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Current chemical disinfectants are fraught with shortcomings. Emerging pathogens are outpacing efficacy. Pathogen resistance to legacy chemicals is increasingly concerning. Some active ingredients are now, or on the verge of being banned. Toxicity to humans, animals and the ecosystem we all share is a concern. Human healthcare is successfully transitioning to oxidizing chemistries as a sustainable means of infection prevention and control. The scientific community has acknowledged and validated the trend… Animal Health disease specialists are taking notice.

ACCELERATED® HYDROGEN PEROXIDE Patented
AHP® Patented

Accelerated Hydrogen Peroxide® (AHP®) is a patented synergistic blend of commonly used, safe ingredients that when combined with low levels of hydrogen peroxide dramatically increase its germicidal potency and cleaning performance.

cleaner

AHP® has powerful surfactants simplifying sanitation of animal environments which saves time and money by conserving water and reducing labor costs.

faster

AHP® is proven to deliver superior kill performance; contact times are 50% faster which ensures compliance and provides confidence that disinfection has been achieved.

responsible

AHP® has been proven to be essentially non-toxic and non-irritating (for in use solution) which gives assurance that animal and human health has not been put in jeopardy.

sustainable

AHP® formulations are inherently biodegradable; hydrogen peroxide breaks down into water and oxygen reducing environmental impact and improving the environment for animals and those who care for them.

compatible

AHP® is designed to be compatible with a wide range of materials which ensures your investments are protected by reducing corrosion and wear.

Collaborate

By harnessing the power of hydrogen peroxide, the development of our patented Accelerated Hydrogen Peroxide® (AHP®) technology is inspired by science and validated by third party experts.

Innovate

As a research driven company we have successfully pioneered the broader acceptance of hydrogen peroxide-based products with our patented technology known as AHP®.

Nurture

Our AHP® technology has unmatched efficacy with environmental integrity and safety in application making it poised to battle microbes without endangering people, animals or the environment.

Demand a Better Alternative

The very chemicals we have been using to fight microbes are causing environmental damage and threats to our health and safety. With Accelerated Hydrogen Peroxide® there is no longer the need to compromise on efficacy of application, or to trade it off for either personal safety or environmental integrity.

Invest in the Future

Virox is committed to innovating, developing and improving peroxide based, environmentally sustainable cleaners and disinfectants that allow our affiliates to reduce their environmental impact when consuming such necessary products. A focus on health and environmental sustainability is a legacy we will pass on to future generations.

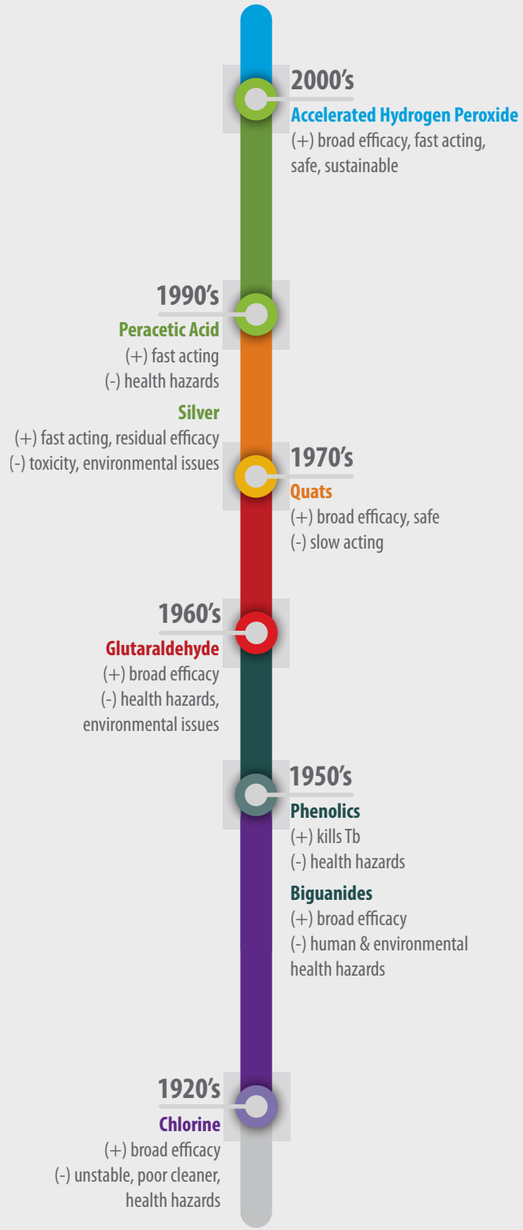
Collaborative Culture

Dedicated to development, optimization and adaptation, Virox's culture of intradepartmental collaboration inspires our team to continually innovate solutions that anticipate customer needs.

Expertise

Experts in chemical disinfection for infection control and biosecurity, our Professional and Technical Services team (PTS®) is committed to providing educational opportunities to our partners, distributors, and end-users.

PTS® Professional & Technical Services



Pork producers have another option for disinfecting against PEDv

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Ferry, B. ; Benjamin, M. DV, MS

ABSTRACT

With the advent of devastating diseases affecting the swine industry, much attention is being given to biosecurity in an effort to improve hygiene and ultimately prevent the spread of pathogens. As such, industry is looking to new chemical formulations, vetted protocols and scientific data as a front line defense to prevent disease, and when required eradicate an outbreak. These studies consider a relatively new yet proven chemistry broadly used in healthcare facilities known as Accelerated Hydrogen Peroxide® (AHP®) in contrast with current chemistries that have known shortcomings. This third party study done by the University of Iowa shows that AHP is superior to the incumbent chemistries tested.

BACKGROUND

Disease outbreaks in swine herds are a constant threat to the pork industry. More specifically, Porcine Epidemic Diarrhea virus (PEDv) is extremely infectious with high morbidity and mortality within swine herds, posing an economic risk. Due to PEDv's infectious nature, it is imperative that awareness for cleaning and disinfection protocols for facilities and transportation vehicles be broadly initiated to increase biosecurity measures.

STUDY 1

Typically a disinfectant becomes neutralized in the presence of organic soils. Therefore, complete washing, disinfecting and drying of equipment is essential but very time consuming. The use of AHP was tested in the presence of a fixed volume (5 or 10 ml) of undiluted PEDv-positive feces. The feces was spread evenly on the floor of a 6 by 6 inch aluminum tray. The trays were then disinfected with AHP in the concentrations of 1:16 and 1:32 for 30 minutes. Fecal swabs were collected from the pigs to test for any active PEDv. In this study, AHP successfully inactivated PEDv in the presence of both light and heavy fecal loads (up to 25%) at both tested concentrations at room temperature. Since this study resulted in positive results for AHP, a second study was conducted to see if the results could be replicated but in a cold temperature environment.

STUDY 2

The use of AHP in cold temperature environments, was utilized to test the efficacy of inactivating PEDv in trailers in a more timely manner than traditional cleaning methods allow for. The study was conducted in both the presence of light and heavy fecal contamination (up to 25%) in cold weather conditions (-10° Centigrade or 14° Fahrenheit). The tested contact times for PEDv inactivation were 40 and 60 minutes. It was found that PEDv was successfully inactivated in light and heavy fecal contamination, in the concentrations of 1:16 and 1:32 of AHP and 10 percent propylene glycol solution (to prevent solution from freezing), using contact times of both 40 and 60 minutes. The key finding in this study was the ability of AHP to kill 100% of PEDv in a 25% soil challenge, showcasing AHP's tremendous efficacy.

CONCLUSIONS

Both studies concluded that using a minimum of a 1:32 concentration of AHP is an effective method of disinfection when proper washing, disinfecting and drying of a trailer is not realistic. The researchers are not recommending that the gold standard procedures for the cleaning of a trailer should be dismissed, but that using AHP in a single step is a validated and effective alternative when there is not sufficient time for thorough cleaning.

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An evaluation of the effectiveness of sanitation procedures using an accelerated hydrogen peroxide (Accel) disinfectant to reduce virus transmission via livestock transport vehicles

Schneider, P. DVM; Holtkamp, D. DVM, MS; Ramirez, A. DVM, MS; Zhang, J. PhD

ABSTRACT

Disease outbreaks within the swine industry can be devastating with mass economical costs. Today's pork production industry is characterized by the frequent movement of swine making biosecurity a top priority. This study tests the efficacy of a relatively new yet proven chemistry that is broadly used in healthcare facilities known as Accelerated Hydrogen Peroxide® (AHP®), recognized for its superior cleaning ability and realistic contact times, ensuring disinfection has taken place.

BACKGROUND

With unknown health statuses of transported swine and the necessity to transport multiple groups in a short period of time, make transportation vehicles a risk for spreading infectious diseases. Porcine reproductive and respiratory syndrome virus (PRRSV) and transmissible gastroenteritis virus (TGEV) are two viruses with large economic consequences that are capable of being transmitted by transport vehicles. Sanitation procedures to decrease pathogen load in standard equipment used in swine transportation are not always followed between every transport event and can pose a risk to negative herds.

STUDY

This study compared the efficacy of an AHP disinfectant (Accel) and Synergize disinfectant against PRRSV and TGEV in model livestock trailers under conditions similar to those experienced in commercial pork production. Additionally, this study used a bioassay to determine whether or not a sufficient quantity of live PRRSV and TGEV were present in the model trailers to infect pigs when inoculated intramuscularly (IM). Model livestock trailers were contaminated with a slurry mixture containing PRRSV and TGEV and allowed to sit in a cooler for sixty minutes. The trailers were decontaminated using a high-pressure washer with cold water for 90 seconds. Trailers were then disinfected using Accel or Synergize. Four samples at 5 time points were collected for each trailer replicate. Time points included pre-wash, immediate post-wash, and at 15, 30 and 60 minutes post disinfection. For each replicate, samples from each time point were pooled and tested for the presence of PRRSV and TGEV. In order to test whether a sufficient quantity of live PRRSV and TGEV were present in model trailers to infect pigs, 24 10-week old PRRSV and TGEV negative pigs were challenged with a minimum of 4mL of supernatant by IM injection and 7mL by oral gavage. Bioassay groups were monitored for 14 days. Blood and fecal samples were collected and tested for the presence of PRRSV or TGEV at days 7 and 14.

RESULTS

Results from this study show that the AHP disinfectant (Accel) decreased the amount of PRRSV genomic copies on board the contaminated model trailers quicker than Synergize disinfectant when paired with a 90-second cold-water, high-pressure wash. Both Accel and Synergize were effective at inactivating PRRSV by 15 minutes post-application of disinfectant. No bioassay pigs tested positive for TGEV.

CONCLUSION

When time constraints prevent the golden standard of cleaning, disinfecting and drying of trailers, a limited washing procedure combined with the proper use of a disinfectant, such as AHP is effective at inactivating the presence of PRRSV in the environment.

REFERENCE

Schneider, P., Holtkamp, D., Ramirez, A., & Zhang, J., (2013). An evaluation of the effectiveness of sanitation procedures using an accelerated hydrogen peroxide (Accel) disinfectant to reduce virus transmission via livestock transport vehicles. Twenty-first Annual Swine Disease Conference for Swine Practitioners, November 14-15, 2013.

Evaluating Post-Milking Teat Dip efficacy Using Somatic Cell Count Data

Bradley, A.; Breen, J.; Janowicz, P.; McKinzie, M.; Hemling, T.

ABSTRACT

The use of a teat dip is an essential practice in preventing new intramammary infections in cows. The procedure involves dipping teats of dairy cows before and after milking with a germicidal solution to reduce teat skin colonization and contamination with mastitis-causing bacteria and minimize penetration. Chlorohexidine is a commonly used teat disinfectant as it is recognized for its rapid action and residual activity against intramammary infections. However, it is also known for causing anaphylactic reactions and bioaccumulation in the environment causing reactions to form more toxic bi-products. With these concerns in mind, Accelerated Hydrogen Peroxide® (AHP)® products have been found to be non-hazardous, and non-irritating to skin or respiratory tract. Furthermore, hydrogen peroxide breaks down into water and oxygen reducing environmental impact.

BACKGROUND

Post milking teat disinfectants, such as DeLaval Prima and Hamra Blue, are traditionally assessed by identifying new intramammary infections (IMI) using regular individual quarter bacteriology. Although effective, this approach is costly making field efficacy studies and product registration prohibitively expensive. Somatic cell counts (SCC) are recognized as a proxy for IMI and are relatively inexpensive to perform. SCCs can be used to identify cows as infected or uninfected and can identify new infections by movement across defined thresholds.

STUDY

The objective of this study was to compare the efficacy of using bacteriology and SCC when comparing two teat dip formulations. Furthermore, the study compared the efficacy of these two different teat dip formulations and the impact the products had on teat skin condition. The two teat dip formulations that were used in the study were DeLaval Prima (0.5% Accelerated Hydrogen Peroxide) and Hamra Blue (0.4% chlorhexidine). The formulations were compared on three farms in the UK. Four hundred and fourteen cows were recruited over a 20 week period and randomly selected to be dipped post milking with one of the two formulations. Quarter milk samples were collected for bacteriology and SCC from all cows at enrollment and on completion of the study. Teat skin condition was assessed bi-weekly and scored on a scale from 1 to 5 encompassing smooth supple skin through severe chapped skin. A change in teat condition was calculated by subtracting the mean at each visit from the score at enrollment.

RESULTS

The results of the study revealed that both DeLaval Prima and Hamra Blue were effective teat dip formulations that resulted in a significant improvement in teat skin condition. There was no significant difference in teat skin condition between the two formulations. Additionally, it was identified that SCC could effectively identify new intramammary infections, as effectively as bacteriology.

CONCLUSION

Analysis by various statistical protocols showed that DeLaval Prima was equivalent to Hamra Blue. Although both products are deemed equally efficacious disinfectants, AHP in DeLaval Prima is designed to be non-hazardous and non-irritating for both humans and animals, and is inherently biodegradable making it environmentally preferred.

REFERENCE

Bradely, Breen, Janowicz, McKinzie & Hemling (2002). Evaluating Post-Milking Teat Dip Efficacy Using Somatic Cell Count Data. University of Bristol Research Poster. Journal of Dairy Science, 2002

Efficacy of disinfectants containing accelerated hydrogen peroxide against conidial arthrospores and isolated infective spores of *Microsporum canis* and *Trichophyton sp*.

Moriello, K.; Hondzo, H.

ABSTRACT

Dermatophytosis (ringworm), a highly contagious skin infection, is caused by fungus leading to a circular rash on animals and humans. Due to the highly contagious nature of dermatophytosis, proper disinfection of affected surfaces is essential. This study considers a relatively new yet proven chemistry broadly used in healthcare facilities known as Accelerated Hydrogen Peroxide® (AHP®) in contrast with a current chemistry that has known shortcomings.

BACKGROUND

Disinfectants, especially sodium hypochlorite (bleach), are commonly used to kill fungal spores not removed during the "hard" cleaning process. Bleach is commonly recommended in the fight against ringworm for its known ability to kill fungal spores. However, it is widely recognized that bleach can degrade if not used by the expiry date and needs to be freshly prepared before each use. Further, bleach requires the use of personal protective equipment as it can cause damage to the skin and eyes and has corrosive properties that can cause damage to fabrics and surfaces. As a result, a comprehensive analysis was undertaken to determine if AHP would be a suitable disinfectant alternative to bleach.

STUDY

The purpose of this study was to determine the antifungal efficacy of AHP disinfectants against ringworm. Accel TB RTU, Accel CS 20 and multiple dilutions of Accel Concentrate (1:8, 1:16 and 1:32) were all tested against 3 isolated infective fungal spore suspensions of *Microsporum canis* and *Trichophyton spp.* Potential pathogens were identified microscopically using established morphological criteria.

RESULTS

This study showed no fungal spore growth when using any of the AHP disinfectants at their appropriate concentrations. Accel Concentrate at 1:32 which is 2x the recommended dilution rate as approved by the EPA, showed 1 colony forming unit on two plates at 1:1 spore dilution. However, given the magnitude of this fungal spore challenge, this was still considered good efficacy.

CONCLUSION

AHP products are a viable option for environmental disinfection of surfaces exposed to *Microsporum canis* and *Trichophyton spp.* after appropriate gross decontamination and mechanical cleaning with a detergent. The results from conidial testing were identical to those of isolated infected fungal spore testing, which suggests that AHP products with an antifungal label claim against *Trichophyton mentagrophytes* are a suitable disinfectant alternative to sodium hypochlorite.

REFERENCE

Moriello, K. & Hondzo, H. (2014). Efficacy of disinfectants containing accelerated hydrogen peroxide against conidial arthrospores and isolated infective spores of Microsporum canis and Trichophyton sp. Veterinary Dermatology, Volume 25, Issue 3, pgs 191-e48, June 2014.

Effects of disinfection on the molecular detection of porcine epidemic diarrhea virus

Bowman, A.; Nolting, J.; Nelson, S.; Bliss, N.; Stull, J.; Wang, Q.; Premanandan, C.

ABSTRACT

Routine detection of porcine epidemic diarrhea Virus (PEDv) is currently limited to RT-PCR testing, as it is the only test method that can directly detect PEDv. Because RT-PCR only detects the viral RNA, a positive RT-PCR result only indicates the presence of PEDv viral RNA. It does not mean viable and infectious virus is present. Accelerated Hydrogen Peroxide®(AHP®) is a relatively new yet proven technology that is capable of disinfecting PEDv. In this study AHP was tested along with a number of other disinfectant actives against PEDv using RT-PCR. Positive RT-PCR results were tested to show how AHP was able to fully inactivate any remaining RNA on the surface. Therefore AHP can be used as an alternative disinfectant that is effective against PEDv without the negative toxicity, environmental, safety and compatibility profiles.

BACKGROUND

Contaminated transportation equipment has been linked to the spread of several other important swine diseases making trailer disinfection common amongst pork producers. Efficient disinfection for PEDv in animal contact spaces, including trailers is one of the primary methods used to control the spread of disease. Due to the limited testing options and the implications of environmental contamination, individuals are using RT-PCR to test trailers following disinfection to ensure that the equipment is free of PEDv before contact with animals. RT-PCR tends to underestimate disinfection efficacy compared to infectivity assays; meaning, RT-PCR positive results are obtained when in fact the trailer has been effectively disinfected.

STUDY

The purpose of this study was to examine the effect of disinfectants on RT-PCR results for PEDv and explore the practical solutions to produce RT-PCR negative trailers after they have been contaminated with PEDv. Five classes of disinfectants, including AHP, were evaluated at varying concentrations, both in the presence and absence of swine feces. All disinfectants were able to reduce PEDv viral load and show a reduction in RT-PCR values except for 0.17% sodium hypochlorite. However, no disinfectants eliminated RT-PCR detection of PEDv across all replicates; although 0.52%, 1.03%, and 2.06% solutions of sodium hypochlorite and 0.5% AHP did produce intermittently RT-PCR negatives. To simulate field conditions in a second attempt, PEDv was applied to pitted aluminum trays, which were treated with either 2.06% sodium hypochlorite or 0.5% AHP. Post-treatment surface swabs of the trays tested RT-PCR positive but were not infectious to cultured cells or naive pigs. Ultimately, viable PEDv was not detected following application of each of the tested disinfectants, even though in most cases RT-PCR detection of viral RNA remained.

CONCLUSION

Because PEDv strains are difficult, time consuming and expensive to test using cell culture methods, the pork industry is relying upon RT-PCR for testing. Ultimately, all the tested disinfectants, including AHP were able to inactivate PEDv but few prevented RT-PCR detection of the viral RNA. This study also indicates that the use of RT-PCR as a method to indicate the presence of infective PEDv on a surface is not reliable. One must take caution if using sodium hypochlorite as it is known to cause topical chemical burns, respiratory irritation and pulmonary edema, and can cause corrosion of metals and deterioration of rubber objects. AHP can therefore be used as an alternative disinfectant that is effective against PEDv, without the negative toxicity, environmental, safety and compatibility profiles.

REFERENCE

Bowman, A. et al. (2015). Effects of disinfection on the molecular detection of porcine epidemic diarrhea virus, Vet. Microbiol.(2015) http://dx.doi.org/10.1016/j.vetmic2015.05.027

Comparison of disinfectant efficacy when using high-volume directed mist application of accelerated hydrogen peroxide and peroxymonosulfate disinfectants in a large animal hospital

Saklou, N.; Burgess, B.; Van Metre, C.; Hornig, K.; Morley, P.; Byers, S.

ABSTRACT

Effective decontamination of animal holding environments is critical for providing high quality patient care and maintaining a safe working environment. Disinfection of animal holding environments is a significant challenge during times of epidemic disease. This study considers a relatively new yet proven technology Accelerated Hydrogen Peroxide® (AHP®) in the battle against microbes, as an alternative to legacy disinfectant chemistries with known shortcomings.

BACKGROUND

Veterinary infection control is critical to providing high quality patient care as well as maintaining a safe working environment for personnel. The infection control program at the Colorado State University Veterinary Teaching Hospital (CSU-VTH) employs periodic environmental disinfection using high-volume directed mist application of disinfectant. Directed mist application of disinfectants can be an effective method to reduce the environmental burden of microorganisms, particularly in areas that are not easily cleaned through scrubbing with detergents and copious amounts of water.

STUDY

The purpose of this study was to compare the efficacy of 2 disinfectant solutions; 4.25% AHP (Accel) at a 1:16 dilution and single and double applications of 2% peroxymonosulfate solution (Vikron-S) for decontamination of a veterinary hospital environment. After cleaning and disinfection of the hospital environment, experimentally contaminated surfaces were placed throughout the hospital and collected after each disinfectant application. Disinfectant efficacy was evaluated by determining the percent reduction in colony forming units for *Pseudomonas aeruginosa*, *Salmonella enterica,* and *Staphylococcus aureus* before and after application of disinfectants.

RESULTS

Overall, reductions in average colony forming units (log10) for contaminants were detected after all disinfectant applications. Reductions in bacterial counts on inoculated surfaces ranged from 0.8-2.5 logs, and varied among indicator organisms and disinfectant application. The reduction in colony forming units for *S. aureus* and *P. aeruginosa* was 1.5-2.5 logs and approximately 0.8-1.0 logs for *S. enterica*.

CONCLUSION

It was found that for the organisms evaluated, all disinfectants applied as a directed mist were effective at reducing colony forming units in a veterinary hospital environment. This suggests that AHP is a suitable chemistry alternative in high-volume directed mist application to achieve efficient and thorough coverage of all potentially contaminated surfaces.

REFERENCE

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Efficacy of eight commercial disinfectants against *Microsporum canis* and *Trichophyton spp*: infective spores on an experimentally contaminated textile surface. Moriello, K. et al. (2013). Veterinary Dermatology, Volume 25, Issue 3, pg 191-e48. *This study examines the fungicidal efficacy of multiple ready-to-use disinfectants, including AHP. AHP was concluded to have superior efficacy and proven to be an effective alternative to sodium hypochlorite.*

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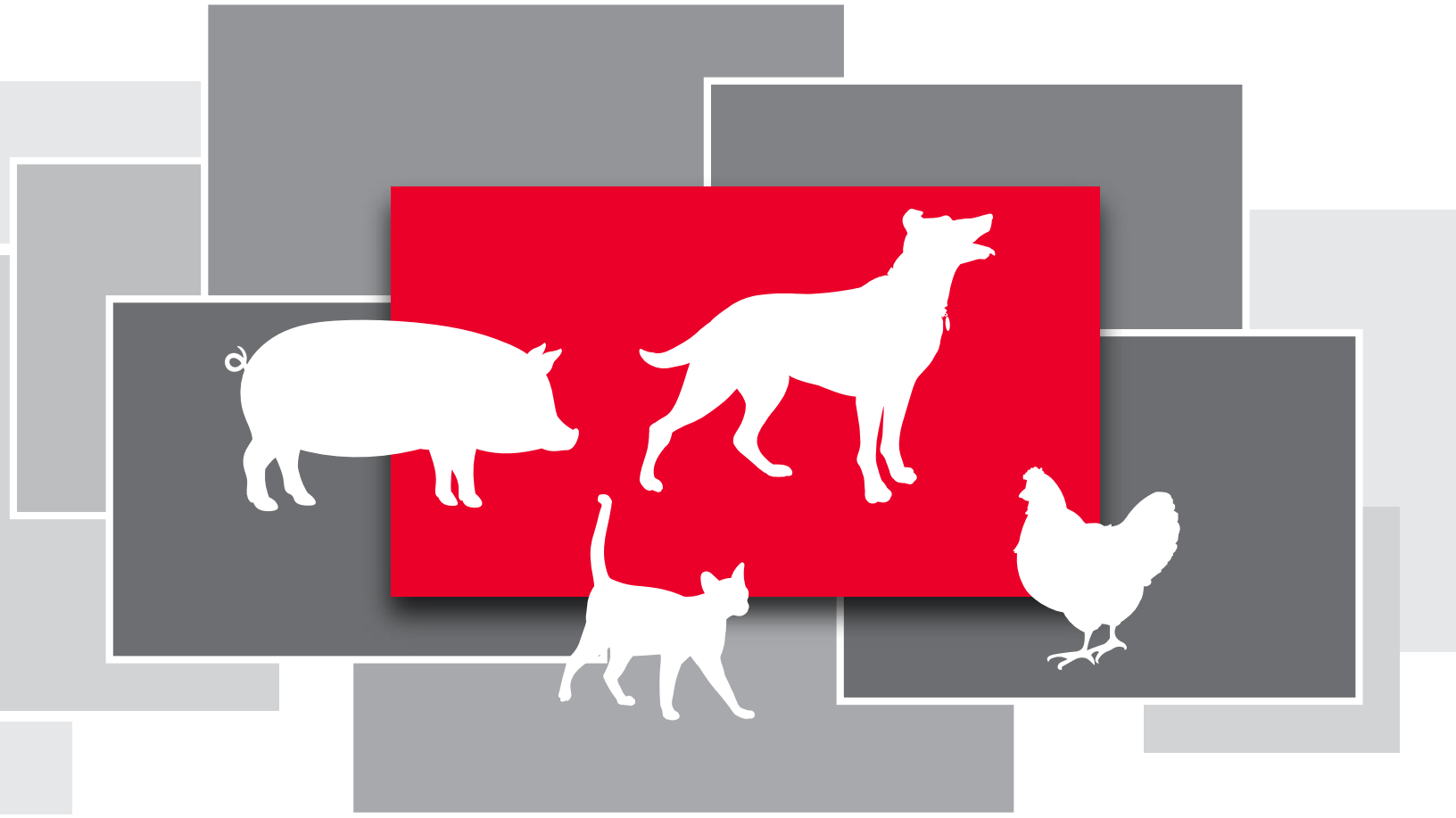

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