, West Nile Virus, Influenza A, Ebola virus, human coronavirus, *S. aureus*, and *P. aeruginosa*
- Results show Highlight[®] **does not reduce the potency** of the disinfectant

Example Use Cases

Biosafety



Yale



Sandia
National
Laboratories

Field



Hospitals



Field-Testing Data



In our survey of >75 HCPs in Liberia and Guinea:

- 99% strongly agreed Highlight® greatly improves coverage
- 97% found Highlight very easy to use
- 100% would choose Highlight® over bleach alone

Unpublished data. In submission.

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