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Subject: Vioguard Cubby
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To: Ron Romano rromano@safetynetamerica.com
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Ron,

More of a general version of the Cubby email:

Attached a summery of the Vioguard Cubby product compared to the UV-Box. It bothered me that they could be selling a product considered to be competitive to the UV-Box for such a low price, I know what it costs to make the AUVS UV-Box and it's not inexpensive. I did a careful re-examination of the Cubby plus and asked Dr. Wayne Clark, my partner, (worked with germicidal UV for over 40 years, 7 patents, developed the Xenon UV lamp, professional UV expert and product developer for the DOD, Phd in electrical engineering, plasma physics and nuclear engineering). Some things just don't add up.

As a bit of background, the company Vioguard that sells the Cubby product started out back in 2008 by two Microsoft engineers who developed a cover for a keyboard with UV lamps mounted in the top, product is called the Defender. The Defender is listed by the FDA with testing of common but easy to kill bacteria and viruses. Vioguard talks about their listing with the FDA but they are only approved for the keyboard and mouse application. Vioguard recently came out with the Cubby, sells for about \$500, it's essentially the Defender product with a bottom drawer the slides out, you can lay phones or iPads on it. Very short height, only 1 1/4" so you are limited to just flat objects. Cubby only disinfects the top of an object you would have to flip it over to disinfect the bottom. The last release is the Cubby Plus that claims disinfection of the top and bottom of an object, they call it 360 degree disinfection or sanitation.

There was a separate study done by Dr. Donsky on the Defender and did achieve a 3 log kill for C-Diff in 90 seconds. Roughly double the UV-Box time of 45 seconds, for C-Diff spores which yields a 4 log kill. We always compare to C-Diff spore log kills since thats the toughest challenge in hospitals.

The construction of the Cubby or Cubby plus is lightweight aluminum box, similar to what you might see with a CD or DVD player. This is fine for an office application but in a hospital it would break in months or weeks. The UV-Box, not pretty is built like a piece of military equipment. A reflective interior box made of a Silver alloy, the device support made of quartz rods and UV-lamps on the top and bottom. The outer box is made heavy duty Aluminum similar to the gauge used on your mobile carts. Hinges and switches rated for hundreds of thousands of cycles. Like anything the military uses, designed for harsh environments, simple design, minimal moving parts and easy to fix in the field.

This is the rub that Dr. Clark and I cant get past with the Cubby Plus, the product you would compare to the UV-Box since it disinfects the top and bottom of the object simultaneously. Stated in the user manual, Vioguard mentions a glass plate where the object to be disinfected is placed on. UV-lamps installed above and below the glass plate. The problem is glass does not let germicidal UV pass through, how does it disinfect the bottom of an object? Quartz is typically used in industrial applications. We think Vioguard is stating a log kill for the Cubby plus for only the top of the object and not the bottom. As a side note, you also need to replace this glass plate every 1 to 3 years depending on use for \$150 each.

Dr. Clark put his examination this way:

Hi Jim,

There are only a few materials I know of that have reasonable transmission of 254 nm UV. These can be classified as natural quartz and synthetic silica quartz. There are two types of synthetic quartz: Spectrosil, which is an industrial grade of synthetic silica has slightly lower transmission of 254 nm UV than the scientific grade Suprasil, but is much less expensive. Natural quartz has slightly lower transmission than the synthetic quartz materials (only by a few percent) but is much less expensive. Even with the least expensive natural quartz, the cost of a plate a few mm thick and 18.9" x 9.9" (the size given for the CubbyPlus) would be in the neighborhood of at least \$1000.

So, I too am puzzled by the statement that they get 360 degree coverage with a clear plate given that they have a selling price of about \$700.

By the way, the organisms they mention in their materials that they tested (*E. coli*, *Pseudomonas aeruginosa* and *Staph aureus*) are all quite a bit more easily killed than *C. Diff* spores. However, on the other hand, they claim very high UV dose levels for the self-sanitizing key board, namely 240 mW-sec/cm². This is about 2.5 times higher than the dose accumulated in the KR 615 in a 60 sec treatment. Seems strange.

Wayne

The dose rating seems very odd too since Dr. Donsky's testing showed only a 3 log kill after 90 seconds, if that dosage is what Vioguard claims then the kill rate would be far higher than 3 log for C-Diff spores.

As you can see it does not make sense based on the understanding Dr. Clark has of germicidal UV, with a 360 degree and dosage claim. This is why every claim AUVS makes is verified by an FDA consulting lab and now with a complete paper done by Atlanta Childrens.

I hope Wayne and I helped a bit here.

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