

# A COMPREHENSIVE APPROACH TO GUT HEALTH

Our Gut Health Triple Check program serves as a support system to **CLEAN UP** contaminants in feed and water prior to animal exposure, **BUILD UP** intestinal strength to reduce leaky gut and **KNOCK OUT** harmful pathogens for healthier livestock and poultry.



# CLEAN FEED AND WATER

## THE FIRST STEP FOR GUT HEALTH

### KEMIN CLEAN UP PRODUCTS

#### Ammo CURB® 65 & 75 Liquid and Dry

Buffered liquid and dry mold inhibitors for processed feed ingredients and livestock feeds.

#### ENDOX® Dry and ENDOX® 5X Concentrate

Complete antioxidant systems formulated specifically to stabilize final feeds and protect fat-soluble vitamins in concentrated mineral premixes.

#### KALLSIL™ Dry

An enhanced zeolite flow agent for broad-spectrum fungal metabolite control to improve feed quality.

#### KEM SAN® Liquid

A buffered liquid acidifier designed for the control of bacteria in drinking water.

#### Myco CURB® Liquid and Dry

Liquid and dry blends of buffered organic acids formulated to inhibit mold growth in livestock feeds.

#### NATUROX® Premium Liquid

A blend of natural-mixed tocopherols, emulsifiers and chelators to protect fats and oils from oxidation.

#### NATUROX® Plus Dry

A blend of natural-mixed tocopherols, emulsifiers and chelators designed to protect feed from oxidation.

#### PET-OX® Dry and PET-OX® Plus Dry

Non-ethoxyquin based dry antioxidant systems designed to protect premixes and finished feeds from oxidation.

#### RENDOX® Liquid Antioxidants

A line of research-backed liquid synthetic antioxidant systems designed to stabilize the diverse fats and oils used in feed formulations today.

#### Sal CURB® Liquid Antimicrobial

A blend of aqueous formaldehyde and organic acids used as an antimicrobial agent to keep animal feed and feed ingredients *Salmonella*-negative for up to 21 days. Formaldehyde has been shown to have antimicrobial properties against viruses in feed.<sup>1</sup>

1. Dee, S., Webb, P. FAD Preparedness & Mitigation Efforts Update. Minnesota Pork Congress 2019, Minneapolis, MN.

LEARN MORE AT

**1-800-752-2864**

**[kemin.com/feedquality](https://kemin.com/feedquality)**

**[kemin.com/guthealth](https://kemin.com/guthealth)**



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A healthy gut is key to optimal health and productivity. To ensure swine and poultry are set up for success, producers must manage contaminants in feed and water prior to animal exposure. As a part of the Kemin Gut Health Triple Check Program, Clean Up Solutions target specific profit-robbing contaminants – molds, mycotoxins, oxidized fats, pathogens, etc. – in your fat, grain, water and finished feed. The recognized authority in feed and water quality, Kemin helps you maintain maximum performance, regardless of the level of antibiotics used in your operation.



Times are changing for swine and poultry producers. With the ever-increasing drive to maximize efficiency, producers are discovering an entirely new set of management challenges which impact animal health and performance. When using antibiotics, feed and water problems can be disguised. However, in many of today's production systems, those previously low-priority concerns are now major issues.

## HERE'S WHY:

- When gut integrity is uncompromised, contaminants from feed and water move through the animal with little negative impact to the animal or its performance.
- However, if contaminants from feed and water get into the animal, and the gut is NOT healthy (due to strain from stressors like heat, feed changes, disease, etc.), contaminants have the ability to degrade the gut lining and potentially move into the blood stream, going systemic and causing major production and health issues.

## GRAIN Grain Storage Treatments

Preventing mold growth during feed processing and storage is essential to retaining grain quality and maintaining nutritional value of the final feed. Nothing can be done to improve the actual quality of grain in storage, so maintaining the quality at the time of harvest is the goal. Preventing mold growth not only helps preserve nutrients but can also help reduce the formation of harmful mycotoxins.

Kemin has developed cost-effective solutions for grain treatment and storage to prevent mold growth. Kemin is recognized in the feed industry for pioneering the use of blended organic acids to control mold and wild yeast growth. Over the years, Kemin has thoroughly tested, evaluated and perfected various combinations of organic acids and buffering compounds to arrive at cutting-edge products like Myco CURB® and Ammo CURB®.

Treating crops with a blended organic acid before short- and long-term storage helps prevent grain mold and bridging of the grain. Grain treated before loading into ships at port helps the grain arrive in better condition. Additionally, treated grain often receives a premium price when sold in international markets.

### KEMIN SOLUTIONS

#### Myco CURB® Liquid and Dry

Liquid and dry blends of buffered organic acids formulated to inhibit mold growth in livestock feeds.

#### Ammo CURB® 65 & 75 Liquid and Dry

Buffered liquid and dry mold inhibitors for processed feed ingredients and livestock feeds.





# FATS AND OILS

## Protect Your Lipids from Oxidation

When it comes to formulating diets, maximizing energy value and nutrient uptake are critical for animal performance. Unfortunately for swine and poultry nutritionists, lipid sources used in feed formulations today – animal fats, vegetable oils, blended fats and by-product oils – are not all created equal. These lipids vary not only in their physical and chemical properties, but also in their susceptibility to oxidation – a major cause of decreased fat quality.

Feeding oxidized fats can decrease feed palatability, destroy fat-soluble vitamins and reduce feed energy content, thereby negatively impacting performance of swine and poultry.<sup>1</sup> Increased exposure of animals to toxic contaminants like free radicals and peroxides (which are produced during oxidation), may also lead to internal oxidative stress, negative gut health implications and immunity challenges for the animal.

To assist producers in maximizing the value of their fats and oils, Kemin has developed research-backed natural and synthetic antioxidant systems specifically designed for different fats, oils and complete feeds. Kemin antioxidant systems contain synergistic blends of antioxidants to absorb free radicals, metal chelators to bind metal ions and oil-based carrier to ensure optimal homogeneity in the fat or feed matrix.

### KEMIN SOLUTIONS

#### RENDOX® Liquid Antioxidants

A line of research-backed liquid synthetic antioxidant systems designed to stabilize the diverse fats and oils used in feed formulations today.

#### NATUROX® Premium Liquid

A blend of natural-mixed tocopherols, emulsifiers and chelators to protect fats and oils from oxidation.

#### KN-50 IP Liquid

A natural, tocopherol-based liquid antioxidant suitable for use in organic production systems.

#### ENDOX® Dry and ENDOX® 5X Concentrate

Complete antioxidant systems formulated specifically to stabilize final feeds and protect fat-soluble vitamins in concentrated mineral premixes.

1. Hung, Y.T., et al. 2017. Peroxidized lipids reduce growth performance of poultry and swine: A meta-analysis. Animal Feed Science and Technology, 231:47-58.

# WATER

## Clean Water Means Improved Profitability

Did you know water is the most essential component of an animal's diet? Good water quality is essential to animal health and performance but is an often-overlooked management element. With the reduction or removal of antibiotics in swine and poultry production, water quality is now taking on an increasingly valuable role. Providing clean drinking water, through the elimination of bacteria and other pathogens, should be a priority for today's producers.

Water is involved in almost all aspects of animal metabolism. A clean, safe water supply is a necessity for healthy animals. Water can be easily contaminated by pathogens, including *Salmonella*, *Escherichia coli*, *Pasteurella*, *Streptococcus* and *Clostridium*, which can compromise animal health and performance.

Our Kemin water treatment solution helps lower the pH of drinking water. Lowering the water pH, makes a more unsuitable environment for pathogens to grow and survive. Acids are categorized as either bacteriostatic – which means they inhibit bacteria growth – or bactericidal – meaning they kill bacteria. When selecting an acid, it is crucial to ensure the acid has the ability to permeate the bacterial cell wall to kill the bacteria. The one-two punch of killing and inhibiting gives you a broader spectrum of protection and a more effective antimicrobial solution for your animal health and performance.

### KEMIN SOLUTION

#### KEM SAN® Liquid Antimicrobial

Designed specifically for pathogen control in livestock and poultry water, KEM SAN® Liquid Antimicrobial is a unique blend of organic acids which provide a broad spectrum of pathogen control.





## FINISHED FEED

Safeguarding feed quality starts when raw materials arrive at the feed mill and continues through manufacturing and storage. Nutritionists carefully formulate diets to meet animal growth and performance requirements and rely on the feed mill to supply the highest quality ingredients. But, after all the feed ingredients are measured and mixed together, the real challenge to feed quality begins.

The act of grinding grain exposes all the starch and sugars to mold and other contaminants. Then we add protein, vitamins and minerals to make a nutritionally complete diet for the bird or the pig – but this also makes a complete diet for microbes. The heat, moisture and pressure of pelleting reduces microbial load in the pelleted feed, however once you convey that feed through a dirty auger or load it into a contaminated bin or truck, the mold growth starts all over again. Despite pelleting's ability to improve the digestibility of feed, it cannot destroy feed contaminants like mycotoxins and may promote oxidation of fats and oils, as well as increase vitamin susceptibility to oxidation.

Moisture in feed bins, mold in conveyers, hardy mycotoxins and old, oxidized feed lodged in the corner of feed pans all conspire to impact feed integrity. To maintain the nutritional value of feed, enhance feed biosecurity, prolong feed shelf-life and save on costs, producers must look at a comprehensive program of feed storage enhancers, fat and oil stabilizers, antimicrobials, flow-agents and more.

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## Customer Laboratory Services at Kemin

At Kemin, it is our mission to work in partnership with our customers to fulfill their needs and meet their expectations. The technical expertise of Kemin staff and our rigorous quality assurance program – which includes testing of incoming and outgoing materials – helps Kemin serve our customers. Kemin goes one step further by offering a specialized Customer Laboratory Services (CLS) team dedicated to meet each of our customer's unique needs.

Kemin CLS staff are available to identify problem areas and confirm product efficacy for customers throughout all phases of the identification, implementation and usage process. Our dedicated analytical laboratory team can provide testing for potentially harmful agents like mold and mycotoxins and share valuable knowledge to enable our customers to improve quality and overall performance. These services include:

- Evaluating new suppliers
- Assessing current ingredient quality
- Quantifying pathogens
- Recommending solutions for feed quality
- Verifying product application rates

For swine and poultry customers concerned about quality and nutritional value of feed ingredients, Kemin CLS is here for you. Our CLS team offers testing services for the following analyses of common profit-robbers in feeds:

- Molds
- Mycotoxins
- Lipid Oxidation
- *Salmonella* prevalence

Along with your Kemin Key Account Manager, CLS can help you design and execute a project to identify potential feed quality challenges in your operation. After CLS analyzes your samples, a summary report will be generated with interpretation of the results and a final recommendation to address your concerns.

