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Halo Disinfection System®

A Superior Choice in Surface Disinfection
Featuring No -Touch Whole Room Disinfection

- HaloMist™ Disinfectant Fogging Solution
- HaloFogger® Dry -Mist Dispensing Devices
- HaloSpray™ Multi -Purpose Surface Disinfectant

The Halo Disinfection System is the most efficacious and economical system for whole-room surface disinfection!

HaloFogger® Hands-Free, Dry-Mist Dispensing Device

It delivers an aerosolized dry-mist of concentrated Halo™ Disinfectant to every exposed surface within a room, disinfecting not just the primary or “high touch” surfaces but also into nooks, crevices and corners that sprays, wipes and UV can’t reach. It reduces the cross contamination associated with using a rag, wipe or sponge.



The logo for Halosil International, featuring a stylized mountain peak above the company name.



Halosil Fogging Applications:

HaloMist Formula is an enhanced cleaning protocol that is applied in conjunction with normal cleaning procedures and is suitable for the effective treatment of a wide variety of areas. Examples of these are:

Medical & Health

Hospitals theatres & wards.
First Aid & treatment rooms.
Emergency Treatment rooms.
Isolation & critical care areas.

Pharmaceutical cleanrooms.
Laboratories & research.
Dental surgeries.
Veterinary treatment areas.

Ambulances & Emergency vehicles
Police & Prison vehicles & buildings.
Police & prison cells.
Public transport & aircraft interiors.

Public Spaces

Retirement homes & healthcare facilities.
Hotels & rental accommodation.
Reception & public assembly areas.

Tourist premises & facilities.
Public & private toilet areas.
Retail premises & Supermarkets.
Caravans, RVs & boats.

Schools & educational facilities.
Kindergarten & childcare centers.
Gymnasiums, health & sports clubs.
Pool changing areas & saunas.

Food & Beverage

Food & Beverage preparation & storage.
Wineries & Breweries.

Fruit & vegetable processing & Storage facilities.

Hotels, restaurants & cafes.
Food production & filling areas.

Hospital Infections in the United States:

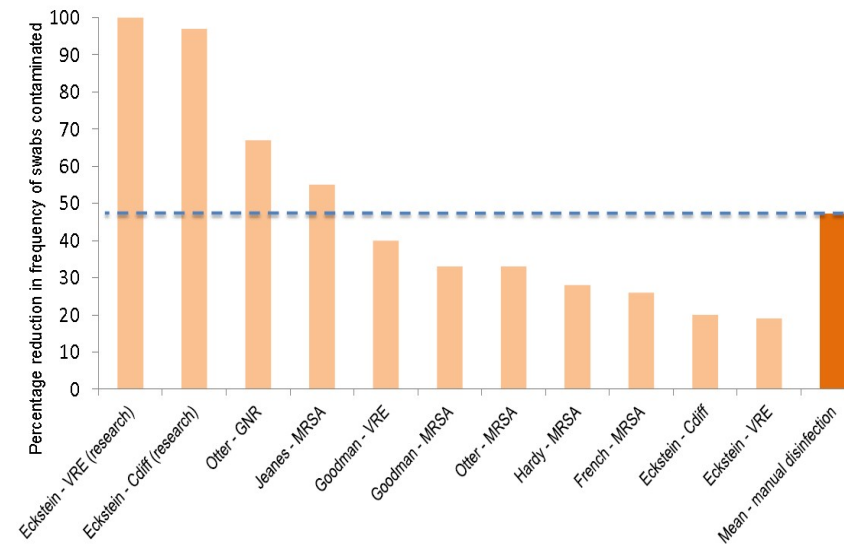
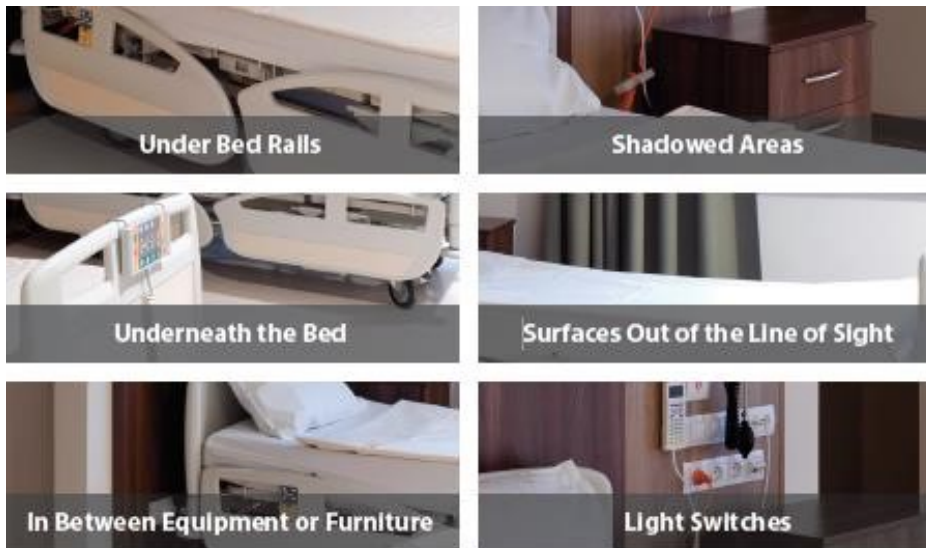
- 1 in 25 people admitted to a hospital will get a hospital acquired infection (HAI).
- According to the CDC, at least 10% of those admitted to the hospital that get a HAI will die.
- Less than 15% of the 5,600+ hospitals today use anything other than spray and wipe disinfectants.
- In 2015 there were 721 hospitals that were fined for hospital acquired conditions, primarily HAIs.
- A HAI average cost is \$22,500 and adds an additional 3-5 days to LOS.
- A 25 bed hospital unit (1,125 admissions per year) will, on average, have 45 HAIs/yr. costing \$891,000.
- LTC is responsible for between 1 and 4 million infections and 380,000 deaths each year.

Knowledge Base

Common Organisms that can survive unexpected time:

Organism	Survival time
<i>Clostridium difficile</i> (spores)	5 months
<i>Acinetobacter</i> spp.	3 days to 5 months
<i>Enterococcus</i> spp. including VRE	5 days – 4 months
<i>Pseudomonas aeruginosa</i>	6 hours – 16 months
<i>Klebsiella</i> spp.	2 hours to > 30 months
<i>Staphylococcus aureus</i> , inc. MRSA	7 days – 7 months
Norovirus (and feline calicivirus)	8 hours to > 2 weeks ¹
SARS Coronavirus	72 hours to >28 days ²
Influenza	Hours to several days ³

Halosil Difference:



Introducing a Unique Solution *that Works*

The Halo Disinfection System®

A family of unique products designed to deliver infection-reducing results safely at a cost lower than other surface disinfection technologies.

Hardware

HaloFogger®

aHP Dispensing Devices



Disinfectant

HaloMist™

Disinfectant Fogging Solution



HaloSpray™

All-Purpose Surface Disinfectant



Halosil Difference:

What makes Halosil different?

- **Effective** - HaloMist was the first aerosolized hydrogen peroxide disinfectant the EPA approved for fogging with a 99.9999% kill of *C. diff* spores in a whole room.
- **Affordable** – Halo Disinfection System cost is often under \$10,000. Consumable costs are usually about \$20 per treated patient room.
- Halosil disinfectants are **ready-to-use** hydrogen peroxide and ionic silver formulas.
- Halosil disinfectants are **odorless** and are bleach, ethanol and PAA free. They are also non-corrosive and **safe for use around electronic equipment**.
- Halosil's unique, stabilized formula delivers exceptional **2-year storage stability**.
- Halosil's **5% H₂O₂ formula** is toxicity rated as a **III (mild)** eye irritant, and a **IV (innocuous)** oral, dermal, and inhalation irritant.

EPA Definitions

Sporicide

A sporicide is an antimicrobial “pesticide” that destroys or eliminates essentially all forms of microbial life in the inanimate environment, including 99.9999% of bacterial spores. The FDA term “sterilant” is deemed to be synonymous with the EPA’s “sporicide”, but such products are intended for different purposes. Since sterilization includes eradication of all living microorganisms, such claims are intrinsically related to protection of human health.

Disinfectant

A chemical that destroys vegetative forms of harmful microorganisms but does not ordinarily kill bacterial spores. Test results must show at least a 4-log kill of each test organism. (A Disinfectant Cleaner must also work in the presences of 5% artificial soil.)

Sanitizer

EPA considers an antimicrobial to be a hard-surface sanitizer when it reduces but does not eliminate all the microorganisms on a treated surface. To be a registered sanitizer, the test results for a product must show a reduction of 99.9% in the number of each test microorganism.

Cleaner

A substance or mixture of substances (such as chemical or biological substances) that is intended to clean away or remove inanimate material from a surface, water or air, and that makes no pesticidal kill claims.

Hierarchy of Efficacy

Implications of Log Reductions

Sporicide/Sterilant

For every **ONE MILLION** pathogens in an environment, a sporicide will leave **ONE** alive or active, on average. **Disinfectant**

A disinfectant will, on average, leave **ONE HUNDRED times as many** pathogens alive in that environment.

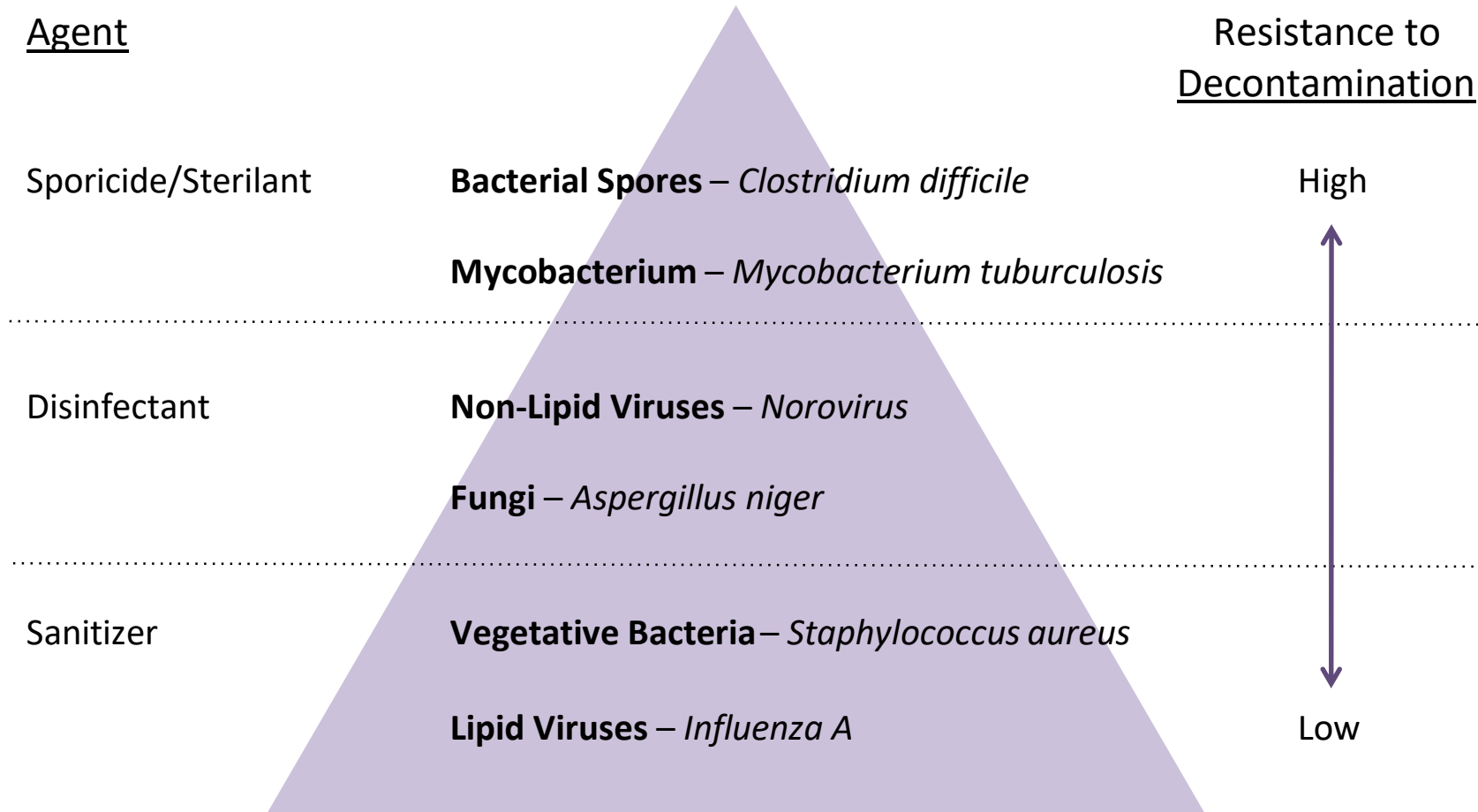
Sanitizer

A sanitizer will leave **ONE THOUSAND times as many** alive as would a sporicide in that environment.

And in “Real Life”...

In “real life”, cleaning and manual disinfection with highly effective sporicidal or disinfectant sprays and wipes will eliminate less than 50% of the pathogens in a room, leaving **FIVE HUNDRED THOUSAND times as many** pathogens alive or active in that environment.

Hierarchy of Efficacy



This hierarchy considers broad classifications of microbial categories. It is considered a rough guide to general susceptibility of microorganisms to anti-microbial agents.

Hierarchy of Efficacy

What Halosil kills – EPA Label

Bacteria

Escherichia coli

Enterobacter aerogenes

Pseudomonas aeruginosa

Salmonella enterica

Staphylococcus aureus

Staphylococcus aureus – MRSA

Proteus mirabilis

Clostridium difficile (C-diff)

Mold

Trichophyton mentagrophytes

EPA Reg. No. **84526-6**

Viruses

Human immunodeficiency virus type 1 (HIV-1)

Influenza A virus Hong Kong (flu virus)

Avian influenza A (H5N1) virus (flu virus)

Rhinovirus type 37

Swine influenza A (H1N1)

Feline calicivirus

Minute virus of mice (MVM)

Norovirus (feline calicivirus surrogate)

SARS-CoV-2

Non-Label EPA Claims

Ebola, Enterovirus D86, Candida auris *Aspergillus niger*



ALL US EPA approved GLP tests

Hierarchy of Efficacy

First EPA registered **fogging** formula for whole-room disinfection.

HaloMist is an EPA-validated, proprietary hydrogen peroxide-based disinfectant for use on hard, pre-cleaned, non-porous, non-food contact surfaces. HaloMist is approved for use in whole-room surface disinfection procedures using HaloFogger. HaloMist is a healthcare-grade, ready-to-use formula that's been proven to reduce environmental infections rates.

Update: HaloMist now combines the original efficacy claims of both HaloMist and HaloSpray, supporting a broad array of kill claims. The EPA-amendment also increases the use sites for HaloMist.

EPA Validated to kill 99.9999% (6-log) of *C. diff* spores in an entire room

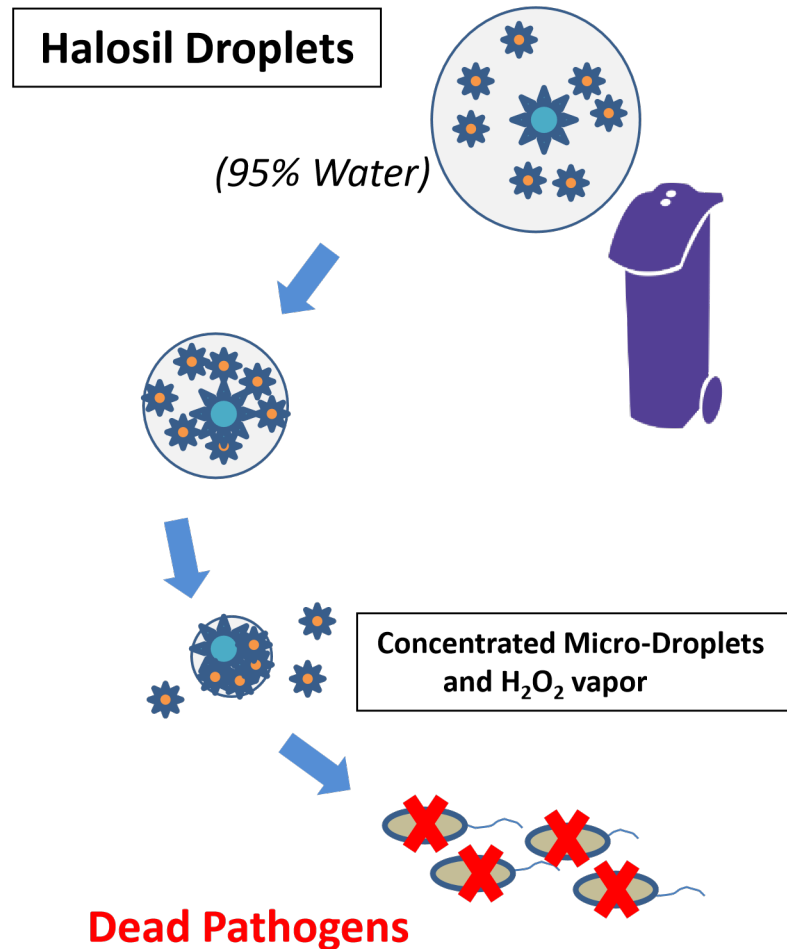


services.
using
proven to

approved

Halosil Product Information

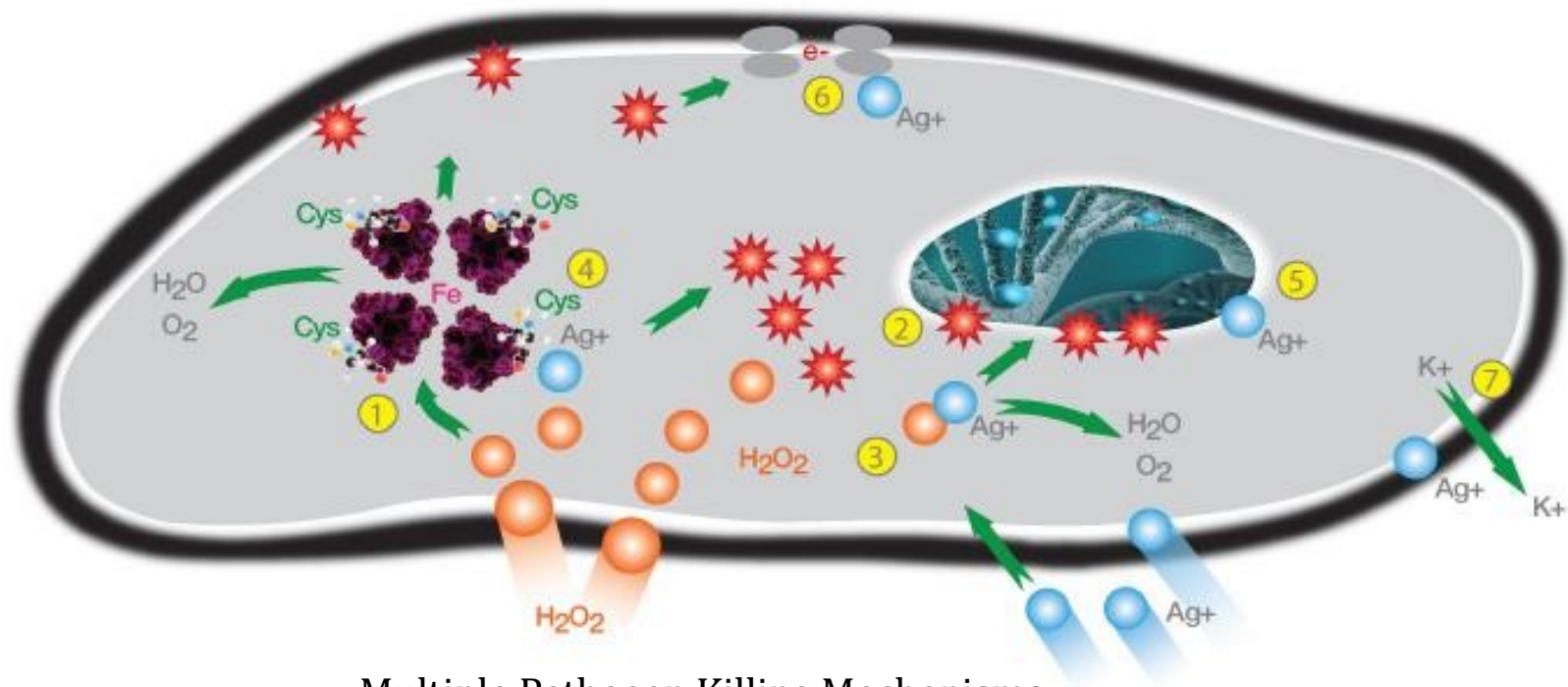
Why fog instead of spray?



Evaporation = Vapor & Concentration

- The evaporation of water from the droplet in air concentrates the solution;
- The evaporation of H₂O₂ creates a pathogen-killing vapor;
- The micro-droplets float all over the room, disinfecting all available surfaces;
- The smaller the micro-droplet size, the more surface area is covered;
- The twin killing mechanisms produce the highest efficacy of any whole-room disinfection system.

How Does Halosil Chemistry Work?



Multiple Pathogen Killing Mechanisms

H_2O_2 Mechanisms

- 1** Attack of metalloenzymes (Fe) and subsequent creation of ROS (Reactive Oxygen Species)
- 2** ROS can cause breaks in DNA and further oxidation of enzymes
- 3** H_2O_2 can react with free Ag^+ to form ROS

Ag^+ Mechanisms

- 4** Attack of cysteine protein residues at thiol groups in O_2 , creating ROS
- 5** DNA binding and inhibition of replication
- 6** Respiratory chain disturbance
- 7** Membrane permeability-Potassium release disturbing ionic balance

HaloFogger Designs

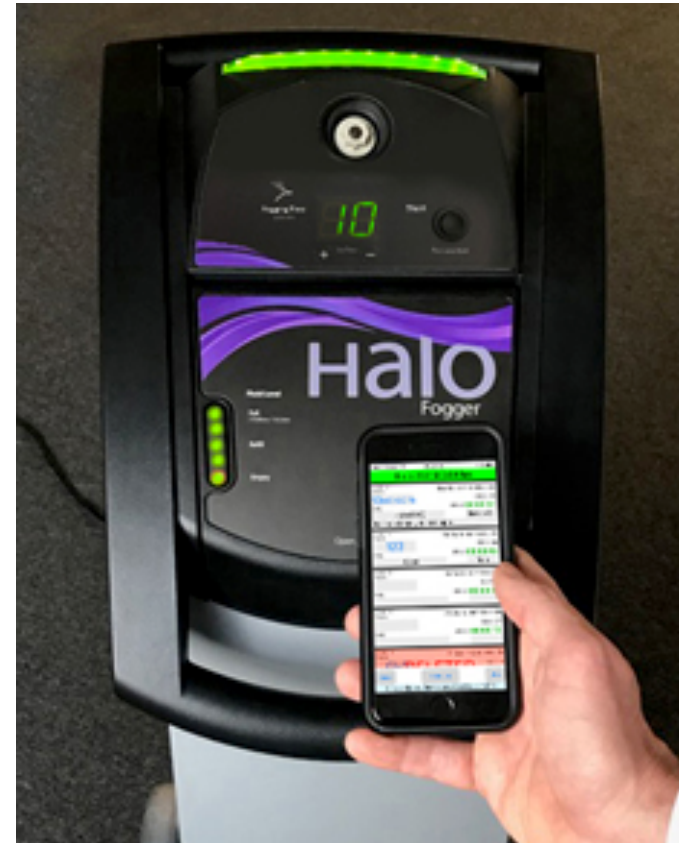
Three Models available – STD, FLX and EXT designations

HaloFogger STD (Standard)	HaloFogger FLX	HaloFogger EXT
60-minute Timer High Fluid Output = 1.7 oz /minute Spaces up to 10,500 ft ³	60-minute Timer High Fluid Output = 1.7 oz /minute Spaces up to 10,500 ft ³	30-minute Timer Low Fluid Output = 0.85 oz / minute Spaces up to 2,250 ft ³
	Hose Length: 12'	5'



Data Logging Capability for HaloFoggers

- Download and view time-stamped record for treatment cycles, room and operator identifiers, and session notes
- View total hours of HaloFogger use
- E-mail data file and edit in Excel
- Requires Apple iOS device



Permanently installed
nozzle assembly
available for the
HaloFogger FLX and
EXT





- Pennsylvania Hospital, a 496 bed urban teaching hospital, reduced hospital-acquired *C. Difficile* rate 66% from a better-than-industry-average of 4.9 new cases per 10,000 inpatient days to only 1.65 new cases.
- ROI produced greater than \$10 savings for every \$1 spent (using industry low estimates for *C. diff* costs per case).
- Earned Penn Health's Quality and Patient Safety Award.
- For the first time, Pennsylvania Hospital had two-of-three months with zero new cases of *C. Difficile*

Result: Over a 66% reduction in New *C. Diff* Cases

Field Data:

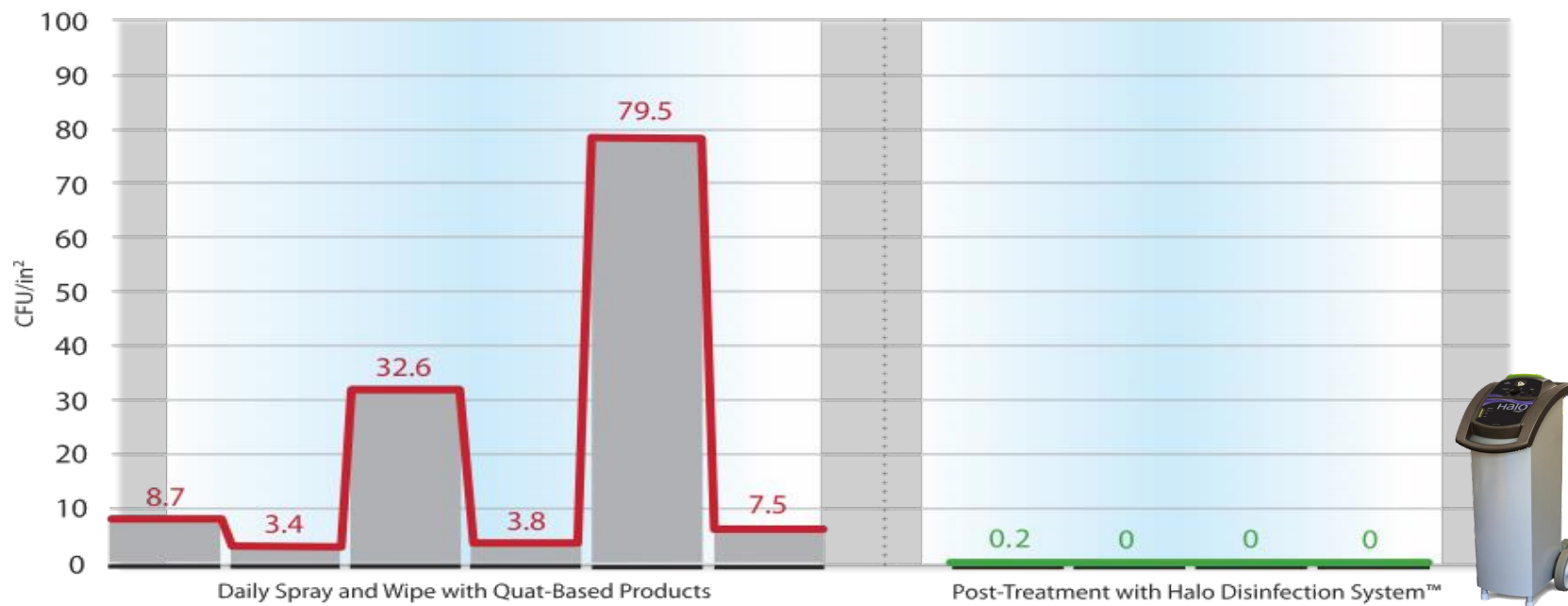
CDC File - Study Performed at Southwestern Vermont Medical Center



- Southwestern Vermont Medical Center, a 99-bed regional hospital, evaluated several UV systems and the Halo Disinfection System.
- Pre-Halo *C. Diff* Rate: 13.62 new cases per 10,000 inpatient days
- Halo Use Period: *C. Diff* Rate drops to 3.73 new cases per 10,000 inpatient days
- Hospital re-admission rates for *C. Diff* related cases or anti-biotic resistant HAIs dropped to zero during a more than 120 day period.

Result: *C. Diff* new case rate was reduced by over 65% - at a time when hospitals nationally reduced rates by only 2% (CDC).

Centers for Disease Control and Prevention (CDC) Field Study
**Reduction in Bioburden After Adoption of
Aerosolized Hydrogen Peroxide Whole Room Disinfection**



Source: CDC Field Study, Determining the Bioburden of Multi-Drug Resistant Organisms on Environmental Surfaces in Healthcare Facilities, Phase2, 2nd Report, June 2013.

SAFE

- Safe for patients and staff
- Non-corrosive and biodegradable, excellent material compatibility, safe for use around computers and sensitive electronics

EFFECTIVE

- Repeatability and reliable efficacy of a sporicidal product
- Coverage that gets into ordinarily hard to reach and/or overlooked places
- Improved control over quantity of dispensed disinfectant with no potential for cross-contamination

AFFORDABLE

- Low capital and consumable cost
- Reduced labor – No touch automated system that is simple to operate, portable and easily stored.

UV for Disinfection is Complex and Higher Cost



Pros:

- **Perception of faster room turnover time.**

Cons:

- **Line-of-Sight-Issues** – Surface must be ‘seen’ to be effectively treated; surface reflection and mirrors are used to reach out-of-sight surfaces which can impact efficacy due to diffuse reflection (loss of light intensity)
- **Distance to Surface Issues** – Surfaces further from light source require longer exposure times for effective treatment
- **Potential Surface Damage** – The closer the surface, the greater the risk for some materials to be damaged (equipment ‘sunburn’) from exposure to UV light
- **Higher Capital Cost** – To purchase and maintain, on average, UV lights cost 5-10X more than the Halo Disinfection System®
- **Reliability and Consistency** – UV bulb condition impacts efficacy; degrade with use and must be replaced frequently, and no method exists to immediately confirm light reached a particular surface in lethal dose
- **Not Accountable** – UV not regulated by government for efficacy claims; even so, they seldom claim to kill C. diff spores in their marketing





HALOSIL EPA EVALUATION:

- 2-Year Protocol Development, Testing & Validation Process;
- Each test used 64 Biological Indicators for each of *C-Difficile* spores, *S. Aureus*, and *Pseudomonas* (192 BIs per test);
- Test repeated 3 times at an independent GLP lab, with 3 different HaloMist shelf-life ages and dilutions, for a total of 576 BI coupons;
- BIs were placed throughout the three dimensions of the test room: high on walls, under items, in drawer spaces, etc..

EPA RESULT: Success!!! No Growth on any of the (576) Biological Indicators

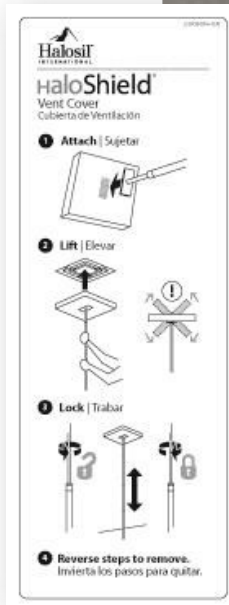
Room Fogging Protocol

Step	Task	Notes
1	Pre-Clean Room	Rooms should be pre-cleaned and surfaces dry
2	Prep Room	Seal & Cover vents, HVAC off, cover smoke alarms
3	Measure Room	$L \times W \times H = \text{ft}^3 / \text{m}^3$
4	Prep Fogger	Position, Set time and check fluid level
5	Press START	30 second count begins
6	Exit Room	Close , seal and placard door
7	Wait required time prior to reentry	OSHA = at or below 1 ppm, test for exposure limit
8	Open room, uncover vents	Remove smoke alarm cover, HVAC on

For Ceiling Vents

HaloShield® Vent & Smoke Detector Covers

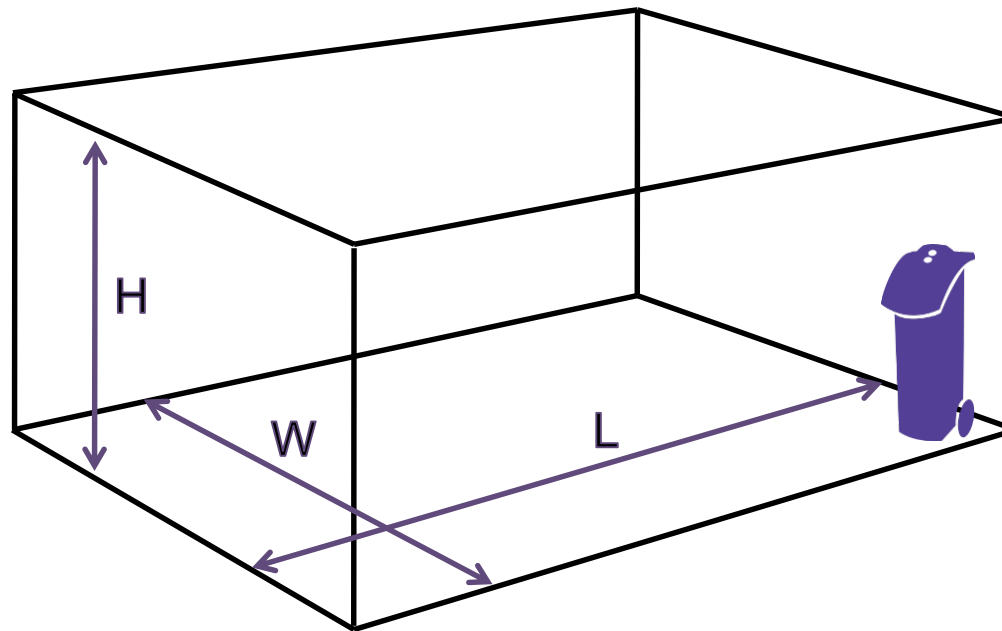
- *No ladder required to cover ceiling vents*
- *Safe and easy-to-install from floor by one person*
- *Reusable*



Measure Room

$$L \times W \times H = \text{ft}^3 / \text{m}^3$$

Measure the length, width and height of the room you plan on treating. Round up to the nearest cubic foot or meter. The Measurements will determine the final room size and recommended fogging time with the HaloFogger®.



HaloFogger® Quick Chart

The instructional quick chart, found on the rear panel of every HaloFogger, is an easy-to-follow reminder of the steps to safely operate the Halo.

For detailed information, refer to the HaloFogger User Manual and/or Protocol Manual for the disinfectant product being dispensed.

Only Halo Disinfectant products can be used in the HaloFogger

Quick Instructions | Instrucciones Rápidas

Consult product specific user manual for detailed instructions and warning information.
Consulte el manual de usuario del producto para obtener instrucciones detalladas e información de advertencia.

1 Calculate Room Size
Calcular Tamaño de la Habitación

$L \times W \times H = \text{ft}^3/\text{m}^3$

2 Determine Fog Time
Determinar el Tiempo de Nebulización

3 Set Timer
Establecer el Tiempo

4 Plug in HaloFogger
Conectar el nebulizador

5 Check/Fill Disinfectant
Chequear/Llenar Desinfectante

6 Press and Hold Start Button
Mantener Pulsado el Botón Start

7 Leave Room
Dejar el Espacio

8 Post Sign
Poner un Letrero

Fog Times for dispensing Sanosil HaloMist™:
Consult HaloFogger™/Sanosil HaloMist User Manual for detailed instructions and warning information.

Tiempos de Nebulizar para dispensar Sanosil HaloMist™:
Consulte el Manual de Usuario del HaloFogger/Sanosil HaloMist para obtener instrucciones detalladas e información de advertencia.

ft ³	m ³	Fog Time Tiempo de nebulización	Room Re-Entry Consult HaloFogger User Manual for room re-entry procedure.	Reingreso a la Habitación Consulte el Manual de Usuario para el procedimiento de reingreso a la habitación.
400 - 1,800	11 - 50	10 minutes	<p>Treated room can be reoccupied one hour after H2O2 concentration level is at or below 1 ppm.</p>	<p>La habitación tratada puede ser reocupada una hora después que el nivel de concentración del H2O2 se encuentre en o por debajo de 1 ppm.</p>
1,800 - 2,600	50 - 75	15		
2,600 - 3,660	75 - 104	20		

Fog Times for dispensing HaloSpray™:
Consult HaloFogger™/HaloSpray User Manual for detailed instructions and warning information.

Tiempos de Nebulizar para dispensar Sanosil HaloSpray™:
Consulte el Manual de Usuario del HaloFogger/Sanosil HaloSpray para obtener instrucciones detalladas e información de advertencia.

ft ³	m ³	Fog Time Tiempo de nebulización	Room Re-Entry Consult HaloFogger User Manual for room re-entry procedure.	Reingreso a la Habitación Consulte el Manual de Usuario para el procedimiento de reingreso a la habitación.
400 - 1,800	11 - 50	10 minutes	<p>Do not allow reoccupation of the treated space until H2O2 exposure level is below 1 ppm.</p>	<p>No permita reocupación del espacio tratado hasta que el nivel de exposición de H2O2 esté por debajo de 1 ppm.</p>
1,800 - 2,600	50 - 75	15		
2,600 - 3,500	75 - 100	20		
3,500 - 4,400	100 - 125	25		
4,400 - 5,200	125 - 150	30		
5,200 - 6,100	150 - 175	35		
6,100 - 7,000	175 - 200	40		
7,000 - 7,900	200 - 225	45		
7,900 - 8,800	225 - 250	50		
8,800 - 9,600	250 - 275	55		
9,600 - 10,500	275 - 300	60		

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Set fogging time and check fluid levels

With room size established, set fogging time to correct recommended dispensing time found on chart on the back of the fogger. **DO NOT** set time for longer than recommended time.



Quick Instructions | Instrucciones Rápidas
Consulte el manual de usuario para obtener instrucciones detalladas y información de advertencia.
Consulte el manual de usuario del producto para obtener instrucciones detalladas e información de advertencia.

- 1 Calculate Room Size**
Calcular Tamaño de la Habitación
 $L \times W \times H = R^3/m^3$
- 2 Determine Fog Time**
Determinar el Tiempo de Nebulización
- 3 Set Timer**
Establecer el Tiempo
- 4 Plug in HaloFogger**
Conectar el Indicador
- 5 Check/Fill Disinfectant**
Chequear/Llenar Desinfectante
- 6 Press and Hold Start Button**
Mantener Pulsado el Botón Start
- 7 Leave Room**
Salir de la Habitación
- 8 Post Sign**
Poner un Letrero

Fog Times for dispensing Sanozil HaloMist™
Consulte el Manual de Usuario del HaloFogger/Sanozil HaloMist para obtener instrucciones detalladas e información de advertencia.

Room Size (ft³)	Room Size (m³)	Fog Time (minutes)	Room Re-Entry
400 - 1,000	11 - 28	10 minutes	Reingreso a la Habitación: Consulte el Manual de Usuario para obtener instrucciones detalladas e información de advertencia.
1,001 - 2,000	29 - 56	15	Reingreso a la Habitación: Consulte el Manual de Usuario para obtener instrucciones detalladas e información de advertencia.
2,001 - 3,000	57 - 85	20	Reingreso a la Habitación: Consulte el Manual de Usuario para obtener instrucciones detalladas e información de advertencia.

Fog Times for dispensing HaloSpray™
Consulte el Manual de Usuario del HaloFogger/Sanozil HaloSpray para obtener instrucciones detalladas e información de advertencia.

Room Size (ft³)	Room Size (m³)	Fog Time (minutes)	Room Re-Entry
400 - 1,000	11 - 28	10 minutes	Reingreso a la Habitación: Consulte el Manual de Usuario para obtener instrucciones detalladas e información de advertencia.
1,001 - 2,000	29 - 56	15	Reingreso a la Habitación: Consulte el Manual de Usuario para obtener instrucciones detalladas e información de advertencia.
2,001 - 3,000	57 - 85	20	Reingreso a la Habitación: Consulte el Manual de Usuario para obtener instrucciones detalladas e información de advertencia.

Plug unit into wall and check the fluid level indicator to make sure the unit is full with 2 gallons of disinfectant.

If unit is not full, wear PPE and carefully add disinfectant until full.

All 5 Level Indicator lights should turn green.



Press and hold for 2-3 seconds

Steady green light will begin to flash red. This indicates a 30-second countdown has begun. Leave room immediately.



Exit & Seal Room

Close door after exit

Seal doors edges with tape (wide Painter's tape works well.)



CAUTION/PRECAUCION

DO NOT ENTER / NO ENTREAR

Room Fogging in Progress

Treatment Date / Start Time:

Estimated Room Re-entry Time*:

(*Refer to Section 5 of the Halo Fogger User Manual to determine room re-entry time.)

Halosil
INTERNATIONAL

www.halosil.com

Photocopy and post outside of room being treated.

Easy Troubleshooting - Nozzle

- The nozzle is the first thing to check if dispensing appears to fall off or if the floor in front of the HaloFogger is covered with visible droplets.
- The HaloFogger User Manual outlines steps for cleaning the nozzle.



Maintenance

Nozzle Cleaning and Alignment

To keep your HaloFogger® working at optimum performance, it is recommended that you clean the nozzle on a regular basis (example: clean nozzle once-a-week if fogger is used once-a-day or more.)

Step 1. Before performing any maintenance to the HaloFogger, disconnect the power cord from the electrical outlet.



Step 2. **Remove Nozzle.** Using adjustable pliers, gently squeeze nozzle (DO NOT crush) then carefully turn nozzle counter-clockwise 90° and remove.



Step 3. **Separate Parts.** Remove Main Bolt from Nozzle Insert. Soak both parts in soap and water. Rinse parts thoroughly with water.



Step 4. **Reassemble Nozzle.** Carefully insert the Main Bolt back into the Nozzle Insert. Make sure the "wings" on the Main Bolt nest into the slots down inside the Nozzle Insert.



IMPORTANT - Position Main Bolt so a uniform gap surrounds the nozzle tip.



Step 5. Carefully **reinstall the nozzle into the Halo**, turning nozzle clockwise 90° to lock into place. Test Halo for straightness of nozzle stream.

Funnel Cleaning

The fluid funnel inside the HaloFogger should be checked for debris on a regular basis. Visually inspect the funnel. If any debris is present, wipe with a clean towel dampened with water.

Ensure that the funnel screen is in place.

Storage and Disposal

HaloFogger®

Storage: Store in a safe, dry location. Do not place anything on top of the device. Store in an upright position. Keep the refill door closed.

Do not allow Halo Disinfectant to be stored in the HaloFogger for longer than one year.

Disposal: Electrical and electronic devices may not be disposed of with domestic waste. This product is in accordance with the law "waste electrical and electronic equipment" (WEEE).

Please contact your local representative for more information.

Specifications for HaloFogger

Mechanical

Height	40.0" (101.5 cm)
Width	13.25" (33.5 cm)
Depth	18.5" (47 cm)
Weight	Approximately 50 lbs (22.5 kg)

Electrical

Power Requirements	North American Version: 110V International Version: 220V
Certification	MET UL 969, MET CE
Fuse	10 amps, 250 volt, slow acting, 5 x 20mm
Electrical Rating	4 amps, 115 volt, 60 Hz (220 volt, 50 Hz for the 220V Fogger)

Performance

Volumes treated	400 - 10,000 ft ³
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Personal Protective Equipment (PPE)

and
can



- **Halo™ Disinfectants** contain 5% hydrogen peroxide is a mild eye and lung irritant. It cause temporary skin discoloration. Personal protective equipment (PPE)

including chemical splash goggles and gloves should be worn for protection.

- OSHA regulations require SCBA for H₂O₂ levels over 50 ppm in the air.
- *Consult section 8 of the Halo Disinfectant SDS Sheets for more information*

Common Phone Pathogens

Manual Disinfection



>50 - 60% of pathogens remain

UV Treatment



2-3 log kill

Halo Disinfection

System®



6-log kill

*In a UV procedure, you would not have the EVS person doing a manual wipe/mop disinfection process thru the whole room, that's the purpose of a "no touch" technology. They would typically do a gross contaminate clean, then a UV treatment.

What are “Logs” and Why Do They Matter in Preventing Infections?

Disinfection professionals today are generally concerned with what percentage of a given germ is killed by a particular process or disinfectant. The highest percentage that is generally used is 99.9999%. In scientific research papers, this percentage is written as “a [6 log10 reduction](#)”, but in medical shorthand it’s known as “a greater-than 6-log reduction” or “a 6-log kill rate.”

So how are log rates calculated? Scientists use a logarithmic scale. Log reduction stands for a 10-fold (or one decimal point) reduction in bacteria, meaning the disinfectant reduces the number of live bacteria by 90 percent for every step.

To help understand the value of each additional “log”, let’s do the math for a small colony of a million MRSA bacteria under the edge of a patient’s table in a hospital:

- A **1-log** kill reduces the colony to 100,000 MRSA bacteria after a 90% reduction;
- A **2-log** kill reduces the colony to 10,000 bacteria after a 99% reduction;
- A **3-log** kill reduces the colony to 1,000 bacteria after a 99.9% reduction;
- A **4-log** kill reduces the colony to 100 bacteria after a 99.99% reduction;
- A **5-log** kill reduces the colony to 10 bacteria after a 99.999% reduction;
- A **6-log** kill **reduces the colony to 1 MRSA bacterium after a 99.9999% reduction.**

So, a UV light that manages to get a 2-log kill leaves 100 times more bacteria to breed and infect the next patient than does a process that gets a 4-log kill. **One hundred times** more pathogens as a penalty for just a 2-log difference in killing ability!

Now let’s switch the conversation to the hardest-to-kill pathogens known as [Clostridioides difficile](#), or C. diff. According to the CDC, healthcare-acquired C. diff infections kill 28,500 of the 500,000 patients infected in U.S. hospitals and nursing homes annually. C. diff is difficult to control because it forms spores that survive on surfaces for months and are highly resistant to most disinfectants.

The [Environmental Protection Agency](#), the US government regulator of antimicrobial disinfectants, requires a disinfectant to produce at least a 99.9999% reduction in C. diff spores to be able to claim it as an effective disinfectant against this most difficult to

control pathogen. The EPA allows products that meet their standards to be called sporicides, the equivalent to what the FDA calls sterilants.

So, a UV light that manages somehow to get a 2-log kill on an array of one million C. diff spores spread around a room will leave 10,000 of them on surfaces, each fully capable of causing the next patient in that room to develop a devastating and potentially fatal

infection. ***The Halo Disinfection System, on the other hand, produces an odor-free and non-corrosive mist that has been validated by the EPA to achieve a 6-log kill of C. diff spores in all the nooks and crannies of complex hospital rooms. (The laws of physics prevent any commercially viable UV system from accomplishing that high a kill rate because of shadows and distance from the light source.)***

Following treatment, the Halo Disinfection System leaves 1 spore still alive.

The UV light leaves **ten thousand times** more viable spores than the Halo Disinfection System would in that same room. While the infection rate will not be 10,000 times higher, the question remains...

To which room would you rather have your mother admitted?

The Halo Disinfection System kills 6-logs. Don't settle for anything less.

Truth in Labeling: Look for the EPA Registration

HaloMist™ used in the HaloFogger™ is the only aerosolized disinfectant product to earn an EPA registered 6-log fogging claim against C. diff.

There are a number of products on the market that claim to achieve whole room hard surface disinfection. But only one aerosolized disinfectant— [HaloMist Disinfectant Fogging Solution](#)—has a registered claim for whole room disinfection via fogging on its U.S. Environmental Protection Agency approved label.

You will find the EPA registration number, [84526-6](#), displayed on the label of every bottle of HaloMist healthcare-grade fogging solution. Think of 84526-6 as a number you can trust, a stamp of proven efficacy from the United States government.

In fact, HaloMist is the only disinfectant aerosol that can make a 6-log claim to kill *Clostridioides difficile* (C. diff) spores, providing total room, hard surface disinfection. HaloMist's 6-log claim means that 99.9999% of C. diff spores are killed on all non-porous surfaces in the room where HaloMist is fogged.

EPA registration for disinfectant sprays and wipes requires the "Use Instructions" on the product's label to specify that the surface being disinfected is sprayed or wiped enough to stay visibly wet for the time the EPA agrees is required to kill pathogens. Even spraying with an electrostatic gun must still wet surfaces to get any EPA-proven efficacy, and consequently does not typically provide complete coverage in complex rooms. On the other hand, HaloMist, when dispensed from the HaloFogger, reaches into every nook and cranny without wetting and is safe for use around electronics. And as a hydrogen peroxide-based disinfectant without bleach or PAA, HaloMist is odor free and non-corrosive.

EPA registrations are not easily obtained. The EPA registration number and label claim means the EPA has reviewed the data from vigorous independent laboratory tests which support that claim and has validated the efficacy and instructions for the safe use of HaloMist. It is a violation of Federal Law to sell or use unregistered products or to use products for a use that is not specified on their EPA label. Doing so puts healthcare facilities at financial and legal risk, especially if someone is injured during the use of that product.

We believe the rules are there for a reason—and that it is important to play by those rules. That is why Halosil, the manufacturer of HaloMist, has devoted considerable resources for the privilege of making a proven claim on HaloMist's label.

We appreciate honesty—and we believe our distributors and customers appreciate honesty, too.

