In regard to Enviro-Solutions ES 64 vs. 3M 25H, there are several ways to compare disinfectants including disinfection efficacy and cleaning efficacy. Disinfection efficacy is related to listed pathogens, kill times, ppm (parts per million) and soil load capability. Cleaning efficacy is related to dilution ratios, solvency and detergency.

First, we can look at listed pathogens. Both products use quaternary ammoniums as actives. The primary quat supplier for each company has a "master" efficacy data sheet. It is from this multiple page master efficacy data sheet that disinfectant cleaner manufacturers pull the names of the pathogens that they feel are necessary to list on the limited space of product labels and spec sheets. The listed products are usually selected based on the current interest in certain pathogens like HIV, HBV, Human Coronavirus, Acinetobacter Baumannii, E. Coli, etc. Of more interest these days are the multi-drug resistant strains of Staph and Enterococci like MRSA, VISA and VRE. The other pathogens listed would be the very difficult to kill organisms like Streptococcus and Pseudomonas. By listing these, it is easy to acknowledge that lesser, easier-to-kill organisms are also killed. Both products, ES 64 & 3M 25H, list all the important organisms, so at a glance, the disinfection efficacy appears very similar. Odds are that the "master" efficacy data sheet on the raw quats used by each would be almost identical.

Kill times for both products appear very similar. Although there is a little variance in some of the lesser pathogens, the critical pathogens have the same kill times. For example, a ten minute dwell time for most organisms is the reported test data for each product. Keep in mind that the standard test for EPA approval requires 100% (99.99999%) kill of the listed pathogen when subjected to a 5% blood serum (food source) in ten minutes. Then, the test needs to be replicated to ensure that the results are consistent. It is worth noting that many companies promote accelerated kill times, but that can paint a distorted picture. For example, Enviro-Solutions ES 64 has EPA approval for a 5 minute kill time as a virucide whereas 3M 25H state that it requires 10 minutes as a virucide. That might make one believe that ES 64 is stronger. However, the 3M 25H states that it has a 30 second kill time on HIV whereas ES 64 lists a two minute kill time. That might make one believe that 3M 25H is stronger. The truth is that neither claim means that the product is stronger. It merely means that the test data submitted to the EPA for Registration approval was based on these specific accelerated test times and other, perhaps shorter test data was not submitted. Technically, HIV is fairly easy to kill, so it is very possible that ES 64's quat system would be efficacious at 30 seconds against HIV. The problem is that everyone wants to claim accelerated kill rates before the next guy has the time (and money) to submit their test data showing their accelerated kill times as a way of "inferring" that their disinfectant is "better". In reality, these test take place in a lab in a petri dish, so there is more to disinfecting a hospital environment than lab tests like this will ever show.

Part per million (ppm) of the end-use solution is another way to look at disinfection efficacy. Enviro-Solutions ES 64 is 600 ppm. 3M 25H is 725 ppm. One might think that indicates the 3M 25H is "better". It doesn't. Disinfectants are considered to be efficacious if the ppm is above 300-350 ppm. The "safety" margin is there to help the disinfectant overcome the impact of hard water or high soil loads, which will lower the ppm of the disinfectant solution when in use. In this sense, both products have an ample margin to handle high soil loads or hard water environments.

Now, "where the rubber meets the road", is the cleaning efficacy of the solution. A surface can't be considered to be disinfected unless the "gross soil" has been removed. This is directly related to real-world cleaning operations in hospitals or other health-care settings, even schools. Cleaning efficacy is directly related to the amount of solvency and/or detergency that the end-use solution has. In this case, Enviro-Solutions ES 64 is many times more effective than the 3M 25H. ES 64 is diluted at 2 oz/gal. It has 600 ppm of active quat, all the rest is detergents, solvents (cleaning agents), etc. 3M 25H has a dilution ratio of 0.35 oz/gal (1:360 as indicated on their spec sheet and the ppm calculation). Of that 1/3 oz/gal, 725 ppm is the active quat and what's left is the detergents and solvents that need to do the actual cleaning work so the quat can kill. This is a ridiculously lean solution. It more closely resembles the dilution rate of an air-dry food service sanitizer than it does a hospital use disinfectant. Whenever I have been presented with an outbreak to decontaminate in a school, college,

hospital or nursing home, the first thing we do is ramp up to a 2 oz/gal disinfectant. This is primarily due to the fact that a good disinfectant CLEANER will help to remove dried and difficult soils and allow them to be captured in a mop bucket or an autoscrubber. Then it is disposed of. You see, in a world full of nasty and deadly, mutating pathogens, the single most important factor is to remove them, dead or alive! If they are not in the facility any more, they can't threaten the occupants!

I believe the logical choice is very clear. Given the option of either product, I would most certainly opt for the ES 64 for the above reasons. It wouldn't even be a choice if I was presented with an environment threatened by highly contagious, potentially deadly, multi-drug resistant diseases. The biggest no-brainer since the beginning of earth.