

Becoming Germ Free in a Germ Resistant World

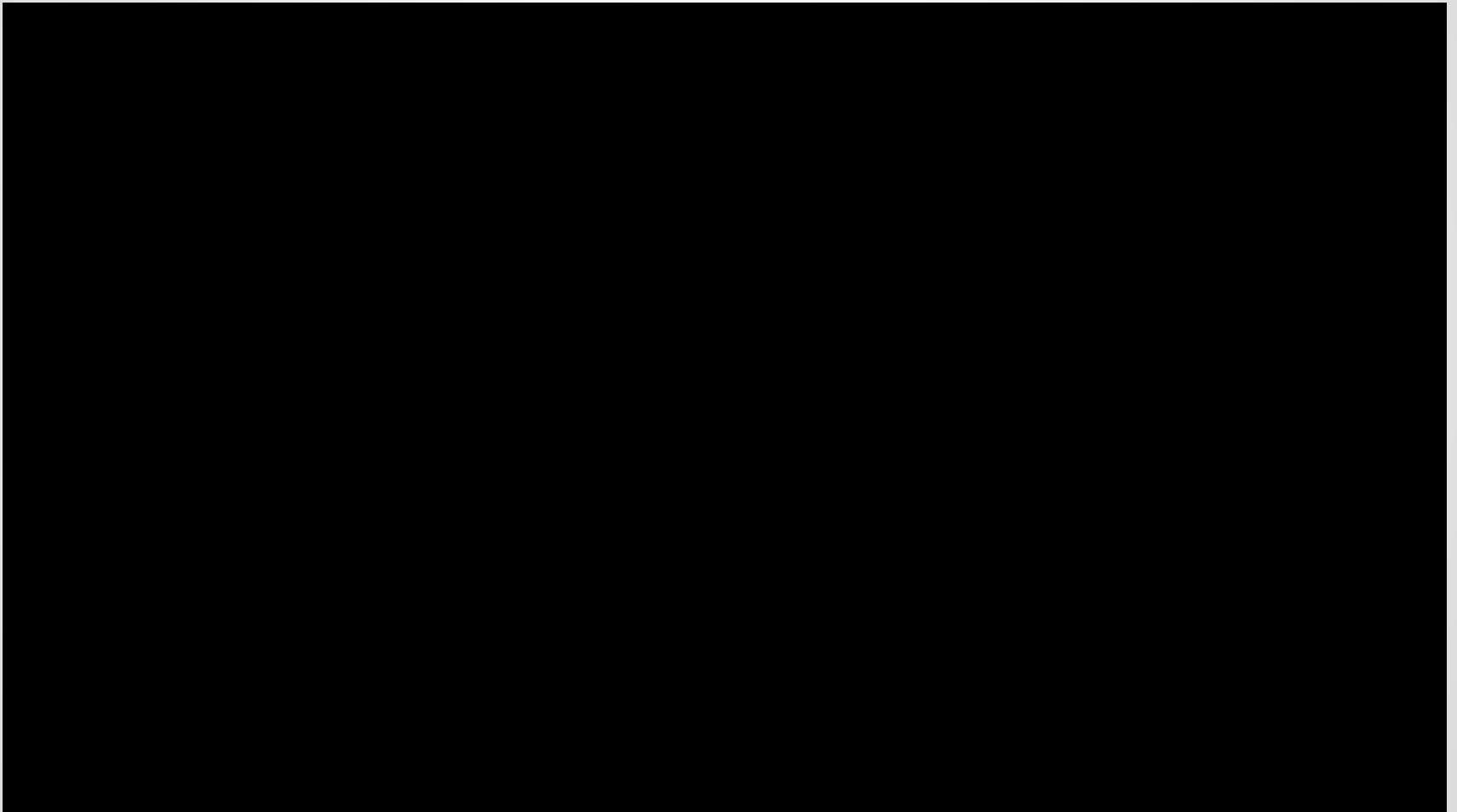
by: Frances M. Grinstead

The most effective ways to disinfect fleets

CURIS[®]
BIO - DECONTAMINATION



Pandemic/Novel Influenza are you
ready?



Why do we care? We should all care...



Because: Why we do something is as important as what we do.

A resistant staph infection from a weight room. Three months of trying to stop it.

Cleaning v. Disinfecting – What is the difference???

Cleaning is for
Appearance

Disinfecting is for
Health



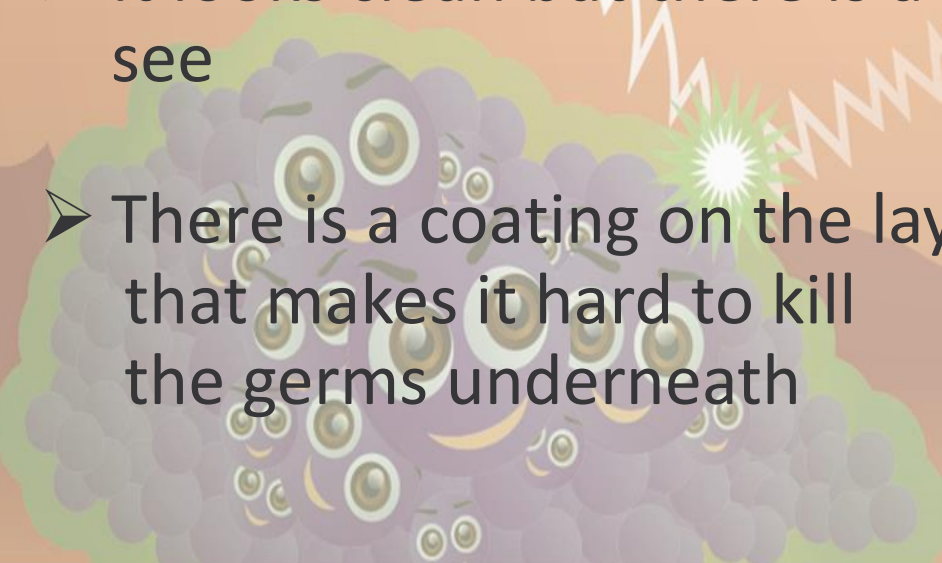
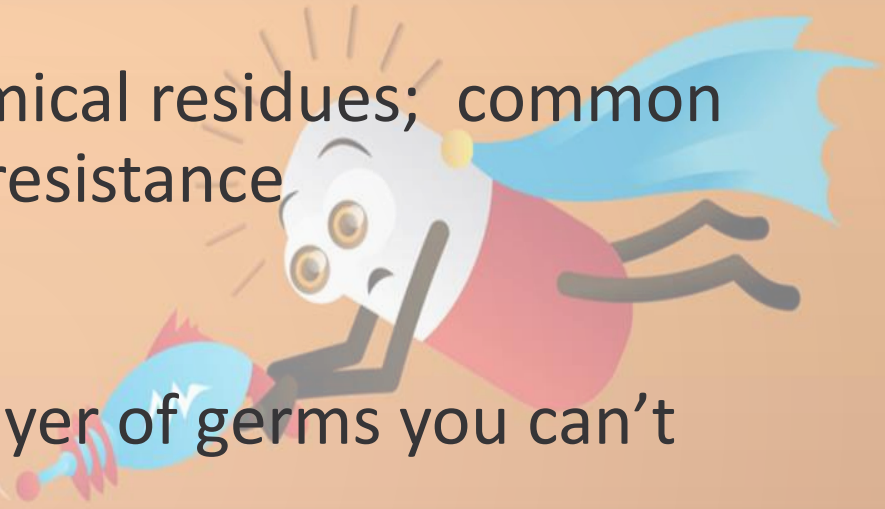
Which one are you doing?



You have to clean first to disinfect

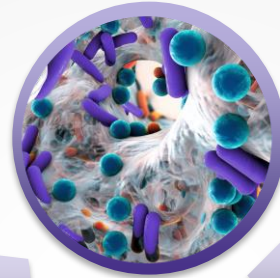
Why do you pre-clean before disinfecting?

- Some films are germs in chemical residues; common cause of pathogen chemical resistance
ex: cryptosporidium
- It looks clean but there is a layer of germs you can't see
- There is a coating on the layer that makes it hard to kill the germs underneath

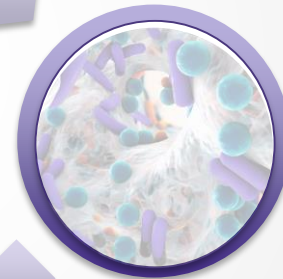


Traditional Cleaning

Germs Re-Grow
Outbreaks are NOT
Stopped



Spray and Wipe
Not enough dwell time
to kill germs



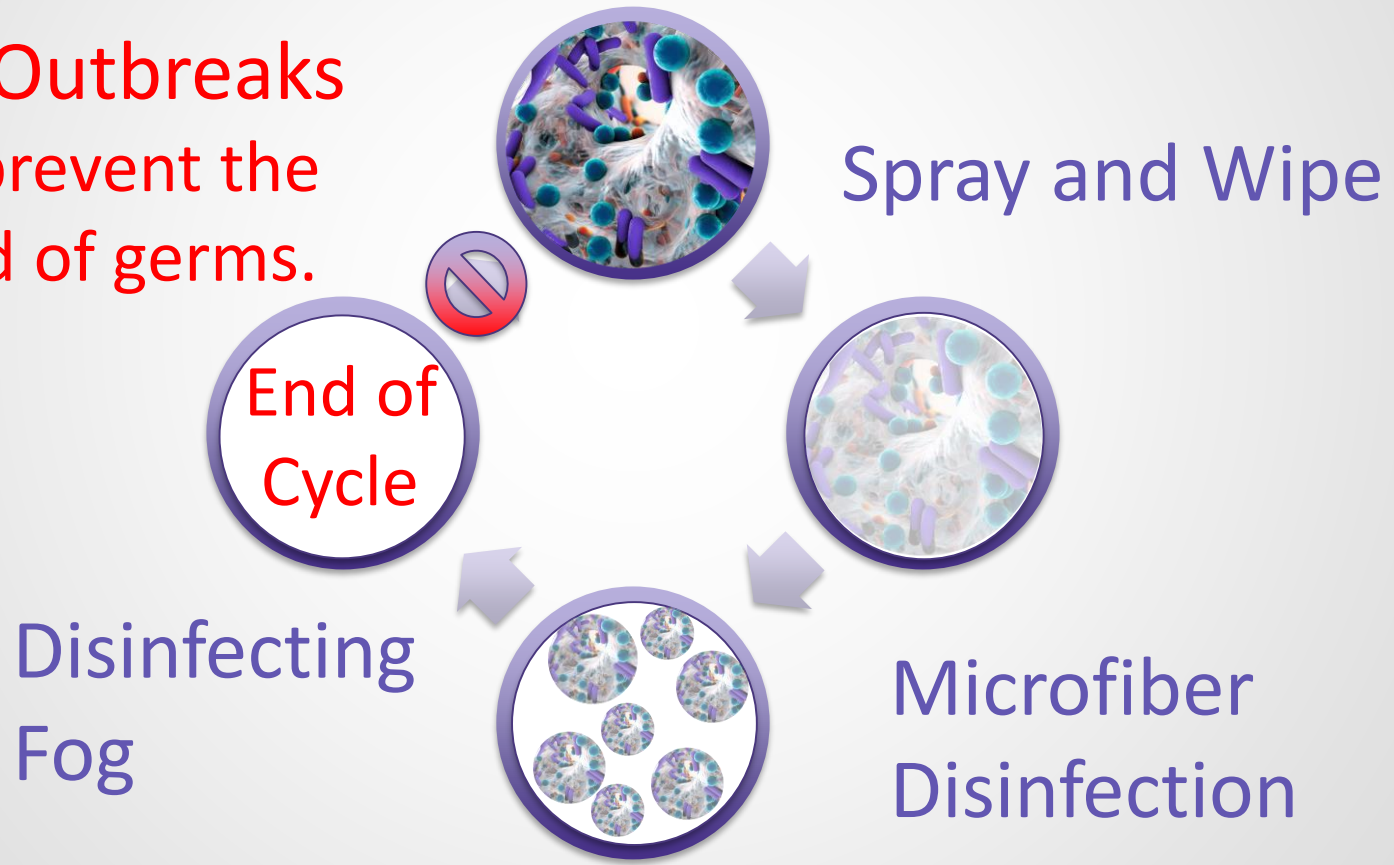
Human Error &
Improper
Disinfection



Old Rags to
disinfect
40% of spaces are
missed

Proper Disinfection

Stop Outbreaks
Help prevent the
spread of germs.



Is transit really that full of germs?



Even “clean” buses
are making people sick.



68% of buses
carry MRSA / Staph

American Journal of Infection Control 2014

Germ Survival on Dry Surfaces

Pathogen	Survival on Dry Inanimate Surfaces (range from studies)
Streptococcus A (flesh eating)	7 days to 3 months
Aspergillus Niger (Black Mold)	6 months or longer
Clostridium difficile (c.diff) - Intestinal	5 months
Escherichia coli (e.coli) - intestinal	1.5 hours to 16 months
Enterococcus spp. Including VRE and VSE	5 days to 4 months
Influenza (Flu)	12 days
Klebsiella spp.	2 hours to greater than 30 months
Tuberculosis (TB)	1 day to 4 months
Norovirus - intestinal	Indefinitely
Pseudomonas aeruginosa	6 hours to 16 months; 5 weeks on dry floors
Staphylococcus aureus (including MRSA)	7 days to 7 months
Candida Albicans	120 days or longer
HIV	More than 7 days

The R_0 values of Emerging Pathogens

How the Ebola virus compares with other contagious viruses. The reproduction rate or R_0 , calculates the number of people likely to be infected by one person who has a disease.

REPRODUCTION RATE (R_0)

Initial infected patient ● — Person he or she has infected

R_0	1 to 4 people	2 to 4	4 to 7	5 to 7	5 to 7	6 to 7	12 to 18	12 to 17
DISEASE	Ebola	SARS	Mumps	Polio	Smallpox	Rubella	Measles	Pertussis (Whooping cough)
HOW IT SPREADS	Bodily fluids	Airborne droplets	Airborne droplets	Fecal-oral route	Airborne droplets	Airborne droplets	Airborne	Airborne droplets

Sources: Michigan Center for Public Health; WHO; Transmission Dynamics and Control of Severe Acute Respiratory Syndrome, Nature; Understanding the Dynamics of Ebola Epidemics, National Institute of Health

Is this just a cycle or the new normal?

Trends happening globally

- TB up 350% over 2015 *Florida department of Health 2016*
- Mumps vaccine ineffective in 67% of fully vaccinated cases *Emory University study 2015*
- 2016 Flu Season worst recorded since Spanish Influenza *Washington Post Dec 2016*
- Number of Measles cases in several states *outbreak News Today May 2017*
- Norovirus season lengthening this year *Wall Street Journal Jan 2017*

Two on-campus students at UF diagnosed with MRSA



Monday, September 19, 2016 3:45pm

22 Tweet 22

GAINESVILLE — Two on-campus students at the University of Florida have contracted MRSA, university officials confirmed Monday.

19
September

Press Release

Engaged with U.S. 87

Florida, May 18, 2017

"At least 32 outbreaks caused by *Cryptosporidium* (also known as "Crypto").... in 2016, compared with 16 outbreaks in 2014"

PLAY CBS NEWS VIDEO

PARASITIC INFECTION ON THE RISE IN POOLS TWICE AS MANY OUTBREAKS IN 2016 COMPARED TO 2014

CBSN

Health • Diet • Fitness • Living Well • Parenting • Family

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ANTHONY BOURDAIN PARTS UNKNOWN

MARATHON 8 P. ET SUNDAY

Hand, foot and mouth disease outbreak strikes Florida State University

By Susan Swift, CNN

Parents Told of MRSA Infection at New Jersey Elementary School

The Central School in Wall Township was being disinfected, officials said in a letter to parents



HEALTH & FITNESS

2 cases of C.diff raise concern at school

Share G+ Tweet Email


Tuberculosis case confirmed on Pasco County school bus

By WFLA Web Staff

Published: March 30, 2017, 4:14 pm | Updated: March 30, 2017, 10:40 pm



Why should you care?

A purple arrow pointing upwards, containing the text 'Staff sick days', 'Buses down', and 'Route delays'.

Staff sick days
Buses down
Route delays

Increased
Costs

A purple arrow pointing downwards, containing the text 'Reputation' and 'Reliability'.

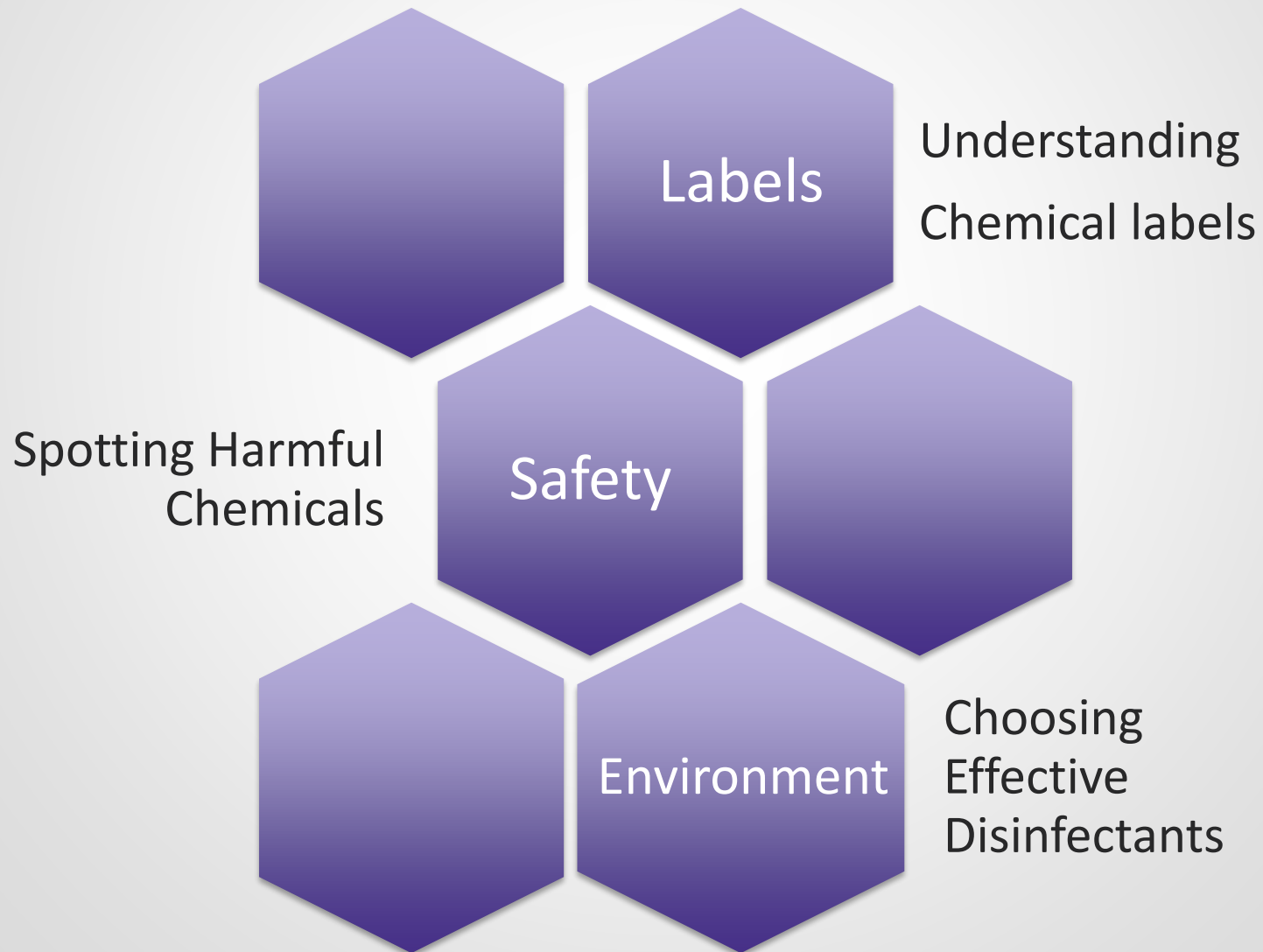
Reputation
Reliability

Reduced
Ridership

CHOOSING A BETTER METHOD

Section 2

Using Disinfectants Properly



Chemicals and Misuse

- Read the manufacturer's label. It will tell you...
 - Ingredients
 - Precautions
 - Dwell times
 - How to use them properly
 - More is not better its more; Don't make bio-films

The Right Tools for the Job

- Micro fiber rags – These are meant to saturate a surface with disinfectant
- Paper towels and rags are meant to absorb liquids
- Folding a rag as you wipe decreases cross-contamination



Play game– How hard it it to kill germs?

Extremely
Hard to kill

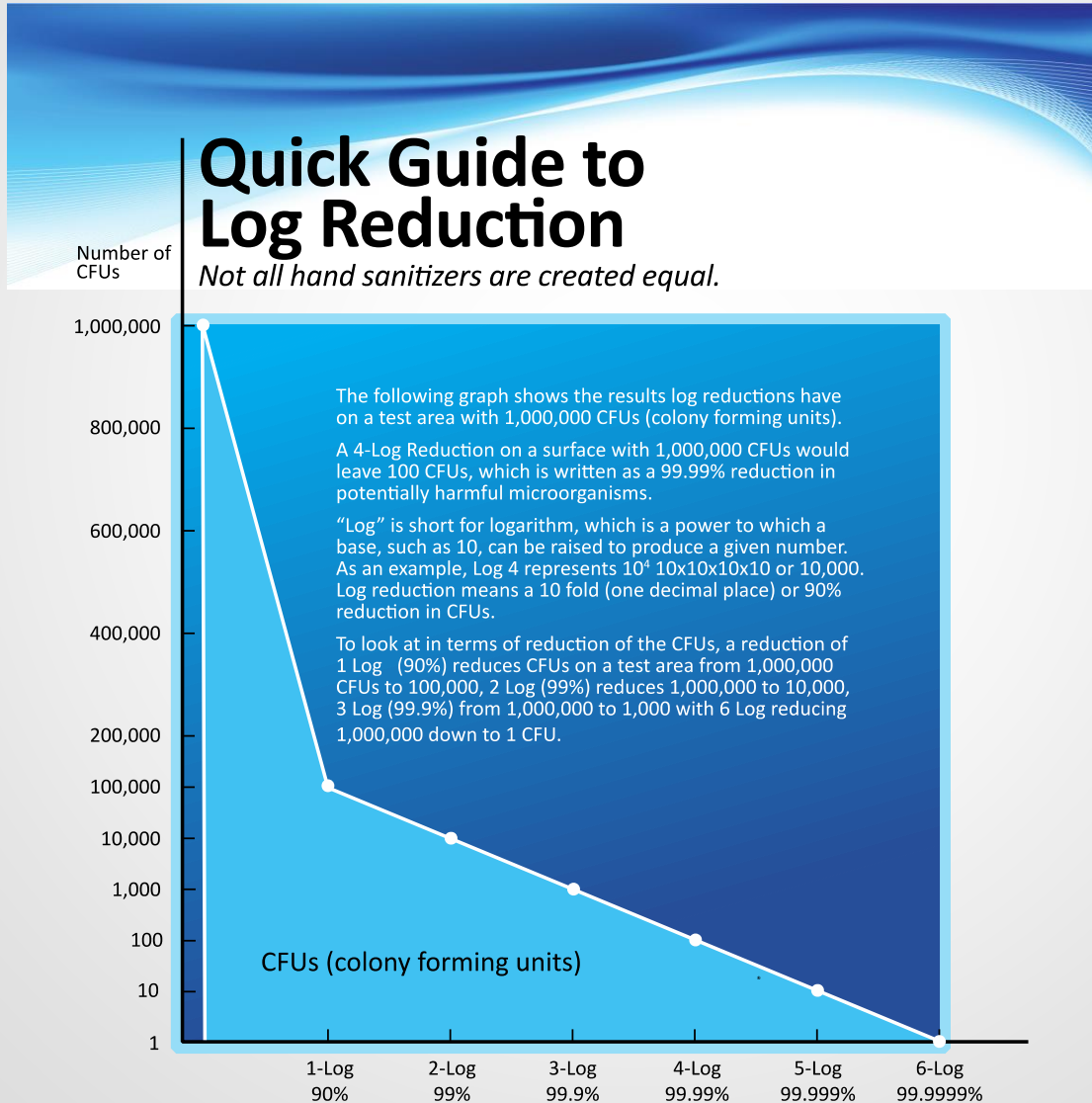
Levels of Disinfection Difficulty

Harder to Kill

Easy to
kill

Prions		Transmissible Spongiform Encephalopathy (TSE); Creutzfeldt-Jakob disease (CJD) Mad cow disease; Scrapies
Bacterial Spores		Spores of: <i>C. difficile</i> ; <i>C. tetanus</i> ; <i>C. botulinum</i> ; <i>C. perfringens</i> ; Anthrax
Mycobacteria		<i>M. tuberculosis</i> ; <i>M. avium</i>
Viruses without envelopes		Norovirus; Rotavirus; Rhinovirus; Poliovirus; Papillomavirus (HPV); Cocksackie; Adenovirus
Fungi includes fungal spores		<i>Aspergillus fumigatus</i> , <i>A. flavus</i> ; <i>A. niger</i> ; <i>Candida albicans</i>
Gram negative bacteria		<i>Pseudomonas</i> , <i>Acinetobacter</i> , <i>Klebsiella</i> , <i>E. coli</i> ; Enterobacteriaceae, <i>Legionella</i>
Gram positive bacteria		<i>Staphylococcus</i> ; <i>Enterococcus</i> ; <i>Streptococcus</i> ; Clostridia vegetative rods
Viruses with lipid envelopes		Influenza; HBV; HCV; HIV; RSV; Coronavirus CMV; HSV; Measles, Mumps; Rubella; VZV (Varicella-Zoster) Shingles/ Chickenpox

What does 99.9% mean?



Choosing Effective Chemicals

Harmful



- Bleach
- Quaternary Ammonias

Helpful



- Hydrogen Peroxide (H_2O_2)
- Vinegar

What about traditional disinfection? Why do we need something more?

- It is well known that up to 50% of surfaces are missed when wiping with the traditional spray and wipe methods, *ISSA 2014*
- Only 1/4 of janitorial staff follow dwell times for target pathogens, *Oxford Academic IC survey 2008*
- The most widely used chemicals can do more harm than good
 - ❖ Quats - known allergen, pathogen chemical resistance, pathogen transmission, *NIH 2016*
 - ❖ Bleach- allergen, Immunosuppressant, dermal absorption, asthma causing agent, pathogen resistance – overuse, *NIH (National Institute of Health, 2016)*



How can you achieve dwell with spray and wipe?

1. Read what the dwell time is for the germ your targeting
2. If it is 2 minutes or less you will need to spray leave it for 2 minutes and then wipe
3. If it is 5 minutes- Spray leave 2 min, spray again leave 2 min, spray again leave one minute, then wipe
4. The same is done for longer dwell times like ten minutes spray 5 times spraying every two minutes for five times.
6. Always be aware of your environment. Lower humidity will need to spray more often.

What does your dwell time look like?

This is how it looks to get the kill claims on the back of the label

CURIS® system achieves dwell every time



Some Solutions:

Have a Plan

- ✓ UV light - only treats where light touches
- ✓ Air filters- only treat the air and 70% of germs are on surfaces
- ✓ Hand spray systems – do nothing to help achieve dwell times and rely on human error
- ✓ CURIS[®] micron fogging - decontaminates 100% of surfaces and don't forget the bed bugs

Dwell time is critical and fogging achieves it every time

- Disinfectants must stay wet for a recommended time: see manufacturer's recommendations
- If dwell is not reached germs can come back stronger, creating chemical resistance
- The longer the disinfectants stay in place, the better



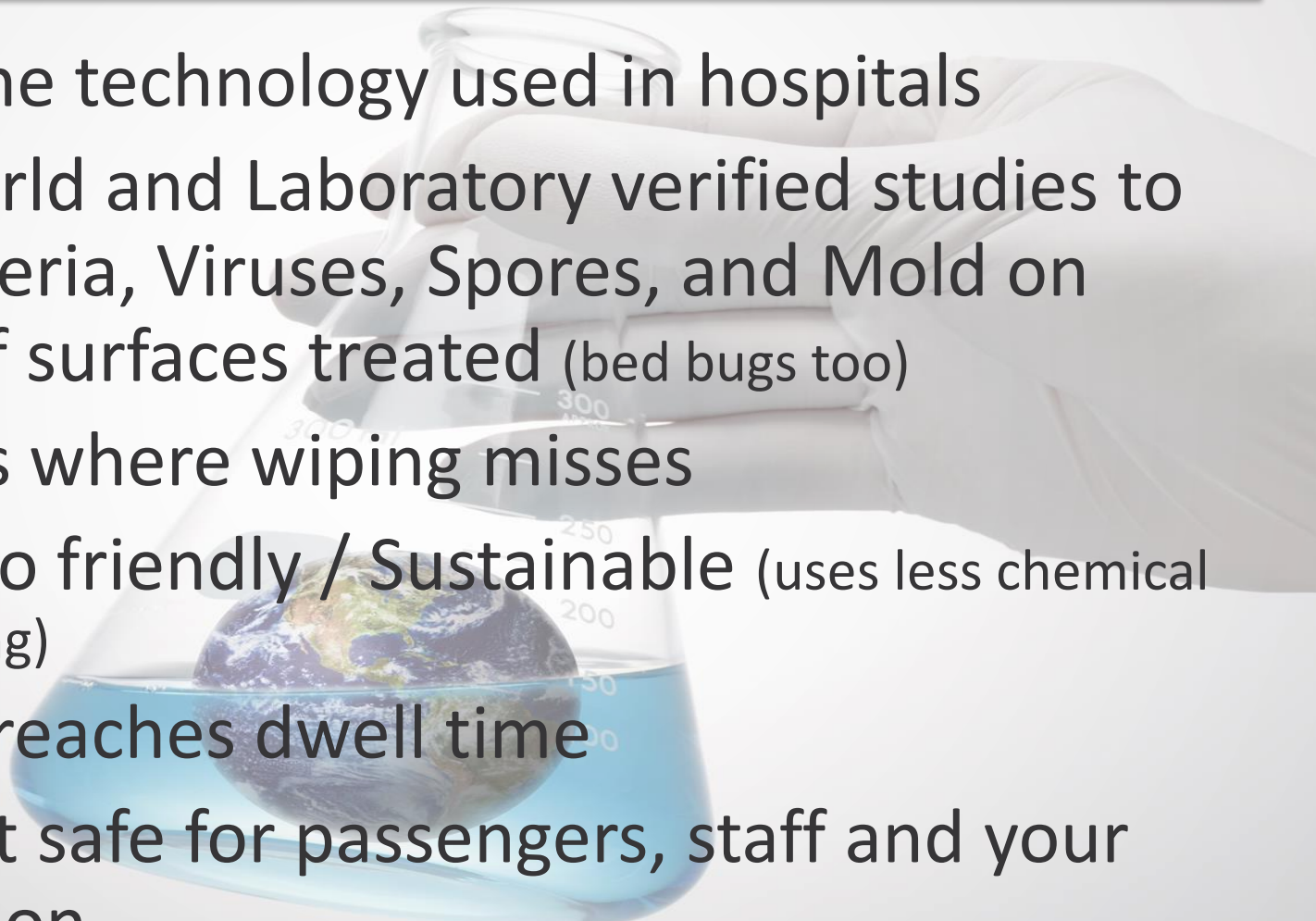
Why is micron fogging better?

CURIS[®]

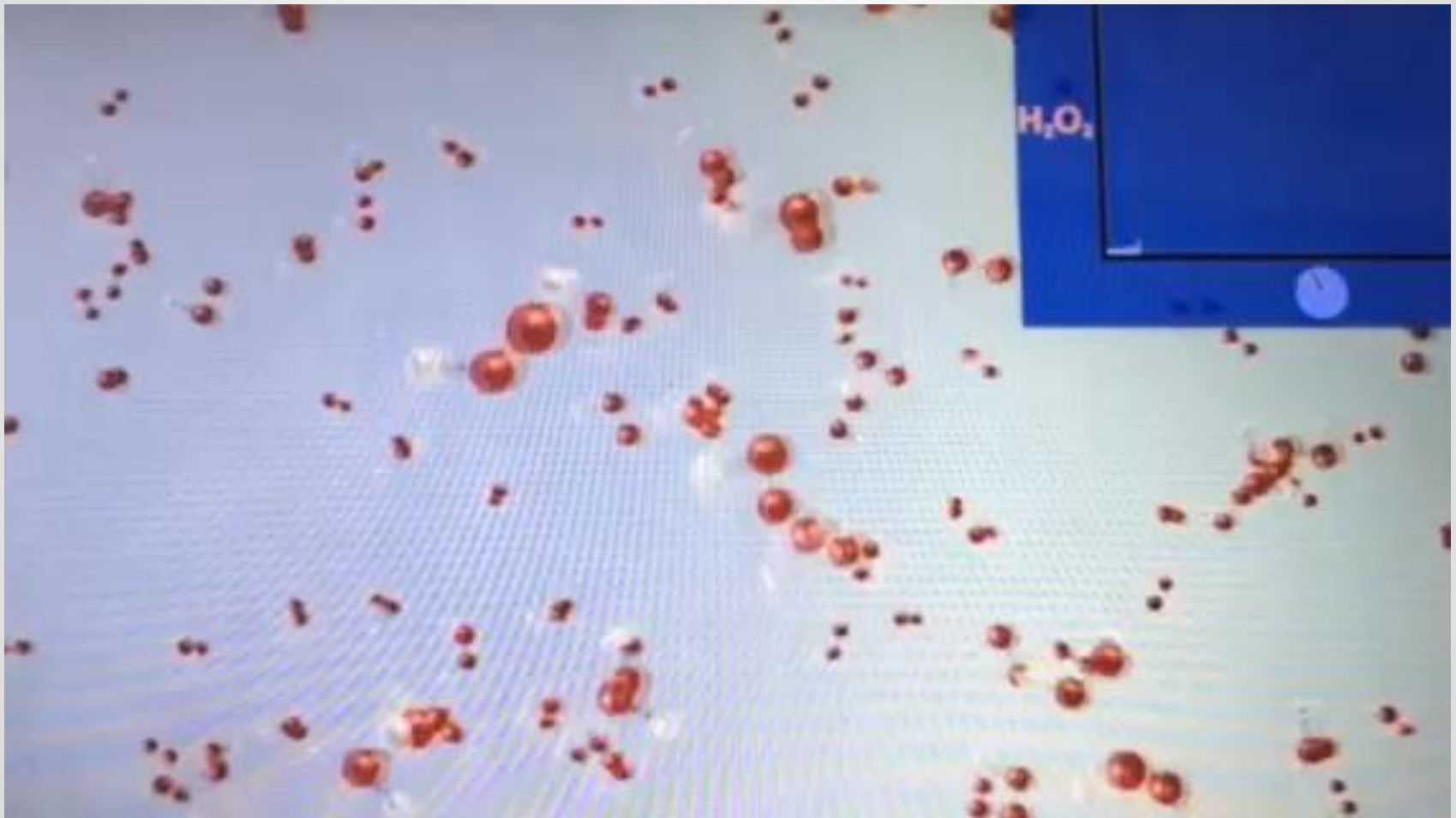
- Fills a space with H₂O₂ and silver to reach 100% of surfaces and kill germs where wiping misses
- Silver is left behind as a bio-stat to stop regrowth



Why is CURIS® System better?

- The same technology used in hospitals
 - Real world and Laboratory verified studies to kill Bacteria, Viruses, Spores, and Mold on 100% of surfaces treated (bed bugs too)
 - Reaches where wiping misses
 - Safe- eco friendly / Sustainable (uses less chemical than wiping)
 - Always reaches dwell time
 - Makes it safe for passengers, staff and your reputation
- 
- A background image showing a gloved hand pouring liquid from a graduated cylinder into a flask. Inside the flask is a small globe of the Earth, symbolizing the system's application in various environments and its eco-friendly nature.

How H_2O_2 Kills Germs



When do I use the CURIS system?

- Proactively – to advertise your **MEDICALLY DISINFECTED FLEET**
 - Reactively – to treat a germ, odor or bed bug concern
 - Routinely – to keep your fleet in a healthy condition for staff and passengers –
Monthly/Quarterly
-
- Sterilizing**
This is to decontaminate a space: No pathogen left alive & zero contamination
- Disinfecting**
This is clearing for Health. Removing some germs, creating a healthier space
- Cleaning**
This is for appearance: Dirt, grime and debris removal
- BEST
BETTER
GOOD

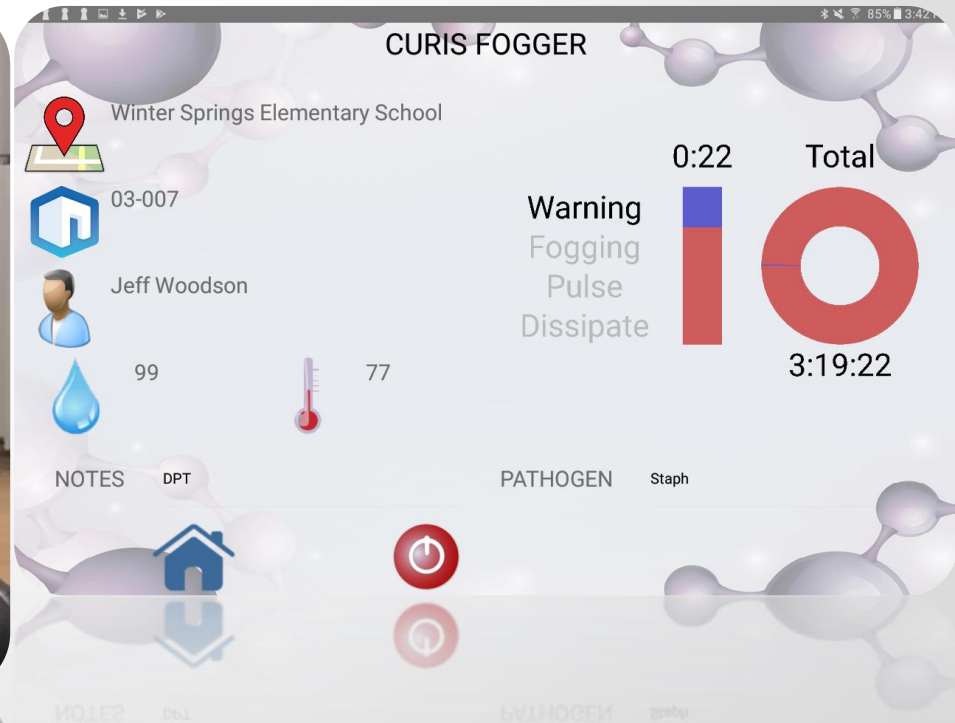
What else can CURIS® do?

- ✧ Remote controlled
- ✧ Proves you did your job
- ✧ Germ tracker
- ✧ Routine setter
- ✧ Structures your Plan of attack



Fog Cycle

- When running the fogger remotely and out of line of sight, check your App for fog cycle progress by touching the CURIS icon. The time line will inform you as to the status and time remaining for completion.

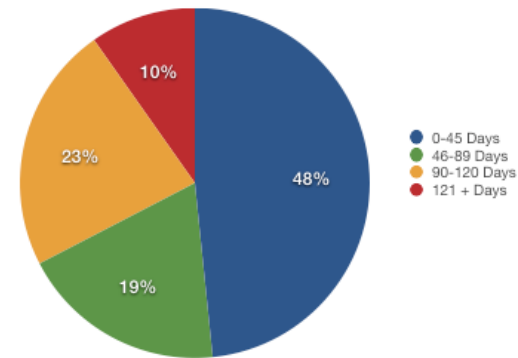
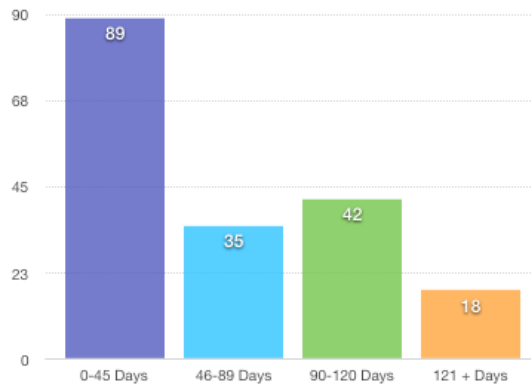


Technology meets disinfection

Easy to understand charts

Rooms Treated

TIME INTERVAL	ROOMS
0-45 Days	89
46-89 Days	35
90-120 Days	42
121 + Days	18



The Solution:

Have a Plan

- ✓ CURIS® devices to treat 100% of surfaces
- ✓ CURIS® to treat areas proactively
- ✓ CURIS® to treat before cleaning to safely clean an area
- ✓ CURIS® after cleaning to decontaminate
- ✓ Pathogend® to handle your outbreaks





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