Sal CURB®

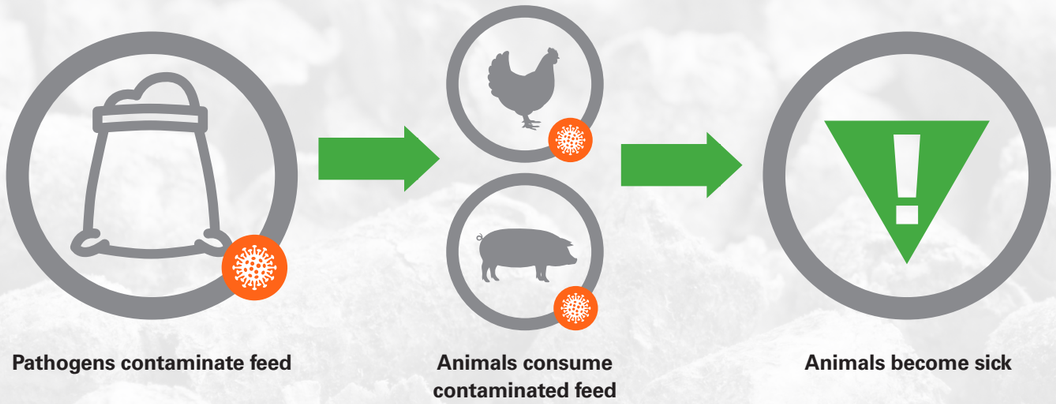
SAFETY / EFFICACY / ACCURACY

KEMIN


# INCORPORATE THE ULTIMATE FEED BIOSECURITY PRODUCT.

# FEED IS A PROVEN DISEASE TRANSMISSION ROUTE.

**Feed mills are built to do what they do best: produce feed. But pathogen control within a feed mill is a more complex issue.** This is largely due to the nature of the business — many people enter and leave the premises, there is no continuous flow movement and there is complex equipment that makes it difficult to clean. Unfortunately, this means once a pathogen is introduced into a feed mill, it can contaminate subsequent batches of feed and other ingredients on site. **That's just one reason why your comprehensive biosecurity program must include feed.**

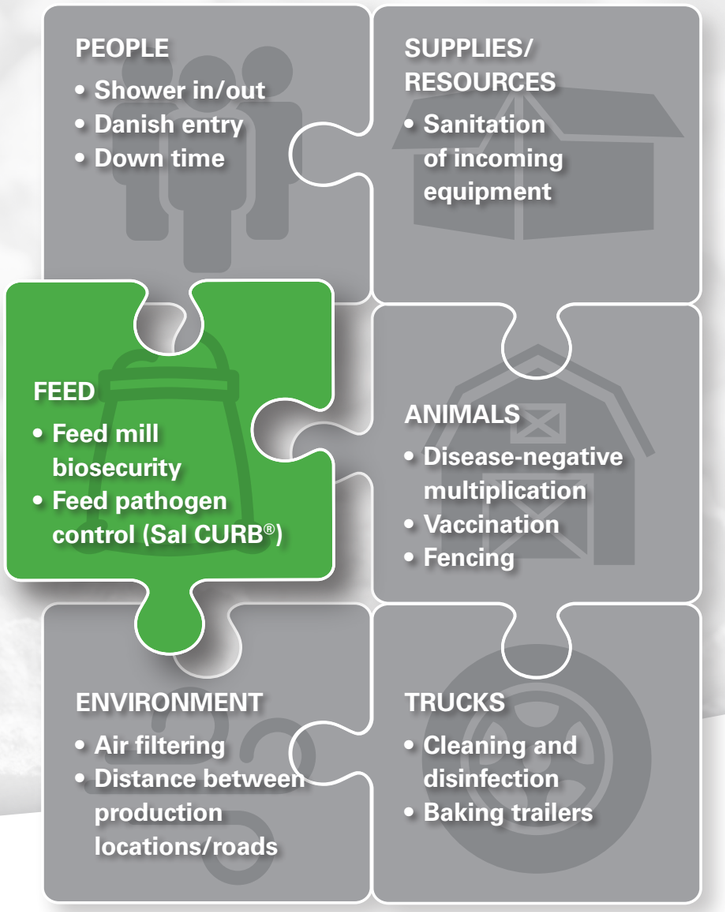


Pathogens contaminate feed

Animals consume contaminated feed

Animals become sick

## KEY BIOSECURITY COMPONENTS




### THE IMPORTANCE OF PATHOGEN CONTROL

**Once a pathogen enters a feed mill, it is almost impossible to eliminate it.[1]**

## CASES OF DISEASE TRANSMISSION THROUGH FEED

***Figure 1:*** *Critical pathogens confirmed to survive and remain infective in feed for long periods of time.*

### *Salmonella* transmission through feed

**1960s**

Health officials concerned about transmission of *Salmonella* through feed.[2]

**1991-2010**

Studies confirmed the risk of feed transmission of *Salmonella* and potential risks to food safety.[3,4]

### PEDv transmission through feed

**2013**

PEDv outbreak in the U.S. led to the loss of over 8 million pigs within the first year.

**2014-2015**

Case study found feed correlated to PEDv outbreak.[5,6,7]

### Critical viruses and foreign animal diseases (FADs) remain infective in feed

**2018**

ASFv outbreak led to the loss of about 40% of the Chinese swine population within the first year.

**2018**

ASFv, SVA, PRRSv and other viruses showed survival in feed and feed ingredients under transpacific shipment.[8]

**2020**

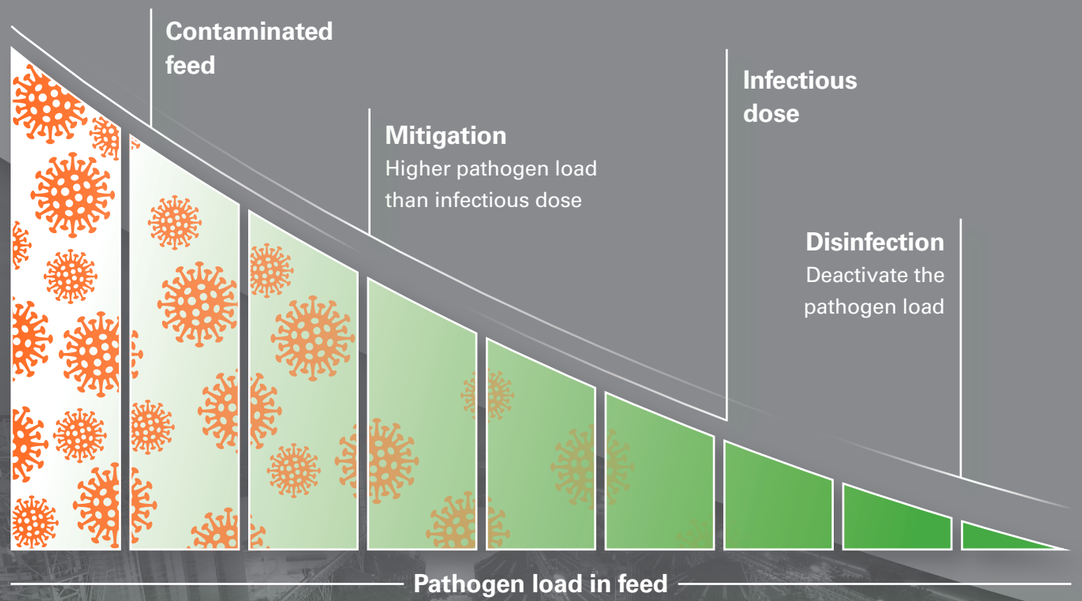
Critical viruses are amongst the hardiest — ASFv, SVA (surrogate for FMDv), PRv, PSv (surrogate for SVDv) and PEDv.[9]

# ANTIMICROBIAL BENEFITS VARY FROM PRODUCT TO PRODUCT.

### Understanding mitigation vs. disinfection

Research demonstrated that the infectious dose — the minimum amount of virus needed to infect a pig — of African Swine Fever virus (ASFv) is significantly lowered with repeated exposures to contaminated feed.[10,11] So, even if a minimal amount of virus is present in feed, the sheer number of times a pig is exposed to that feed makes it likely the pig will contract the virus. This concept holds true with an array of pathogens that have the potential to impact your operation.

This is why high-efficacy products are crucial in feed biosecurity. They can exert a "disinfection effect," bringing the pathogen load in feed below the infectious dose. On the other hand, some products might exert some level of "mitigation effect," only reducing the pathogen load in feed, not necessarily below the infectious dose.




**THE LEVEL OF PATHOGEN CONTAMINATION IS RARELY KNOWN, SO HIGH-EFFICACY PRODUCTS ARE CRUCIAL.**

### Selecting science-based products for the highest efficacy

The market has become crowded with feed antimicrobial products. Antimicrobial efficacy is a moving target — it depends on a number of variables: the matrix being treated, the product's active chemical and its dose, and the pathogen and its infectious dose.

High-efficacy products are those that exert a feed disinfection effect, that have been **extensively tested**, with a **large number of supporting studies** evaluating **multiple pathogens in various matrices** and with **different methods** — such as PCR, virus isolation or natural feeding models.[12]

Ensuring an antimicrobial solution checks these boxes will help decision makers distinguish between products and select what works best in their feed biosecurity programs.

# Sal CURB® IS THE ULTIMATE FEED BIOSECURITY PRODUCT.

Sal CURB is an antimicrobial solution that maintains the *Salmonella*-negative status of complete feeds and feed ingredients for up to 21 days. By using a blend of aqueous formaldehyde 37% solution and propionic acid — known to eliminate mold and pathogens — Sal CURB plays an important role in reducing feed biosecurity risks. What's more, formaldehyde is approved for use in poultry and livestock feeds and feed ingredients by the U.S. Food and Drug Administration (21 CFR 573.460) and has been regulated since 1996.

Kemin has spent more than 25 years testing Sal CURB in various models against existing and emerging pathogens. **Sal CURB is the most tested, trusted and cost-effective feed antimicrobial on the market today.**

**6.5 LB. PER TON OF COMPLETE FEED**

**IBC CONTAINERS AND BULK DELIVERIES**

# KEMIN: THE INDUSTRY'S MOST COMPREHENSIVE PATHOGEN CONTROL PROGRAM

For more than two decades, Kemin has offered Sal CURB® as part of a **comprehensive program** to help customers manage their production-wide pathogen load. Since the launch of Sal CURB, the Kemin **commitment to the safety of people, animals and the environment** has been unwavering. In fact, Kemin has expanded its services and investments to bring more value to customers.

Today, **Sal CURB remains the most effective feed antimicrobial** used in biosecurity programs. In this era of global trade and ever-increasing biosecurity risks, both effective pathogen control solutions and a commitment to safety are crucial, and Kemin has you covered.

## APPLICATION EQUIPMENT SUPPORT

Our application equipment support extends beyond site-specific system design and fabrication — it also involves installation, on-site guidance on operation and safe handling, and exceptional maintenance services.

## SAFETY AND REGULATORY SUPPORT

Backed by third-party Certified Safety Professionals®, our experts provide situational-based training and support to meet regulatory requirements. Monitoring programs at installation and during scheduled audits assure formaldehyde levels remain within limits.

Certified Safety Professional® is a registered trademark of Board of Certified Safety Professionals, Inc., Indianapolis, Indiana.

## SCHEDULED AUDITS

During our scheduled audits, a mill expert will inspect your mill and application system to assure a safe working environment and optimally-functioning equipment.

## EXCEPTIONAL SERVICE

Kemin Customer Laboratory Services, remote tank monitoring and a dedicated Pathogen Control Team are all part of our commitment to exceptional service.

## LEADING EDGE RESEARCH

Kemin spearheads industry-relevant studies with credible research entities, and we conduct customer trials answering specific questions through our testing and pilot laboratory.

## EXTENSIVE RESEARCH TIMELINE OF KEMIN PATHOGEN CONTROL SOLUTIONS

**2000-2014**

***Salmonella***

10+ studies documenting the efficacy of **Sal CURB®** against *Salmonella*.[13]

**2014**

**FMDv/CSFv**

Study with surrogates for FMDv and CSFv detected no virus in **Sal CURB**-treated feed.[15]

**2014**

**PEDv**

No evidence of PEDv infection was observed in pigs fed **Sal CURB**-treated diets.[14]

**2015**

**PEDv**

Transmission of PEDv was prevented with **Sal CURB** treatment.[17]

**2015**

**FMD/CSFv**

18 different feed ingredient samples treated with **Sal CURB** remained PEDv-negative.[16]

**2016**

**PEDv**

In a transoceanic shipping model, feed ingredients treated with **Sal CURB** remained PEDv-negative.[18]

**2019**

**PEDv/SVA/PRRSv**

No evidence of PEDv, SVA or PRRSv infection was observed in piglets fed **Sal CURB** treated diets.[19]

**2020**

**ASFv**

**Sal CURB** effectively controlled ASFv in feed. Kemin acquires related U.S. patent application.[20]

**2022**

**FMD**

Transmission of FMD through feed was prevented with **Sal CURB** treatment.[21]

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**kemin.com/salcurb**

## INCORPORATE THE ULTIMATE FEED BIOSECURITY PRODUCT INTO YOUR PROGRAM TODAY.

Visit **kemin.com/salcurb** or contact your Kemin representative for more information about consistent, tested, trusted Sal CURB.

KEMIN® | PATHOGEN CONTROL


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