You Can't kill Diddly Squat with AA batteries
Battle of the wands

Far-UV Sterilray™ Disinfection Wand

Featuring **Excimer Wave Sterilray™ Technology**

Patented 222nm Lamps (aka Far-UVC)
Manufactured only by Far-UV Sterilray

VS

UV-C Mini Sanitizer Wand
Battery powered device bought at box store.

The tests in this study are designed to determine the effectiveness of the Far UV Sterilray device and the UV-C Mini Sanitizer device in killing Bacillus pumilus Spore Suspension in petri dishes.

Far-UV Sterilray™

www.sterilray.com info@sterilray.com
30 Centre Road • Suite 5 • Somersworth, NH 03878

You can't kill Diddly Squat with AA Batteries

In 2010, we went to Microbiology Research Labs in Acton Massachusetts to test our Version 2.0 wand against one of the UVC wands you could buy in airline magazines and big box stores.

Any wands now being sold online or in stores using UVC 254nm bulbs reduce the concentration by want the lab labeled as "Scientifically insignificant". In other words are useless. A waste of your money.

Only 222nm Excimer Wave Sterilray branded Sterilray Disinfection Wands destroy pathogens in seconds.

Thie lab test was done on spores. Spores have hard outer shells like walnuts.
In previous lab tests we determined that 100 mj/cm$_2$ (total dose) would destroy these spores.Thus we set up a IL 1700 radiometer to measure the same dose for each device.

Coronavirus has a soft protein outer surface. Much less dose is required to destroy.
We have destroyed three similar viruses with less than 20 mj/cm$_2$.
Therefore, It will take 1.4 seconds to achieve that dose with our version 3 wand.
Waving over a surface for 2-3 seconds should destroy the current coronavirus.

Far-UV Sterilray Wand took 7 seconds to achieve over 100 mj/cm$_2$
This equates to 1.4 seconds for coronavirus.
The UVC wand took 196 seconds-over THREE minutes to reach 100 mj/cm$_2$

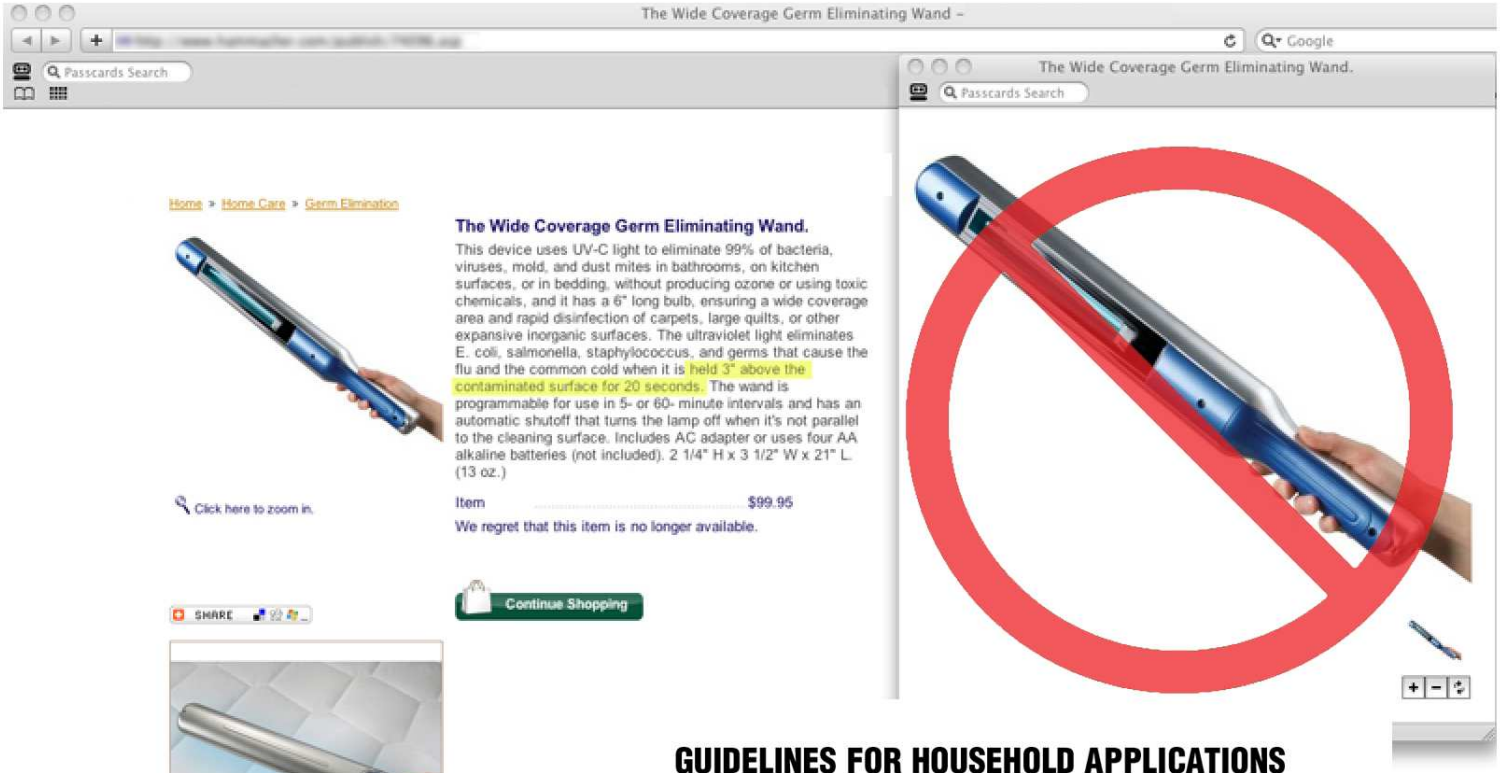
Please note the UVC (254nm) wand instructions say:
“99% ... when it is held 3" above the contaminated surface for 20 seconds”

Also note that it says:
“it has a 6" long bulb, ensuring a wide coverage area”

Instruction say to hold the UVC (254nm) less than 2” from surface for 10 seconds.
They say it does work to **alter** the DNA after **10 second** per 2”x 6” area!
Although we proved that it would **not** get even close to the 99% they claim, who is **really** going to hold it over each 4x6 area for 10 seconds?

Let’s do some math:
At 20 seconds per 6”x2” area (6 inch lamp that is only about 2 inches wide)....or in 60 seconds you could do three times that or an 18 x 6 inch area
Equal to about ONE side of a family size cereal box.

Frankly, We feel people are wasting their money.
Several reviews of their product agree with this statement.



GUIDELINES FOR HOUSEHOLD APPLICATIONS

Sanitizing Tip: Effective disinfecting can generally be achieved in 20 seconds at a distance of approximately 1 inch.

1. Bed mattresses, quilts, pillows: Vacuum the mattress first. Hold UV-C Light Wand approximately 1 inch above the surface and move the UV-C light wand over a 12 inch area for 20 seconds. Continue until the entire desired surface is covered.
2. Animal mattresses and enclosures. Refer to Number 1 for directions.
3. Personal hygiene items: Expose items such as personal razors, brushes combs and other personal hygiene implements at close range for a minimum of 10 seconds.
4. Kitchen utensils: Hold the wand at close range, exposing knives, utensils, chopping boards for a minimum of 10 seconds. Use away from water sources.
5. Bathroom Germs and Odors: Hold the wand approximately 2 inches above the surface of the toilet seat or sink and slowly move the wand sideways over the entire surface for a total of 20 seconds. Be careful not to immerse the wand in water.
6. Shoes: Expose once a week at close range for five minutes to help kill germs that cause odors. Expose the soles of your shoes more frequently - the soles are the major source of bringing bacteria into the home!
7. Computers, Doorknobs, Telephones, etc.: Expose at a distance of 1 inch for approximately 10 seconds.

Please note in the ad, the instructions say:
“99% ... when it is held 3" above the contaminated surface for 20 seconds”
Also note that it says:
“it has a 6" long bulb, ensuring a wide coverage area”
Let’s do some math:
At 20 seconds per 6”x2” area (6 inch lamp that is only about 2 inches wide).or in 60 seconds you could do three times that or just an **18 x 6 inch area!**

About the same area of ONE side of a family size cereal box

EVEN BY THEIR OWN INSTRUCTIONS THIS IS IMPRACTICAL!

We Proved the claims are wrong....Would need a MUCH longer time!

Microbiology Research Associates, Inc. 33 Nagog Park, Acton MA 01720 • (978) 263-2624 • FAX (978) 263-2786

Microbial Evaluation of Far UV Sterilray Device and UV-C Mini Sanitizer Device Against *Bacillus pumilus* Spore Suspension

1.0 Client: Far-UV Sterilray
30 Centre Road
Suite 5
Somersworth, NH 03878

2.0 Test Facility:
Microbiology Research Associates, Inc.
33 Nagog Park
Acton, MA 01720

3.0 Purpose: The tests in this study are designed to determine the effectiveness of the Far UV Sterilray device and the UV-C Mini Sanitizer device in killing *Bacillus pumilus* Spore Suspension in petri dishes.

4.0 Test Microorganisms:

Bacillus pumilus Spore Suspension ATCC #27142

5.0 Sanitization Methods:
6.1 Far UV Sterilray Device - Provided by Far UV Sterilray, Somersworth, NH
6.2 UV-C Mini Sanitizer Device by Germguardian

6.0 Controls:
6.1 Uninoculated Media will serve as a negative media control.

6.2 Petri dishes inoculated with test microorganisms and not exposed to the sanitization method (s) will serve as positive product controls.

7.0 Materials:

7.1 Trypticase Soy Agar (TSA)
7.2 Trypticase Soy Broth (TSB)
7.3 Sterile Disposable 1ml/10ml Pipets
7.4 Phosphate Buffer Dilution Blanks
7.5 30-35^{0}C Incubator
7.6 Mechanical Pipetter
7.7 Vortex
7.8 Colony Counter
7.9 Sterile Petri Dishes

8.0 Preparation of Test Microorganisms:

8.1 A purchased bacterial spore suspension will be used for the spore testing. Adjust the spore suspension using serial dilution in phosphate buffer to approximately 1 x 10^6 CFU/ml.

9.0 Method:

9.1 Aseptically inoculate approximately 1 x 10^6 CFU/ml of test microorganism to duplicate empty sterile petri dishes.

9.2 The initial CFU added to the petri dishes will be estimated based on the CFU/ml in the standard challenge inoculums as determined by pour plate method.

9.3 For the Far UV Sterilray Device and UV-C Device, the inoculum will be exposed to the UV Wand approximately 2 inches from the petri dish surface for the exposure of approximately 100 mj.

9.4 After exposure, each sample will be serially diluted in PB and plated into TSA using the pour plate technique.

9.5 All plates are incubated for 48 hours at 30-35^{0}C.

9.6 A Petri dish inoculated with the test microorganism that is not exposed to the sanitization steps will serve as the positive product control. This control will be tested just as the UV exposed petri dishes.

9.7 Negative control plates of TSA will be incubated at the appropriate conditions and must not show growth for the study to be valid.

10.0 Results:

10.1 A percent reduction will be calculated for by comparing the recovered CFU population from the positive product control to the recovered CFU population from the UV exposed petri dishes.

10.2 All data will be recorded in a MRA lab notebook.

Table:

Microbial evaluation of Far UV Sterilray Device and UV-C Mini Sanitizer Device against *Bacillus pumilus* Spore Suspension.

Total Irradiance:

1. UV-C Mini Sanitizer - 110.67 mj/cm^2
   Exposure Time (196 Seconds)

2. SDW-High Power - 106.8 mj/cm^2
   Exposure Time (7 Seconds)

PC = Positive Control

Test Microorganisms	**PC**	**Count After Exposure**		**% Reduction After Exposure**	
		UV-C	**SDW**	**UV-C**	**SDW**
Bacillus pumilus Spore Suspension	1.3×10^6	2.7×10^5	0	79.15	>99.99

Conclusions:

1. UV-C Mini Sanitizer killed 79.15% (<1 log) of spore suspension in 196 seconds of exposure (110.67 mj/cm^2).

2. Far UV Sterilray Device killed >99.99 (>6 logs) of spore suspension in 7 seconds of exposure (106.8 mj/cm^2).

3. The Far UV Sterilray Device kills more *Bacillus pumilus* spores in a significantly shorter time period than the UV-C Mini Sanitizer Device with approximately the same total irradiance.

4. Far UV irradiation is more effective at killing *Bacillus pumilus* spores that UV-C irradiation.

4-29-10
Date

James J. Barbato, M.S., M.P.H.