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Spring 2016

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The True Benefits of Using Saponin Containing Products – Fact vs Myth

*Robert L. Owen, V.M.D., Ph.D., DACPV
Director of Technical Services*

Veterinary practice is one of the most challenging of the medical disciplines because, as been said countless times, a veterinarian's patients can't talk to him/her. The challenge has been magnified recently due to the "antibiotic free" mania that is sweeping food animal production today. Veterinarians rather than being able to go to the shelf and pull down a product that has been thoroughly researched for safety, efficacy, environmental impact, and residue are being forced to use a myriad of products that meet an AAFCO ingredient definition (Association of American Feed Control Officials) and the marketing company does not promote it as a drug or vaccine.

Last year, in order to better understand whether some of the urban myths associated with this new wave of "Natural" products can be in any way substantiated by scientific research, the owners of BVS decided to build the BVS Center for Science and Technology. Wes, Ross, and Randy are to be complimented for this endeavor as it is being undertaken for the sole purpose of helping veterinarians better understand what natural products will or will not do and in that way better help the animals that are receiving these natural treatments. One of the goals of the center is to find a natural product or

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& electrolytes*

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Vitamin E

Dry Cider Vinegar

Citric Acid 410

Acidified Copper

Vitamin B Complex

Poultry Talk

After a very mild winter around the country spring has finally arrived and summer soon to follow.

It's been a much quieter spring compared to last year at this time when we were in the middle of the worse HPAI outbreak that we've ever seen in our U.S. poultry industry. It was quite frankly hard to watch what people had to endure as they were dealing with putting flocks down and the clean-up that followed. We have a strong industry and we survived the battle and are much stronger as a result. It heightened our awareness as to how we need to address biosecurity at all levels.

Earlier in the year everyone was reminded about how we need to always be on alert, with the HPAI break in southern Indiana. Those that were affected need to be commended for their quick response and actions that they took to shut down this challenge. It was a direct result of what we had learned from our experience in the upper Midwest. My hats off to people like Dr. Hermes and Dr. Murphy who got on top of things quickly!

I would also like to announce that BVS has hired a new veterinarian; Dr. Rosemary Marusak has just come on board with us. She will be based out of

our Mechanicsburg, PA location. She will be a great asset to our technical team.

With that said; Dr. Owen continues to vet products for ABE, NAU, NAE, and Organic poultry production. We've learned a lot in this past year... what works... what doesn't work... and dispelled some myths about products. Dr. Owen has done a great job of setting up pen studies. We will continue to vet new products through his work. In addition we will take this to the next level as we find products that show results in our pen studies and in the field; we are now collaborating with Dr. Tim Johnson at the University of Minnesota to see how these products change bacterial populations in the gut.

As summer approaches, keep in mind the onset of those first days of hot weather. Making sure that cool cells are properly maintained and cleaned. Inside this edition you'll find information on how to do this. Also, being prepared for those extremely hot days with extra electrolyte supplementation.

I hope that everyone has a safe and great summer!

Until next time and God bless,
Randy



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Using Saponin Containing Products, *continued from cover*

combination of products that act as a natural coccidiostat and impact the cycling and clinical effects of *Eimeria* spp. in both chickens and turkeys

Products of plants belonging to the genus *Yucca*, of the agave family, are labeled for sale in the United States as flavor enhancers and to control odor. One of the urban myths about these products is that their effect in improving intestinal health is interference with cycling of *Eimeria* species. In a series of studies done on both broilers and turkeys the effect of saponin containing products was investigated. For all the studies the experimental design was approximately the same. Day-of-age poult or chicks were orally vaccinated with commercially available vaccines for coccidiosis. Individual groups (10 birds) were housed in 8 sq. ft. pens and feed and

water was available ad libitum. Products being tested were administered in the feed as the sole source of feed for each group. Feces were collected daily for 3 days on a weekly basis for each group and oocyst counts were done using McMaster counting chambers.

In order to ascertain if there was an effect on the cycling of *Eimeria* as evidenced by differences in oocyst counts and if this effect was dose related, two dose titration studies using Biosupreme® were performed. The first study was done using broilers and the second was done with turkeys. The results of the oocyst counts in these studies are shown in figures 1 and 2. Statistical analysis of the data showed no statistical differences between any of the groups and untreated controls. In addition, as can be seen in the graphs, the groups are virtually superimposed and

continued on page 5

Figure 1: Oocyst counts for various doses of Biosupreme in broilers

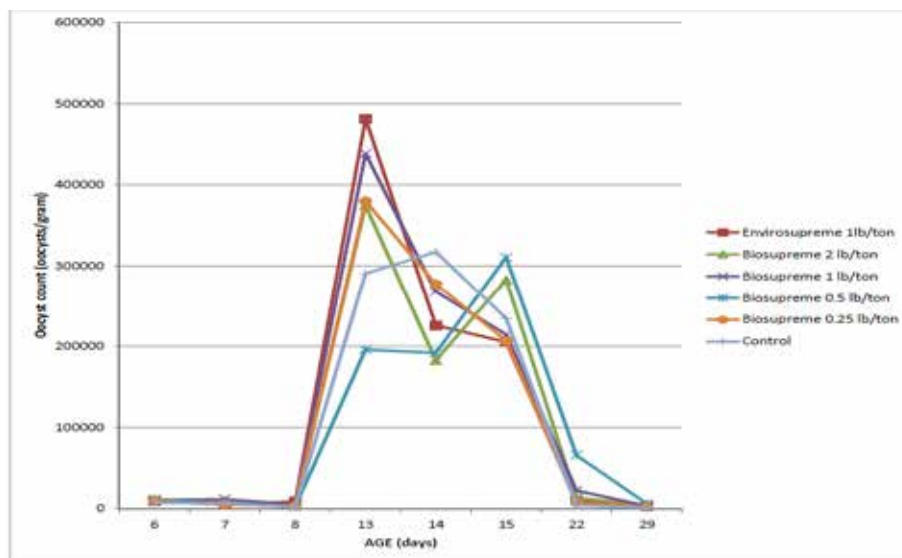
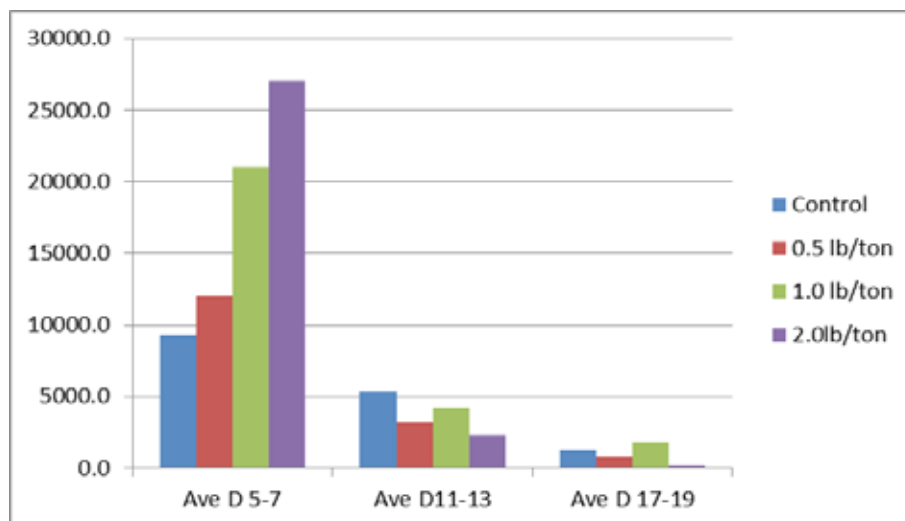


Figure 2: Oocyst counts for various doses of Biosupreme in turkeys



Solutions for Organic Production

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BVS Liquid Citric Acid
BVS Acidified Copper Sulfate

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Biosupreme® Organic Feed Grade
EnviroSupreme Green
By O Reg+
By O Reg Yucca

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Keno™san
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CitrisStim®
Hilyses™
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Mucosol®
BVS Vitamin D3 Liquid
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BVS Solulytes Natural

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Poultry Shield FG Sulfer
Yellowjackets Dust Sulfer

Litter Ammendments:

Klasp™

Please contact your BVS Salesman for more information on the products we offer for organic production

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*Not all products mentioned above are OMRI Listed. Approval for use in organic production is subject to approval from company's/grower's organic certifier.

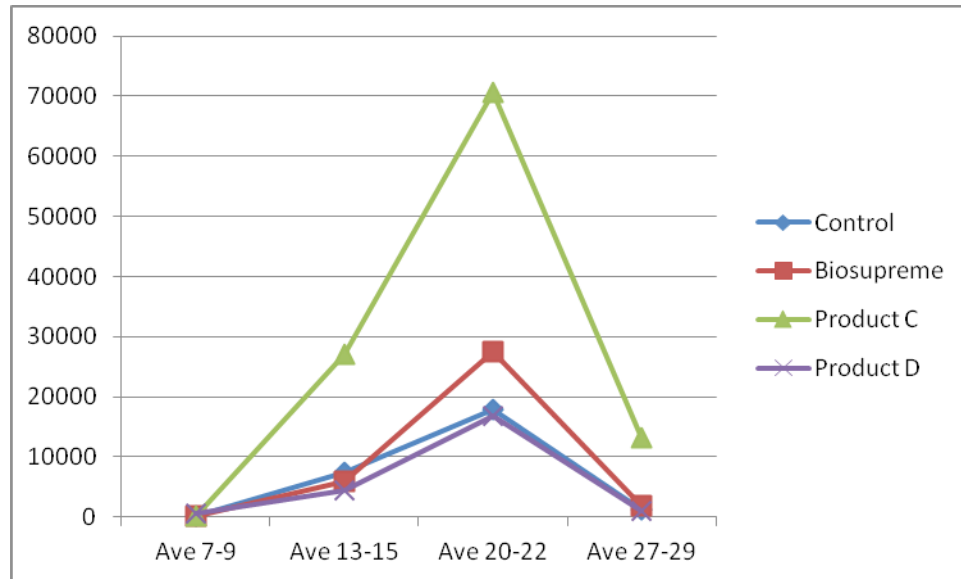


kemira



Using Saponin Containing Products, *continued from page 3*

Figure 3: Oocyst counts using three saponin containing products in broilers



there is no apparent reduction in counts from the untreated controls.

In a follow-up study, a comparison was done in oocyst cycling using Biosupreme and two other saponin containing commercial products administered to broilers. All products in this study were administered at 1 lb./ton. Results of this study are shown in figure 3. Once again there were no statistical differences between groups or between any group and controls and the graphs are virtually superimposed on one another.

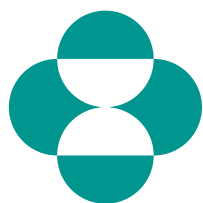
While these studies have not yielded the natural coccidiostat that we are looking for, the results are important for field clinicians using these saponin containing products. One fear is that these products could potentially interfere with proper cycling in birds vaccinated for coccidiosis. This work has shown that this is not the case and these products can be used at any time in the bird's life without concern that cocci cycling will be impaired.

If in fact, as many clinicians believe, these saponin containing products do influence intestinal health the

question remains as to the mechanism. If the mechanism is not the influence on cycling of *Eimeria*, the next most likely mechanism is modulation of the microbiome of the intestine. To answer this question the next series of studies will be in collaboration with researchers at the University of Minnesota to investigate the effects on the microflora.

And so the search continues for a natural coccidiostat. As stated above the purpose of the BVS Center is to try and help animals being reared in today's non-conventional programs – most especially organic. Several years ago this author was asked the question of how we treat birds being reared organically if they break with coccidiosis. My answer was Amprol – WRONG. There is nothing we have found yet with proven efficacy at reducing cycling and clinical effects of this disease that is organically approved. A lot of people talk about it but we are discovering when put to the scientific test it is all idle chatter. If anyone reading this article has ideas or products that you feel are worth testing please come forward and let us test them. This is not about selling product it is about the animals. ●





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(Serotype 3, Live Virus, Live Marek's Disease Vector)

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Advantages:

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- Removes the potential for respiratory reactions due to live ND vaccines
- Allows the use of monovalent infectious bronchitis (IB) vaccines, improving IB protection

NEWHATCH-C2®

TSP-V-053805 10,000 dose vials

Newcastle Vaccine

(B₁, Type, C2 Strain, Live Virus)

NEWHATCH-C2® is the patented, virtually nonreactive C2 strain of B₁ Type Newcastle disease (ND) virus. It is a lyophilized vaccine approved for spray vaccination of chickens one day-of-age or older for protection against Newcastle disease.

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- Effective against field challenge of Newcastle disease virus
- C2 strain of B₁, Type Newcastle minimizes reaction to one day-of-age vaccination in broiler chicks
- NEWHATCH-C2 eliminates problems with lingering hatchery reaction prior to field boost
- Safe to use for hatchery application



ORALVAX-HE®

TSP-V-065396 5 x 2000 dose vials
TSP-V-065398 5 x 5000 dose vials

Hemorrhagic Enteritis Vaccine (Live Virus)

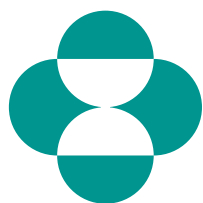
ORALVAX-HE® vaccine is a high titer vaccine that safely protects turkeys 6 weeks of age or older against the immuno-suppressive effects and death losses caused by hemorrhagic enteritis.

Advantages:

- Safe and efficacious: produced with a stable and avirulent strain of type II avian adenovirus of pheasant origin
- Produced under federal quality control standards, ensuring purity and sterility
- Consistent high potency titers to ensure protection of every vaccinated bird, flock after flock
- Recommended administration at 6 weeks of age or older helps assure no maternal antibody interference



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Animal Health



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PM-ONEVAX®-C

TSP-V-065417 1000 dose units

Pasteurella multocida Vaccine

(Avirulent Live Culture, Avian Isolate)

PM-ONEVAX®-C vaccine. The seed culture used to make this vaccine has been laboratory tested for protection of chickens against challenge with the X-73 (Type 1) strain of *P. multocida* and in turkeys against challenge with the P1059 (Type 3) strain of *P. multocida*.

Advantages:

- A temperature sensitive mutant of the CU strain that produces stronger takes than the M-9 strain, but less than the CU strain
- Offers protection against naturally occurring field strains of *P. multocida*
- Easy wing-web administration in broiler breeders, layers and turkey breeders



ART VAX®

TSP-V-065236 1000 dose units

Bordetella avium Vaccine

(Avirulent Live Culture)

ART VAX® vaccine is a live bacterial vaccine containing a chemically induced mutant of *Bordetella avium* which is immunogenic for turkeys when vaccinated by spray cabinet at day of age; then revaccinated in the drinking water at 2 weeks of age.

Advantages:

- Approved for spray administration at day of age followed by drinking water at 2 weeks of age
- Proven efficacy in preventing coryza in turkeys
- Time proven. This vaccine strain has been used effectively in the field for over twenty years
- Mild reaction
- Freeze dried product of proven quality and stability



M-NINEVAX®-C

TSP-V-065378 1000 dose units with diluent and wing-web stabbers

Pasteurella multocida Vaccine

(Avirulent Live Culture, Avian Isolate)

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This vaccine strain has been shown to offer protection against fowl cholera in chickens and turkeys. The seed culture used to make this vaccine has been laboratory tested for protection in chickens against *P. multocida* serotype 1 and in turkeys against challenge with *P. multocida* serotype 3.

Advantages:

- Strong protection against *P. multocida* serotype 1 (chickens) and serotype 3 (turkeys)
- Mild. Less reactive than competitive products
- Safe. Avirulent live culture will not revert to virulence, will not cause mortality
- Specially formulated diluent provides excellent reconstitution stability



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(fenbendazole oral suspension)

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THE SCIENCE OF HEALTHIER ANIMALS.

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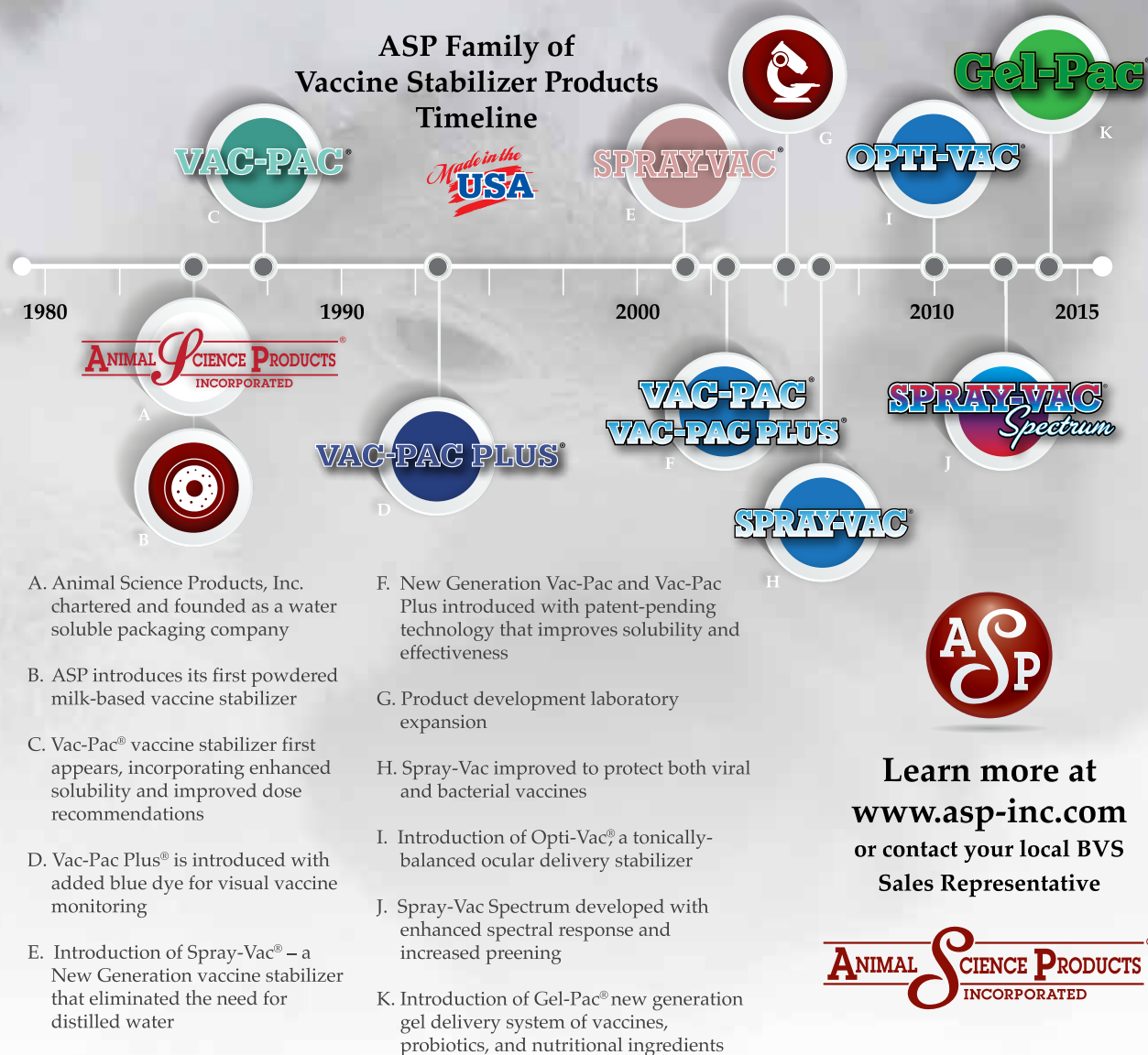


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Vaccine Stabilization and Protection: A History of Innovation

Since its humble beginnings in 1985, Animal Science Products has expanded the boundaries of product development. For nearly twenty years, ASP has established a reputation as an innovator and industry visionary, eventually leading to the 2002 break-through we know today as New Generation vaccine stabilization. Once Spray-Vac, ASP's first New Generation vaccine protection product, was introduced to the market, the race was on to develop even more efficient, reliable, and cost-effective delivery methods for proper vaccination.

In just over 10 years, ASP has introduced five additional vaccine protection products, ranging in delivery methods from drinking water, to eye-drop application, to novel sprays that stimulate preening and feeding behaviors. Together, these products are changing the way poultry producers around the world protect their flocks against disease. Consumer demand for healthy poultry is on the rise globally. This demand calls for better ways to inoculate the entire flock, and is a driving factor behind ASP's commitment to innovation in vaccine protection.





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Latex Powdered Gloves



Latex Powder Free Gloves



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Yellow Rubber Boot Cover LG & XL



Moldex 1200N95 Mask



Moldex 2400N95 Mask



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Nuisance Mask



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BVS Handy Foamer with Tank



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Concentrate Foam Unit



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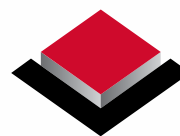


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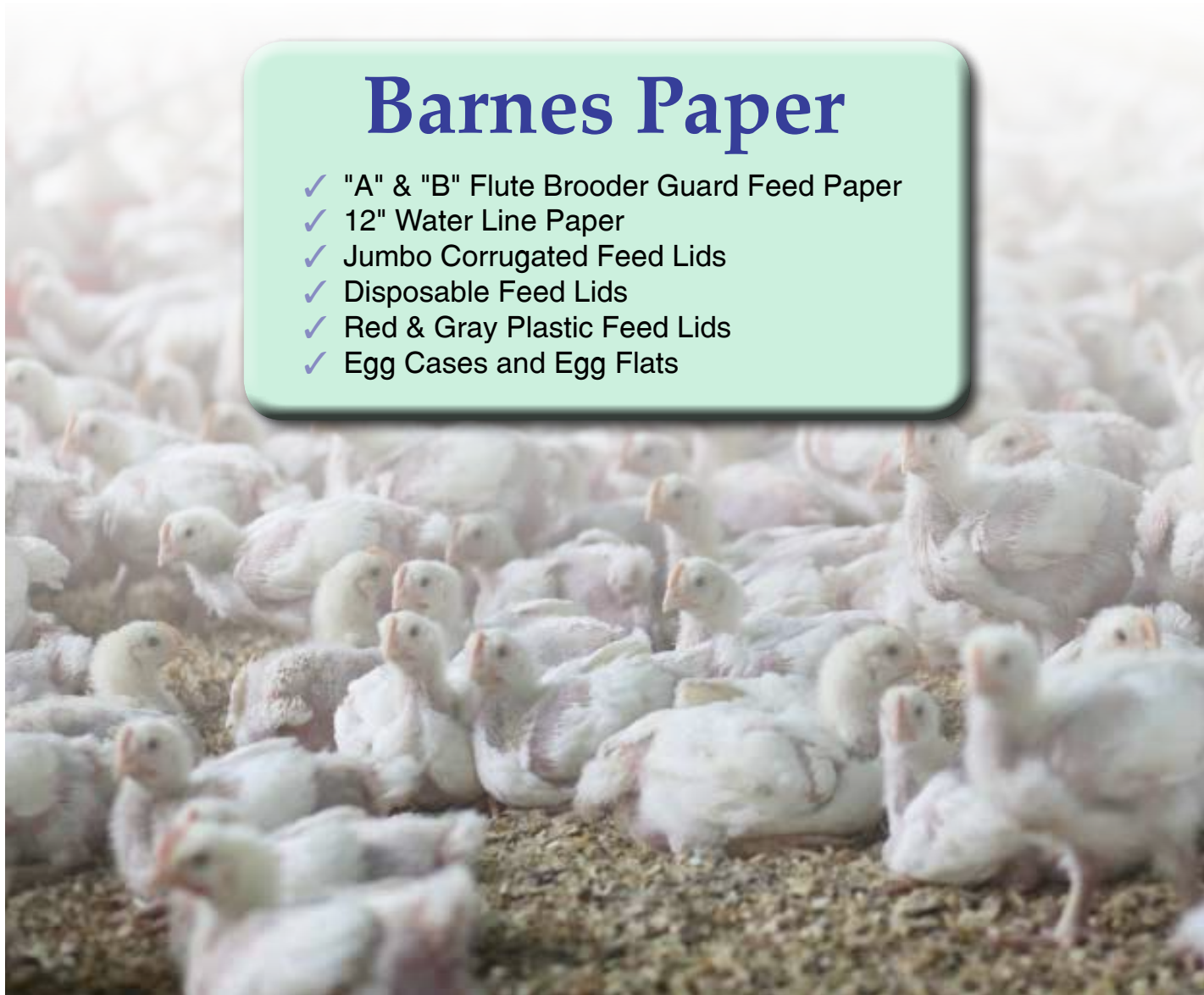
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1 Merial Study #05-017MS. Data on file.
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- Acidic solution
- Corrosive to galvanized and mild steel equipment, piping and/or fittings.
- Wear goggles or full face shield when handling
- For animal use only; not for human consumption
- Keep out of the reach of children

WARNING: *Follow label directions*

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Standard Dosage - 1:1024 gallons drinking water. Administer 1 part Omegamune-Plus in 1024 parts drinking water. For injectors/proportioners administer 1 oz. stock solution per gallon drinking water. Prepare stock solution by mixing 1 gallon Omegamune-Plus with 7 gallons water.

Optimum Dosage - 1:512 gallons drinking water. Administer 1 part Omegamune-Plus in 512 parts drinking water. For injectors/proportioners administer 1 oz. stock solution per gallon drinking water. Prepare stock solution by mixing 1 gallon Omegamune-Plus with 3 gallons water.

Available in the following packaging:

4 x 1 gallon cases.....(Product # 100801)
5 gallon pails.....(Product # 100810)
55 gallon drums.....(Product # 100820)

Manufactured by: **Best Veterinary Solutions, Inc. • Willmar, MN 56201**

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“Marketed Exclusively by Best Veterinary Solutions”

Contact the BVS sales representative or distributor in your area for more details.

CID LINES[®]

Believe in hygiene!

Get into the Zone

The Manage® Zone

Dietary Agent for Poultry and Swine

- ✓ is considered GRAS (generally recognized as safe).
- ✓ has a pH of 1.3.
- ✓ when mixed at recommended levels will reduce drinking water to pH 3.5-5.5.
- ✓ will hold pH down longer than other commercially available acidifiers.
- ✓ contains higher levels of copper than other liquid copper products on the market.
- ✓ is a dark purple solution that stays in solution without any settling out like that of competitive products.
- ✓ fits well into an antibiotic free program.
- ✓ works very well to maintain waterlines. Prevents scale build up.
- ✓ is friendly to the environment. 40% less copper excreted by using Manage versus feed grade copper.
- ✓ Is the only Patented product of its kind!

The Acid Sol® Zone

Dietary Agent for Poultry and Swine

- ✓ is considered GRAS (generally recognized as safe).
- ✓ has a pH of 1.3.
- ✓ when mixed at recommended levels will reduce drinking water to pH 3.5-5.5.
- ✓ will hold pH down longer than other commercially available acidifiers.
- ✓ is a red solution that stays in solution without any settling out like that of competitive products.
- ✓ fits well into an antibiotic free program.
- ✓ works very well to maintain waterlines.
- ✓ is a combination of buffered acids.
- ✓ contains No copper.

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GUT PRO™

Microbial Ecology and Its Important Role.

Recent advances in microbial ecology continue to identify the important role the complex gastrointestinal microbiome plays in the health and wellbeing of animals and humans. Initial colonizing bacteria of the gastrointestinal tract play a vital role in the development of the immune system, establishing intestinal microbial homeostasis, and impacting digestion and nutrient absorption.

Modern commercial practices of hatchery hygiene and the use of *in ovo* antibiotics have led to an inconsistent level of total bacteria and specifically lactic acid bacteria in chicks and poults. Although these practices are effective in reducing egg contamination and disease transmission, they have the undesirable effect of causing highly variable bacterial colonization of the GI tract. In essence, modern practices have contributed to removal of beneficial bacteria from the laying hen.

What is Microbial Terroir?

Our Microbial Terroir™ technology is the foundation of our research and development. Terroir, loosely translated as sense of place, is the embodiment of the sum of the effects of the local environment on the characteristics of a product. It includes the microbiota of the host, environment, feed, and water.

In the case of poultry - the microbial terroir of the gastrointestinal tract interacts with the host immune system (acquired and innate), litter, and feed components. This interaction is critical for the health and performance of the bird.



GUT PRO™ gives them an edge from the start

Immune development and immune function

- Acquired immune system (B and T cells)
- Innate immune system (mucin chemistry)

Microbial homeostasis

- Lactobacillus - Microbiome makes up the complex community that acts as barrier to infection
- Bacillus - Production of bacteriocins to ensure low levels of pathogenic challenges

Nutritional processing

- Microbiome processes complex feed ingredients more readily absorbed
- Processes phytochemicals (polyphenols) - improves function and bioavailability

Powering Your
Microbial Terroir™

GUT START® & GUT PRO™

Powered by

Microbial *Terroir*™

Technology by Agro BioSciences, Inc.



Now with **new strains.**



GUT PRO™

ClO₂ Compatibility

Compatibility of chlorine dioxide (ClO₂) with GUT PRO in poultry drinking waterline systems.

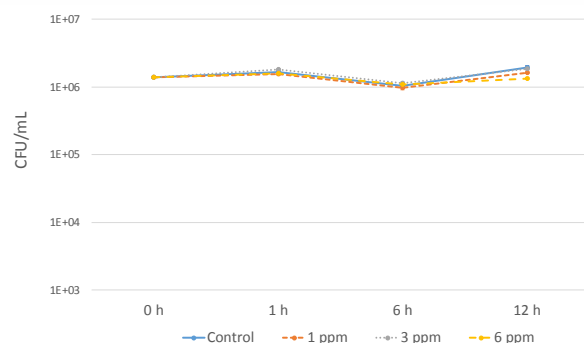
GUT PRO consists primarily of *Bacillus subtilis* and *Lactobacillus*. These strains were tested to improve gut integrity, intestinal health and overall performance in poultry when added to drinking water. The addition of Vac-Pac in GUT PRO, provides superior stability and compatibility with typical drinking water additives.

This study was designed to show that due to the inclusion of Vac-Pac in GUT PRO, GUT PRO is compatible with ClO₂ at typical drinking water levels.

Levels of GUT PRO with Vac-Pac over time with various concentrations of ClO₂

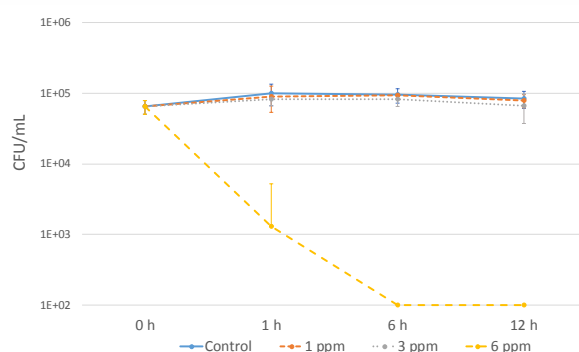
Bacillus

There was no effect of ClO₂ on *Bacillus* levels at all concentrations tested as none of the treatments differed from the control.



Lactobacillus

In general, ClO₂ had very little effect on the *Lactobacillus* component of GUT PRO. Levels of ClO₂ at 1 and 3 ppm in combination with GUT PRO did not affect *Lactobacillus* populations up to 12 hours.



Data shows ClO₂ can be run in tandem with GUT PRO at concentrations up to 3 ppm for at least 12 hours without any deleterious effect to the live bacterial components of GUT PRO.

Powered by
Microbial *Terroir*[™]
 Technology

COMPLETE SANITATION PROGRAM FOR FIELD AND HATCHERIES



BIOGEL

- The strongest cleaner
- Gel clings on longer than classical foam = superior cleaning result

KENOSAN



- Deeply penetrating alkaline foam for farms, incubators, trucks, ...
- Apply at 1 to 1 ½ oz / gal only with a foam wand.
- Non corrosive in dilution.



VIROCID®

- EPA approved "broad spectrum disinfectant"
- QAC/glutaraldehyde based, dil 1/3 oz – ½ oz/gal
- Non corrosive
- Apply by spray, foam or (thermo) fog
- Maintains pad cooling systems



KENO™ X5

- EPA approved "broad spectrum disinfectant"
- Per Acetic Acid based, dil ½ oz/gal
- 100% biodegradable



CID 2000

- H2O2 removes heavy soils
- Peracetic Acid removes scale / mineral build up
- Equipment friendly
- Proven "greatest reduction in microbial load" by U. of Arkansas



CID CLEAN

- 50% Stabilized Hydrogen Peroxide
- H2O2 removes heavy soils
- Equipment friendly
- NO heavy metals

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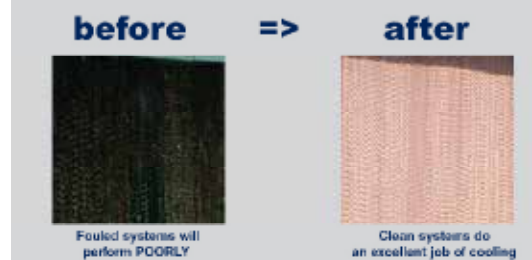
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Maintenance of Evaporative Cooling Pads



CID LINES
INNOVATIVE HYGIENE SOLUTIONS

takes **CARE** for **LONGEVITY** of your

EVAPORATIVE COOLING PADS

Spend little Save a lot

GENERAL MANAGEMENT TIPS TO IMPROVE EFFICIENCY AND LIFE OF EVAPORATIVE COOLING PADS

APPROPRIATE DESIGNING:

- Evaporative Cooling (EC) Pads should be installed with appropriate supports/frame.
- Avoid water absorbing material (such as cement) at EC Pads' bottom guttering as such material exposes them to continuous humidity which shortens the life of EC Pads.
- Water Tank should be, properly, designed (divided into 2-3 portions) to avoid re-circulation of dirty water through the system which, gradually, keeps on clogging EC Pads. It would be of an additional significance, if capacity of water tank is kept in accordance with the requirements of circulating water, through the system. Proper covering of tanks is necessary to avoid surrounding contaminations to get in it.
- During construction of farm house, the side for the installation of EC Pads should be designed as to avoid their direct exposure to sunlight (as in a "**EC Pads Room**" or "**Doghhouse Plenum**" or simply curtains, otherwise, in front at suitable distance from them) to prevent algae or bacterial growth. For directly exposed EC Pads, in farm environment, the installation of nylon net about 1 m before them is recommended to prevent small insects, dust, or unwanted particles to clog the air channels of EC Pads.

FLOW AND QUALITY OF WATER:

- Required Water Flow Rate, for 7 mm (0.28 ") flute height EC Pads, is 60 litres/minute/sqm (1.6 gal / min / sq ft) of top surface for up to

2000 mm (7.9 ") high EC Pads while Required Water Flow Rate, for 5 mm (0.2 ") flute height EC Pads, is 90 litres/minute/sqm (2.3 gal / min / sq ft) . of top surface for up to 1000 mm high EC Pads.

OR

- To supply water for EC Pads; **water pump capacity should be around 5.5 litres/minute** (1.5 gal / min) for 2000 x 600 x 150 mm (6 ½ ' x 23.6 " x 6 ") EC Pads (7 mm or 0.28 " flute height) while the same for 1000 x 600 x 100 mm (3 1/3 ' x 23.6 " x 3.9 ") EC Pads (5 mm or 0.2 " flute height).
- The proper water flow on the top and uniform distribution along the length of EC Pads would reduce the mineral build-up on them.
- Avoid operating EC Pads beyond range of **pH of water between 6 and 8**.
- Proper treatment of water is significant, on regular basis.
- Avoid water with high concentrations of calcium, bicarbonates or sulphates (more than 100 ppm). Proper bleed-off design and pre-treatment of water should be utilised to reduce the potential danger for the life of EC Pads.
- Avoid contaminating oxidising agents such as chlorine or copper compounds into the water.
- Allow EC Pads to completely dry, periodically (overnight), to reduce the bacterial/algae/fungus growth on them.
- Water tank and distribution pipes should be cleaned, on weekly basis.

BLEED-OFF CONTROL:

Bleed-off mode is designed not only to make up evaporated water from the system but it, also, supports in preventing the built-up concentrations within the water that could be harmful for the life of EC Pads. Bleed-off can, simply, be done by adding proper amount of fresh water into the circulating water. To control the proper bleed-off amount, the following is recommended.

1-pH Control:

- Water pH is the proxy of calcification residual in the water. The higher the pH, the lower the dissolvability of calcium and bicarbonates while the higher the concentration of residual in the water.
- The simplest way, to control the bleed-off amount, is that the pH of water, to be circulating in the system, is not exceeding 8.

2-Concentration Control:

- The analysis of ion-concentration (ppm) of water input such as calcium, bicarbonates, sulphates and water pH are necessary inputs for this method.
- The higher the concentration and the pH of water, the higher the bleed-off amount.

BLEED-OFF RATIO:

- General-rule-of-thumb is between 1-1.5 times of water evaporation, that is, if water is being evaporated at the rate of 100 litres/minute then the proper bleed-off amount would be 100-150 litres/minute (26 – 40 gal / minute)

CLEANING & TREATMENT OF EVAPORATIVE COOLING PADS by CID LINES' Products

To keep Evaporative Cooling System, running efficiently, the water in the system must be treated with a wide spectrum biocide. The correct chemical(s) also increases its life and reduce the risk of contamination that could lead to a disease problem, as well. The recommendations of manufacturer(s) should be kept in considerations that the chemical(s), being used, should not damage the EC Pads/Systems. Check the water filters (if being used) and should remove sediments build-up, on monthly basis.

(I) Prior to Start-up of System:

Examine the EC Pads to determine if they are fouled with algae or heavy mineral scales.

To Clean Algae Build-up:

- Spray or foam on EC Pads with **CID 20 @ 6.6 - 15.0 ml/litre (0.66 - 1.5%)** OR **VIROCID @ 3.3 ml - 7.5 ml/litre (0.33 - 0.75 % or ½ to 1 oz / gal)** of water.
 - Allow the product to remain on the surface of EC Pads for 10 minutes.
 - Flush/spray off with clean water.
 - Repeat, if necessary.
 - Drain the system and flush with clean water.
- (CID 20 and VIROCID are bactericidal, fungicidal, virucidal, algacidal that eliminates clogging up by algae or microbial contamination by "slime forming bacteria". These products have residual activity and inhibit bio-film as both of the products contain Quaternary Ammonium Compound and Gluteraldehyde).**

To Clean Mineral Scale build-up:

Choice of 2 methods;

- (1) Add **PHO CID** to the system @ 7.5 - 15 ml/litre (0.75 - 1.5 % or 1 – 2 oz / gal) of water; Let this solution to circulate through the system until EC Pads are cleaned; Drain the system and flush with clean water.
- (2) Foam or spray with **TORNAX-S @ 30 - 45 ml/litre of water (3.0 - 4.5 % or 5 – 6 oz / gal)** on the surface of EC Pads; Allow it to remain for 10 minutes; Rinse off with clean water; Drain the system and flush with clean water.

Refill the system with clean water.

(II)

Initial Treatment:

Add **CID 20 @ 400 ml/1000 litres of water (0.04%)** OR **VIROCID @ 200 ml/1000 litres of water (0.02% or 1 oz / 40 gal)** within the system as to acquire the desired results.

(III)

Maintenance Treatment:

Add **CID 20 @ 110ml/1000 litres of water (0.011%)** OR **VIROCID @ 55 ml/1000 litres of water (0.0055% or 1 oz / 150 gal)** within the system, continuously, with the help of medicator or treat this way, in general, on weekly basis.

(Average consumption per US 22,000 broiler house is 7.6/3.8 litres/year (2 – 1 gal) while per

Chemical Name: **Virocid or CID-20**

Chemical Family: Quaternary Ammonia and gluteraldehyde

Active ingredient level: 36%

Manufacturer's Recommended Doseage:

VIROCID- initial treatment 2.5oz per 100 gals; maintenance treatment 1.25oz per 100 gals weekly, or as needed.

CID 20- initial treatment 5oz per 100gals; maintenance treatment 2.5oz per 100gals weekly, or as needed.

**With little EFFORTS and nominal EXPENSES;
Let's assure you that you can save thousands on Evaporative Cooling Pads**

CAL STAT® PLUS

ANTISEPTIC HANDRUB WITH

ENHANCED EMOLLIENTS

Cal Stat Plus Antiseptic Handrub with Enhanced Emollients is a 63% (v/v) isopropyl alcohol-based handrub designed to effectively decontaminate visibly clean hands of healthcare workers before and after patient contact, and after contact with inanimate objects. In a time kill study, Cal Stat Plus Antiseptic Handrub with Enhanced Emollients demonstrated complete kill in 15 seconds against a broad spectrum of transient microorganisms including methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus faecium* (VREF). The product is formulated with a moisturizing system, adding moisture to the skin after every use. This dermatologist-tested, dye-free isopropyl alcohol-based handrub can be used in all areas of healthcare settings.

PHYSICAL PROPERTIES

Form Liquid
Color Colorless
Fragrance Baby powder
Typical specific gravity 0.891
Antiseptic
ingredient..... Isopropyl alcohol (63% v/v)

DIRECTIONS FOR USE

Wet hands thoroughly with Cal Stat Plus Antiseptic Handrub with Enhanced Emollients and rub until dry.

Storage: Do not store at temperatures below 32°F (0°C).

Flammable, keep away from fire or flame.

ALCARE®

FOAMED ANTISEPTIC HANDRUB

Fast-acting, broad-spectrum antimicrobial action, including MRSA and VRE

Alcare Foamed Antiseptic Handrub is an alcohol-based handrub with fast-acting, broad-spectrum antimicrobial action against pathogenic microorganisms. Alcare Foamed Antiseptic Handrub also has proven activity against multiply resistant microorganisms such as methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococci* (VRE). The Alcare Foamed Antiseptic Handrub formulation of 62% ethyl alcohol and emollients provides hand antisepsis and moisturizing at the same time. Alcare Foamed Antiseptic Handrub spreads easily to facilitate even distribution over all skin surfaces for effective disinfection. Alcare Foamed Antiseptic Handrub is convenient to use when there are no handwashing facilities available and hands are physically clean, but in need of degerming and can be used as an adjunct to handwashing when extra protection is desirable.

Storage: Protect product from freezing. Store and use at 55-85°F (12-29°C); do not store above 120°F (49°C).

PHYSICAL PROPERTIES

Form Foam
Color White
Fragrance Mild alcohol
Antimicrobial..... 62% (v/v) ethyl alcohol

DIRECTIONS FOR USE

Surgical Scrub

Clean under nails with a pick. Nails should be maintained with a 1 mm free edge. Dispense 5 g (about the size of a tennis ball) onto one hand. Spread on both hands paying particular attention to the nails, cuticles and interdigital spaces and forearms. Rub into skin until dry. Dispense 2.5 g (approximate size of a golf ball) onto one hand and spread over both hands and the wrists and rub into the skin until dry.

Healthcare Personnel Handwash

Apply product to hands and rub until thoroughly dry.

NEEDS NO WATER · CONTAINS EMOLLIENTS

STERIS®



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Introducing
pH Safe
Liquid

**MAKE EVERY
DROP COUNT**

PWT is now

pH Safe

Same product from Jones-Hamilton Co.

*is now available from BVS as **pH Safe***

pH Safe water acidifier is the first FDA-approved feed grade inorganic acid water treatment available to the poultry and livestock industries. Due to the unique chemistry of **pH Safe**, the consumption of treated water does not decrease at higher concentrations, as has been reported for organic acids. **pH Safe** contains the strongest animal feed grade mineral acid available. A much lower addition rate is required to acidify drinking water to biologically effective low pH levels. This lower addition rate provides pH reduction with no bitter taste. Birds won't back off from **pH Safe** treated water, so optimum water consumption is maintained. This advantage gives producers the flexibility for administration in a wide range of application in all livestock and poultry species.

Litter Management: The Foundation for Success or Failure Best Management Practices for Maintaining Optimal Brooding Conditions

Litter management is a crucial part to maintaining a healthy environment and reducing challenges for every flock. Managing the litter will become increasingly vital as more companies shift toward antibiotic-free programs, or when new bedding material is scarce or extremely costly to replace.

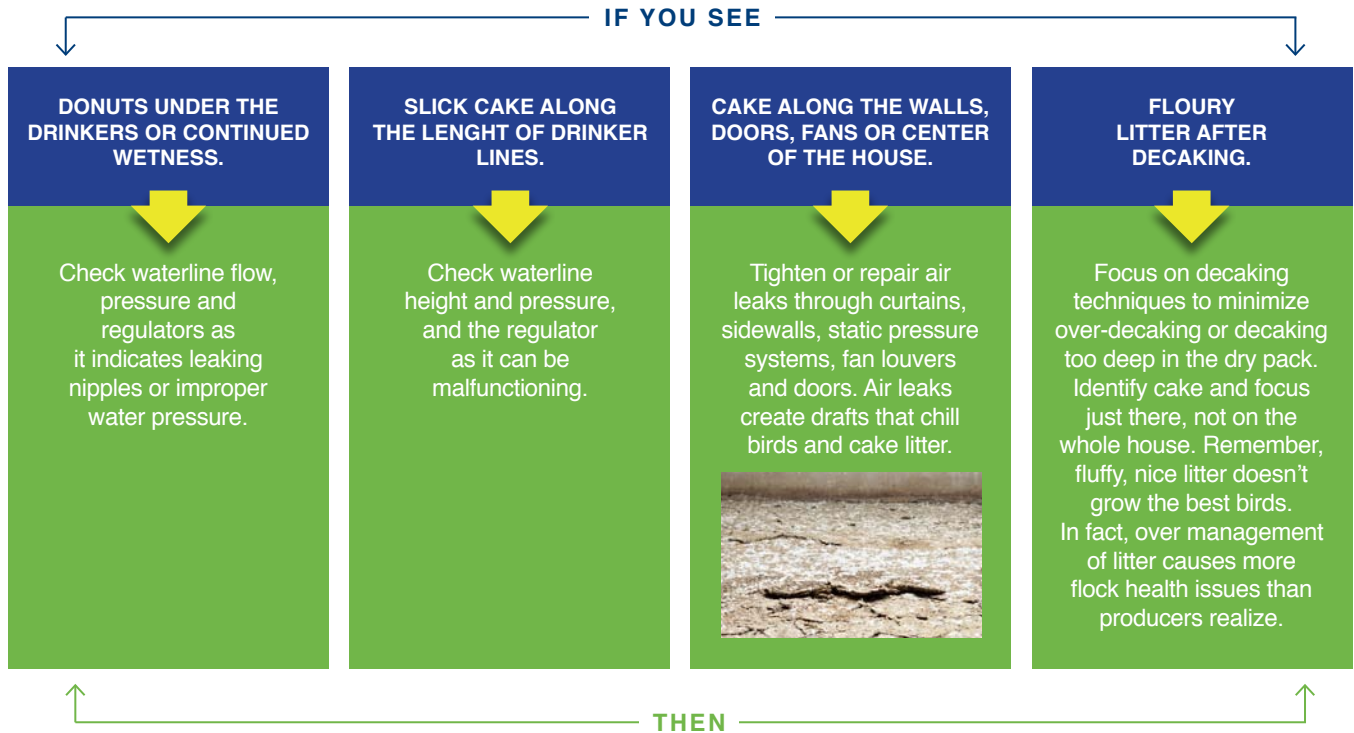
Litter serves as the foundation of a flock's success and careful management is required to ensure a positive impact on a flock's performance. If proper management isn't made a top priority, producers will more than likely be battling higher fuel costs and poor performance. Many producers take a reactive approach to litter management, but once litter has been mishandled, it is difficult to correct and in some cases it is more advantageous to clean out and start over with new bedding. That's why it's imperative to carefully manage litter from the time a clean out is performed so the new litter can be utilized for many flocks thereafter. In fact, litter preparation for the next flock should start while the current flock is in the house. Determining when cake formation starts in a flock and making proper changes to address the cause will ensure a much healthier floor environment.



Begin with Best Management Practices

Smart litter management begins with the development of and adherence to best management practices (BMPs) for waterlines, ventilation and litter conditions. For maximum

performance, these BMPs should address these three areas. Begin by carefully observing the litter to identify issues with current conditions:



Starting the Flock Off Right with Proper House Clean Out

When cleaning out, it's vital to remove all litter down to the pad as well as dust from fixtures (pulleys, tensioners, screens, louvers, lights, etc.). This includes litter along the sidewalls, in the corners and under the fans. If necessary, remove litter by hand. Any litter left in the house will cause problems later when the floors are heated.

Once the litter has been removed, clean and disinfect ceilings, sidewalls and any other hard surface with a strong virucidal and bacterial disinfectant. At this point, producers may want to consider applying an acidifier such as sodium bisulfate (PLT®-Litter Treatment) to the dirt pad; especially if performance declines or disease outbreaks without a clear reason have been occurring. The dirt pad acts as a sponge and absorbs water, ammonia, bacteria and other challenges over time. Therefore, lowering the pH of the floor environment will rid the pad of any ammonia that might volatilize off once new bedding and heat is added. Also, lowering the pH to a very low level will impact the ability of some microbial growth. (See Table 1)

| Level of Bacterial Growth at Varying pH levels. | | | | |
|---|-------------|-------------|-------------|-------------|
| pH | E. coli | Clostridium | Salmonella | Pasteurella |
| 7.4 | Heavy | Heavy | Heavy | Heavy |
| 7.0 | Heavy | Heavy | Heavy | Heavy |
| 6.8 | Heavy | Heavy | Heavy | Moderate |
| 6.5 | Heavy | Heavy | Heavy | Light |
| 6.4 | Heavy | Heavy | Heavy | Light + |
| 6.3 | Heavy | Heavy | Heavy | Very light |
| 6.2 | Moderate | Heavy | Heavy | Very light |
| 6.0 | Moderate | Heavy | Moderate | Very light |
| 5.8 | Light | Heavy | Light | Very light |
| 5.7 | Light | Heavy | Very light | ZERO |
| 5.4 | Very light | Moderate | Very light | ZERO |
| 5.2 | Very light | Moderate | Very light | ZERO |
| 5.0 | ZERO | Light | Very light | ZERO |
| 4.8 | ZERO | Light | ZERO | ZERO |
| 4.5 | ZERO | Very light | ZERO | ZERO |
| 4.3 | ZERO | ZERO | ZERO | ZERO |

Table 1. Effects of pH on bacteria growth (Hardin and Roney)

If you have a concrete pad there is no benefit to applying sodium bisulfate before bird placement since there will be no ammonia to react with the product. However, once the birds have been on the litter for one to two weeks, sufficient ammonia will exist. The ammonia will react with PLT while also working to suppress pH low enough to negatively impact microbial populations.

If the litter is being reused, the moment the last bird leaves, shut the house tightly in order to retain heat from the previous flock and remove excess moisture in the litter

and floor. Ammonia concentrations will continue to rise while the house is closed, but unless you're working in the house there is no need to ventilate. Ventilating during this time will actually shut down ammonia release and accelerate heat loss from the previous flock. Minimal ventilation maybe required in the first 48-72 hours to prevent condensation, but during the daytime only. This will help reduce corrosive condensation from forming on equipment, sidewalls and ceiling. Once the condensation subsides the house should be shut down with no ventilation until preparation for placement starts.

Proper Pre-heating Procedures Can Reduce Stress, Increase Performance

After the house is cleaned out and the pad treated, new litter should be put in at a depth of 4-6 inches. Select clean dry bedding that preferably has less than 15% moisture. It's critical to understand how different bedding substrates handle absorption of moisture, compaction and decomposition in order to know how to maximize the life of the litter and the number of flocks that can successfully utilize it. Once the new litter is in, the house should be shut again to keep litter dry and clean.

When it's time to pre-heat, begin 48-60 hours prior to bird placement to reach the desired placement temperature in the core of the litter base. Remember, new litter can be damp, so the pre-heating period may need to be increased. Damp litter can easily cool chicks once placed, which can make them susceptible to many challenges that can reduce profitability from the very moment of placement. Whether the litter is new or built-up, the core litter temperature is extremely critical. Surface temperature is just that, on the surface; but core temperature impacts the birds' ability to

stay warm as well as ammonia volatilization and microbial challenges.

If you're using built up litter, it is recommended to treat litter with sodium bisulfate just prior to bird placement to reduce the stress of ammonia and bacteria. Your treatment level will depend on litter quality, ammonia load and microbial stress.

Once birds are in the house and you're working to maintain healthy litter conditions, use tilling as a last resort, as it creates more surface area, releases large amounts of ammonia and reduces litter's ability to wick moisture off the surface. If tilling is required, go no deeper than the thickness of the caked areas to minimize surface area. Once tilling is finished, treat the area immediately with sodium bisulfate to eliminate ammonia. The same will happen if windrowing or litter manipulation is utilized as a heat treatment. More surface area equals more released ammonia—even if microbe levels are decreased.



The Role of Water Management

House conditions and litter ecology are also impacted by bird diet and water management. It begins with the gut of the bird. The first line of defense for challenges is in the GI tract. Gut receptor sites will be seeded down with either good bacteria or challenging bacteria. The sooner the normal healthy microflora can be established, the less likely the bird's gut will be colonized by unwanted bacteria such as salmonella and clostridium.

Research shows that acidifying drinking water allows for the crop to be acidified both before and after the normal crop flora becomes established (Byrd et al, 2001). Providing the bird with water at a pH below 4.0 for its first 7 to 10 days of age assists in the establishment of normal flora.

The method used to lower pH matters. If organic acids or a mixture of organic acids are being used for crop acidification or waterline management, birds will typically back off of the water. This is due to the bitter/sour taste created when the hydrogen ions that make up the molecules of acid are released in the mouth. The use of a mineral acid such as sodium bisulfate allows the pH of the water to be lowered to biologically significant levels without negatively impacting water consumption; this is because hydrogen ions are displaced in the manufacturing process making the water more desirable and palatable. Sodium bisulfate is effective in cleaning up the waterlines as well.



Summary

Getting a flock off to the right start is critical not only for the birds, but also for financial gain. It's easy to forget the small details that, in the end, cost greatly. A solid, strong foundation and the understanding that anything that is done to the environment that the birds are in direct contact with (i.e., water, feed, air and the floor) will impact them for better

or for worse. An optimally managed environment provides the best chance of maximizing a flock's health and financial potential. There are no silver bullets to litter management of ammonia and bacterial challenges. Focusing on the things that impact or produce them, however, is the key to a successful flock.

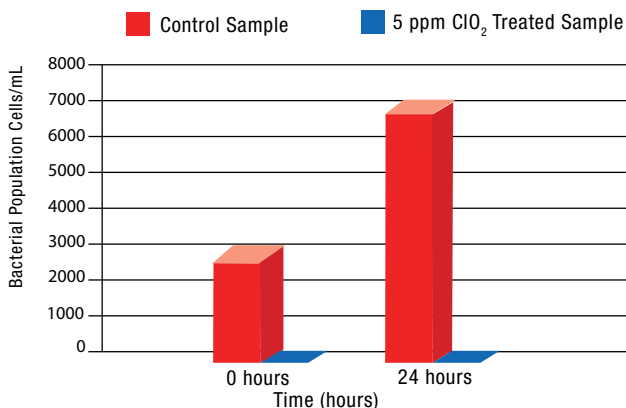
ProOxine® (AH) Disinfecting Solution For Animal Drinking Water

ProOxine® is the most effective tool for water management in animal facilities. ProOxine® keeps the bacteria level down in the water lines, and prevents biofilm from developing thus keeping the animals healthier by keeping down the pathogen level that could potentially travel from one animal to another. ProOxine® makes drinking water more palatable to poultry and livestock and therefore they drink more. Additionally, ProOxine® is highly effective in keeping water systems free of build up.

Efficacy of ProOxine® against Biofilm

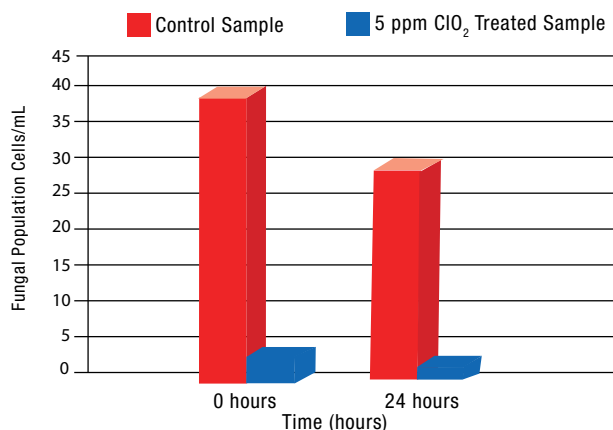
CONTROL EFFECT OF 5 ppm ClO₂ AGAINST BIOFILM BACTERIA

| On Bacteria | Control Sample | 5 ppm ClO ₂ Treated Sample |
|-------------|----------------|---------------------------------------|
| 0 Hour | 3000 | 30 |
| 24 Hours | 7000 | 2 |



CONTROL EFFECT OF 5 ppm ClO₂ AGAINST BIOFILM FUNGI

| On Fungi | Control Sample | 5 ppm ClO ₂ Treated Sample |
|----------|----------------|---------------------------------------|
| 0 Hour | 40 | 4 |
| 24 Hours | 30 | 2 |

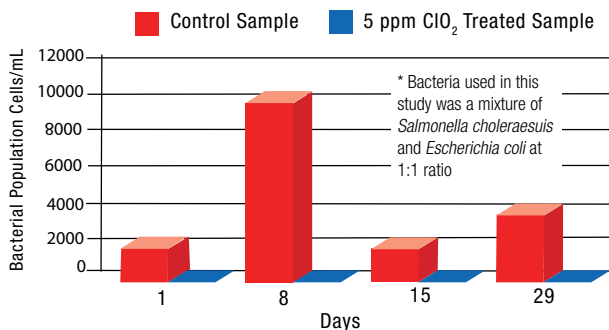


AANE (Automated Activation Non-Electric) System

Efficacy of ProOxine® against Salmonella and E-coli

REDUCTION OF BACTERIAL POPULATION* IN WATER AFTER CONTACT WITH 5 ppm CHLORINE DIOXIDE

| On Bacteria | Control Sample | 5 ppm ClO ₂ Treated Sample |
|-------------|----------------|---------------------------------------|
| 1 Day | 2000 | 20 |
| 8 Days | 10000 | 2 |
| 15 Days | 2000 | 2 |
| 29 Days | 4000 | 2 |



* Bacteria used in this study was a mixture of *Salmonella choleraesuis* and *Escherichia coli* at 1:1 ratio



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www.bestvetsolutions.com

Pure *Yucca schidigera* powder



BIOSUPREME® ORGANIC FEED INGREDIENT

ENHANCES FEED EFFICIENCY

BIOSUPREME® contains saponins (active ingredient), which have surfactant properties, playing an important role in animal nutrition. The glycocomponents within saponins have a natural affinity to bind ammonia and other noxious gases, therefore improving the environmental air quality within the poultry houses, swine barns, and other livestock commercial facilities.

REDUCES THE NEGATIVE EFFECT OF AMMONIA

BIOSUPREME® is produced under strict certified Food Safety Management System guidelines as well as certified organic manufacturing process. We use only mature and over mature *Yucca schidigera* plant stems obtained under an environmentally conscience sustainable harvesting program, monitored by our own in-house forestry engineers.



BIOSUPREME® L

Available in concentrated liquid, which can be included in drinking water systems.



AGROIN
BAJA AGRO INTERNATIONAL

Ensenada, Baja California, México
www.yucca.com.mx



Distributed in the United States by:
Best Veterinary Solutions, Inc.
325 Lakeland DR., N.E. Willmar, MN 56201
Toll Free: 1-888-378-4045
www.bestvetsolutions.com

BAF-AN-BSP-EN-01



Long-Lasting Stabilized Chlorine

Effective for up to 2 Weeks

pH-buffered for enhanced efficacy

Ready-To-Use; NO MIXING

Does not provide a source for bacterial growth
Greatly reduces cross-contamination potential

Does not Freeze nor Evaporate

TRUE PAN POWDER

Ultra-dry, fine composition resists moisture clumping while providing superior foot coverage

Effective Cleaning, Bleaching and Deodorizing Properties

Economical way to clean footwear

Available in 11, 35, 50, 100 and 400 pound Re-Sealable Containers

DIRECTIONS

- Add as needed to foot pan to maintain a half-inch layer. (A thicker layer will not increase effectiveness.)
- Remove organic contaminants as necessary.
- Change out pan powder every 2 weeks for optimal results.

*Gilmer Industries has been
manufacturing top-quality
cleaners and disinfectants
for over 40 years.*



GILMER INDUSTRIES, INC. *Products that Perform*

560 Stone Spring Road
Harrisonburg, VA 22801

PO Box 1247
Harrisonburg, VA 22803

phone 800/200-4162
info@gilmerindustries.com

Gil lo-Poult & Gil Medic-Dyne



Multi-Purpose Iodine Supplement

Gil lo-Poult: 1.75% titratable iodine

Gil Medic-Dyne: 3.50% titratable iodine

Cold Weather Stable

**Concentrate mixes readily in
cold, hard water**

Provides Essential Iodine to Poultry

**Cleans and conditions
water drinking systems,
keeping them free of
slime and mineral scale**

Effective Deodorizer

Consult your local sales or service representative for use directions.

Available in 1, 5, 15, 55 and 275 Gallon Containers

*Gilmer Industries has been
manufacturing top-quality cleaners
and disinfectants for over 40 years.*



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Huvepharma is excited about the addition of our new products...

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Inovocox[®]
(Cocci Vaccine)

Chloronex[®]
(Chlortetracycline HCl)

Neo-Sol[®]
(Neomycin Sulfate)

R-Pen[®]
(Penicillin G Potassium)

Lincomycin
(Lincomycin HCl)

Oxytet[®]
(Oxytetracycline HCl)

Sulmet[®]
(Sulfamethazine)

HUVEPHARMA, INC.
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Huvepharma

525 Westpark Dr., Ste. 230
Peachtree City, GA 30269

770.486.7212

customerservice@huvepharma.us

WHY GO SOFT ON RODENTS?

BECAUSE IT'S THEIR FAVORITE LAST MEAL.

Q: What is soft bait?

A: *FastDraw* or *Revolver* no-wax rodenticide.

When you purchase an 18 pound pail of red or green wax blocks, you are spending money on approximately 4 pounds of wax filler.

When using *FastDraw* or *Revolver* soft bait, rodents consume 0% wax and you gain 100% control in every bite they take!




FastDraw takes 4-5 days to work.

SOFT BAIT





SOFT BAIT

 Replaces red or green wax blocks or pellets

 Low cost per placements

 Increased acceptance & control

 Less bait waste, saving you money

 Will not melt in high temperatures

 Pouches fit in hard to reach places

 Single feed control



FastDraw & *Revolver* soft bait fit in hard to reach places where rodents live and breed.



No wax = no melting and maintaining palatability in hot & cold environments.

Contact your Liphatech District Sales Manager or Best Veterinary Solutions Sales Representative for samples or more information today!

LIPHATECH



Waterline Cleaning

For every 10 jugs of **Cid 2000** purchased...
get 1 HydroMix system free!

OR

For every pallet (75 jugs) of **Cid 2000** purchased...
get 10 HydroMix systems free!

Offer valid from June 1, 2016 to July 31, 2016



- The H2O2 removes heavy soils
- The peracetic acid removes scale/mineral build up
- Equipment friendly
- No (heavy) metals
- Use at 2% (1:50 or 2.5oz per gal)



- Pre-set to run at 2.5oz per gal to work with Cid 2000 right out of the box
- Comes with 15 tips to run at different dilutions
- Maximize waterline cleaning

This offer is for single orders only. Separate orders do not accumulate to work towards this offer.

Recommended dilution for cleaning when system is not in use.

Contact your BVS sales representative for more information.

Best Veterinary Solutions, Inc
1716 Detroit St.
Ellsworth, IA 50075
(888) 378-4045

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325 Lakeland Dr NE
Willmar, MN 56201
(800) 533-1899

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