Is Your Disinfectant Actually Working?

Dylan Lape, DVM
Pork Veterinary Solutions

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Introduction:

In modern swine production, quite possibly the most important topic we as veterinarians discuss with clients is biosecurity. We determine all of the risk events, testing protocols, cleaning and disinfection procedures; however, we often do not see all of these processes through from start to finish. As PRRS, PEDv and PDCoV have wreaked havoc on our industry again this past winter, it left me wondering, what are we missing and how could we do better?

As, I looked back at the various clinical and sub-clinical disease outbreaks that we have seen in the past year, the overarching commonality I found was that at some point our cleaning and disinfection processes failed. Whether that was on a trailer coming to the farm to pick up pigs, or it was from one turn to another in the farrowing house, or even one turn to another in a finishing site. I realized at this point, I needed to do a better job at explaining the importance of cleaning and disinfecting, as well as better understand the features and benefits of the biosecurity products I'm recommending to my clients. I realized I needed to dust off my student hat and learn some new things, to help my clients get better success out of their C&D programs.

Washing:

Often the most dreaded job on the farm, washing, may actually be the most important step! Washing is often looked at as the limiting factor on how fast rooms, barns, or trailers can be ready to fill or use again. In an industry, where we run things as tightly as we do, this could be the root cause of many challenges we face. So I thought how can we still be efficient with our time, but be more effective in our process? A study conducted at the University of Prince Edward Island, found presoaking surfaces reduced the amount of time needed to wash a surface thoroughly and adding a commercial detergent after presoaking reduced total wash time by 46% (Figure 1).

Figure 1. Average wash time per pen with varied washing protocols (Hurnik, 2005)

	Biosolve	Prescak	Time to wash pen (minutes)	Difference (minutes)	Time savings %
Cold Water	-	-	68.03	0	0
	+	-	59.80	-8.23	12.1
	-	+	41.39	-26.64	39.10
	+	+	36.38	-31.65	46.52
Hot water	-	-	52.61	-15.42	22.6
	+	-	46.24	-21.79	32.0
	-	+	41.88	-26.15	38.43
	+	+	36.81	-31.22	45.9

Not only is this more efficient, but it is also a more effective clean. The detergent starts to break down organic material, water scale, and biofilm build up that could be restricting the effectiveness of your disinfectant! Reading this my first thought was, producers are going to balk at this because it is adding cost to their C&D process, but if we can prevent one group from having a disease break it can very well pay for itself and then some, especially with the current pig prices!

Choosing a Disinfectant:

When choosing a disinfectant, many people have a favorite or go to they choose, but are you really using the correct disinfectant for the job? Disinfectant claims and labels are governed by the EPA, and each claim must be registered and approved by them to be included on the label. Unfortunately, the EPA does not often enforce these label claim guidelines, so often product marketing literature can be misleading or include untested claims. If you are curious about the disinfectant you are using, EPA approved claims are available here: https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1

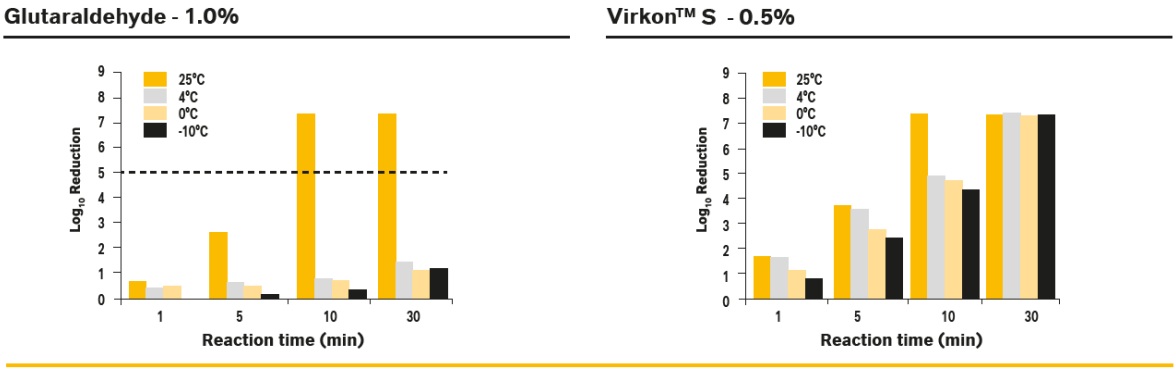
Also, often used Chlorine based dry powder boot baths, can be misleading. They are being marketed as absorbents and deodorizers, so it is important they are not mistaken for disinfectants or helping to control pathogen spread!

It is also important to remember, that all disinfectants are tested at a 5% organic load, so this comes back to the washing process. If there is too much organic matter present, then the disinfectant you are using is likely not getting the job done as you expect.

Products vary in their effectiveness against certain pathogens. Some disinfectants are broad spectrum, and effective against many pathogens; however, you may find yourself wanting to target a pathogen more specifically and then, it may be more cost effective to choose a more targeted disinfectant. If you are only targeting one organism, in some cases this can be done using a lower concentration of a given disinfectant, which means less disinfectant used and more money saved.

Another thing to consider when choosing a disinfectant is the environment you will be using it in. As most pigs in the US are raised in cooler climates where winters can be particularly harsh, this is more important than you might think! Glutaraldehyde disinfectants do not perform very well at low temperatures, and require longer contact times than the label states to reach the EPA required 3.75 log reduction of pathogens. So obviously if you are disinfecting livestock trailers in Minnesota in the middle of winter, these would not be the best option. The good news is oxidizing disinfectants, such as Virkon™ S, are more environmentally stable and have been shown to work at the labeled contact time and strength at temperatures as low as -10°C (Figure 2).

Figure 2.



Conclusion:

It is clear that as veterinarians, our goal is to help our producers be successful. One of the ways we do this is by teaching the importance of biosecurity. However, we may also need to focus on helping our producers follow through with these biosecurity goals, especially when it comes to their Cleaning and Disinfection protocols throughout their systems! Whether it be showing the importance of presoaking and detergent use or helping them choose the right disinfectant for the job. As Dr. Jer Geiger stated in his Howard Dunne Memorial lecture at the 2021 AASV meeting, “We combine science with common sense, in the interest of the pig, to help feed the world.” If the pig is healthy, it will be productive. If it is productive, then our producers will be happy. And if our producers are happy, we will all be successful!