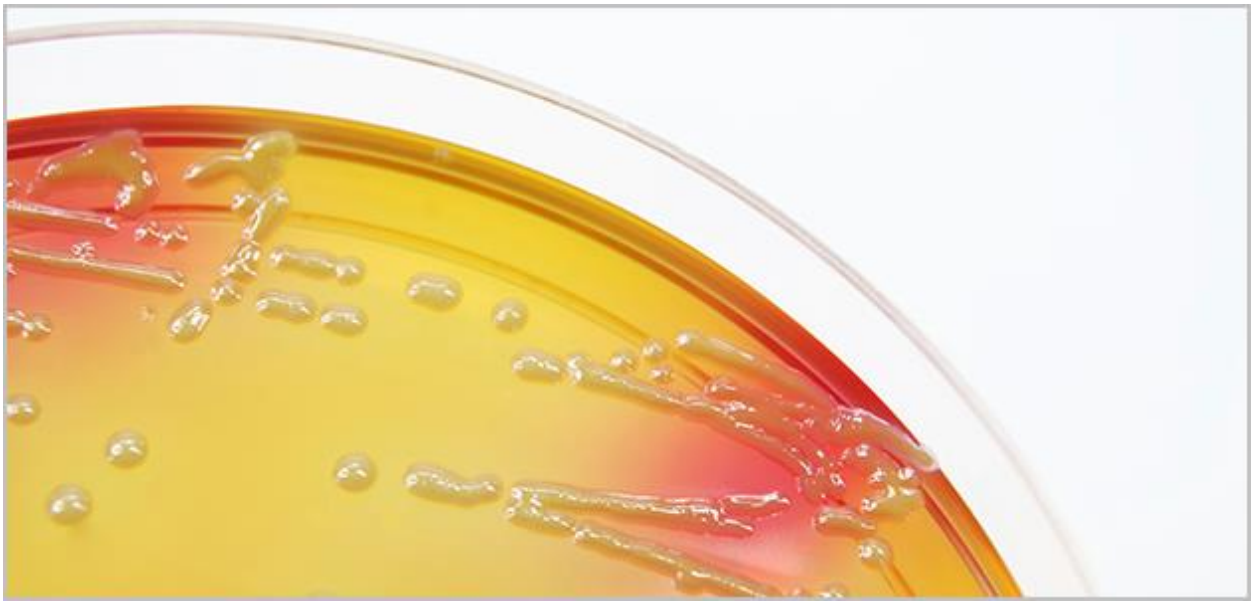
Halosil™
INTERNATIONAL

What are "logs," and why do they matter in preventing infections?



Disinfection professional 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 $\log^{10}$ 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 *Clostridium 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.