

# FAQ (Frequently Asked Questions)



## **Sal CURB® ASF Liquid Antimicrobial**

Sal CURB® ASF Liquid Antimicrobial is a blend of aqueous formaldehyde and propionic acid. Sal CURB maintains *Salmonella*-negative status of complete feeds and feed ingredients for up to 21 days and controls mold in feeds or feed ingredients.

### **How does Sal CURB work?**

The active antimicrobial ingredient in Sal CURB is formaldehyde. Formaldehyde is found naturally in our environment. It is a highly volatile gas, which has a high affinity for water (#1) or protein (#2). When water is not present, formaldehyde will readily attach to proteins through cross-links with their primary amine groups. Once the formaldehyde binds to the proteins in the feed, it cannot release and is no longer free to bind to anything else.

Just like all living organisms, every pathogen has a lipo-protein membrane or cell membrane. When pathogens are in the presence of formaldehyde, the formaldehyde will seek out and attach to the pathogen's lipo-protein membrane. After attached, due to its affinity to water, the formaldehyde will begin to draw moisture out of the pathogen leading to desiccation and death.

### **How long does formaldehyde emit from feed?**

Internal research conducted by Kemin has shown that with good application and proper mixing, the majority of cross-linking or binding happens within the first 13-15 minutes, leaving little free formaldehyde available to emit from the feed.<sup>1</sup> Between 2-24 hours feed stops releasing formaldehyde as by this time the formaldehyde has completely bound to the proteins in the feed.

### **Is Sal CURB treated feed safe to touch?**

Feed which have been treated with Sal CURB is safe to handle. Formaldehyde is included at less than 0.1% in the feed and is below any levels that would cause harm. Additionally, due to the product being bound to the proteins present in the feed, there is no "residue" on the feed to worry about. However, as common good management practices it is recommended to never touch feed with bare hands due to general safety and feed biosecurity concerns.

### **Is the dust from Sal CURB treated feed dangerous?**

Kemin always recommends protecting yourself from dust when working around feed. Similar to touching feed, the level of formaldehyde and binding characteristics render Sal CURB treated feed as no more dangerous than dust from non-treated feed. As previously mentioned, feed dust contains many other hazards and breathing in feed dust whether treated with formaldehyde or not, should always be prevented.

### **Why is formaldehyde listed on the feed label?**

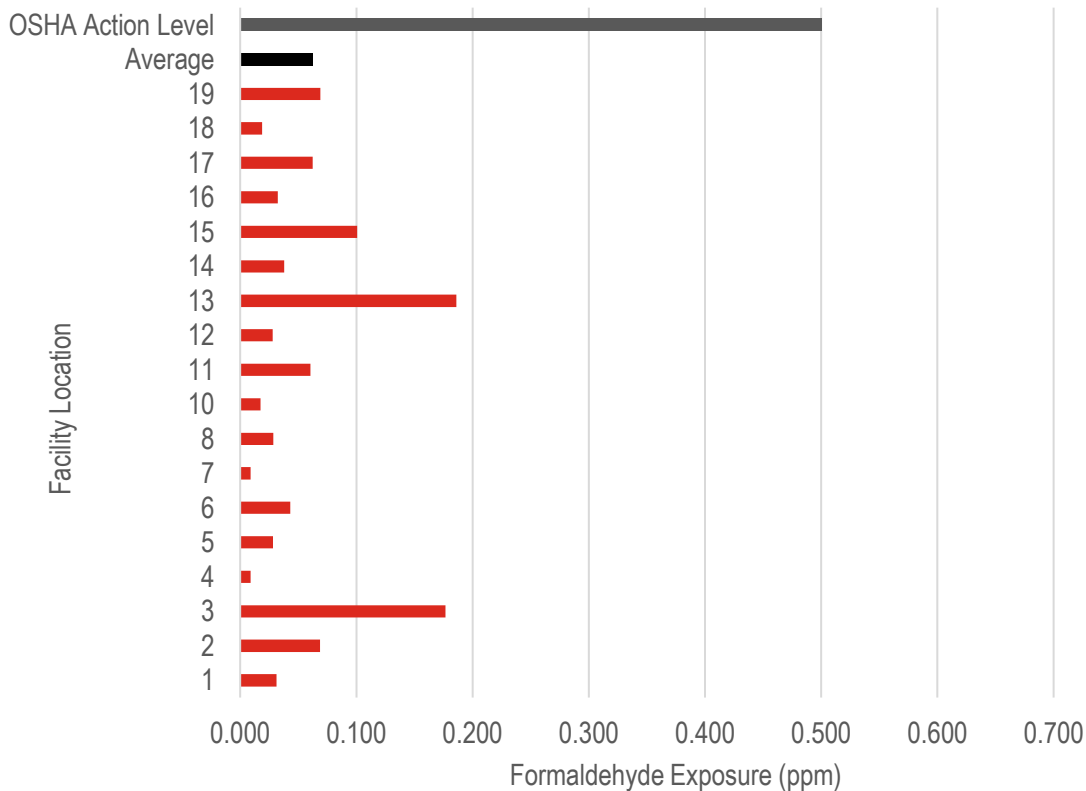
Feed is regulated by the United States Food and Drug Administration (FDA). Feed labeling guidelines, addressed in Part 501 of 21 CFR, require all feed labels to contain information describing the feed product and any details necessary for the safe and effective use of the feed. 21 CFR 573.460 requires treated feed or feed ingredients to be labeled with the statement, "Treated with formaldehyde to maintain feed *Salmonella* negative. Use within 21 days."

### **Is it safe for the animal to eat Sal CURB treated feed? What about the safety of the people eating meat from an animal fed Sal CURB treated feed?**

Kemin is dedicated to providing feed biosecurity solutions which are both effective and safe for animals. With proper application of Sal CURB to the feed, the formaldehyde is bound to the feed and not free when the feed is consumed by the animal. As an FDA approved feed ingredient, formaldehyde has been tested for animal, feed and food safety when applied in an appropriate manner.

### Formaldehyde is listed as a carcinogen<sup>1</sup>, why is that?

Research in rats has shown that high levels of exposure to formaldehyde over prolonged periods of time can lead to the development of cancerous cells in the nose of the animal. To protect humans from high level, long-term exposure, the United States Occupational Safety and Health Administration (OSHA) sets standards on the safe levels of exposure to formaldehyde and has three employee exposure levels. The permissible exposure limit (PEL) is 0.75 ppm over an 8-hour time weighted average; whereas, the action level, the lowest level, is set at 0.5 ppm. The PEL is the level of exposure established as the highest level of exposure an employee may be exposed to, without incurring the risk of adverse health effects.<sup>2</sup> To ensure worker safety, Kemin works to monitor air quality in mills handling Sal CURB. Employee exposure levels for customers handling Sal CURB are shown below in Figure 1, with the OSHA Action level included for reference. The exposure levels indicated on the graph represents the average of each employee exposure at each location. The average exposure for Sal CURB customers is 0.063 ppm. This level is well below the regulations set forth by OSHA.



**Figure 1.** Mean employee exposure to formaldehyde at facilities handling Sal CURB® ASF liquid antimicrobial.<sup>3</sup>

#### References

1. National Research Council. *Review of the Formaldehyde Assessment in the National Toxicology Program 12th Report on Carcinogens*. The National Academies Press. Washington, DC. 2014.
2. Occupational Safety and Health Administration. Standard Interpretation October 6, 1995. [https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=24470](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=24470)
3. Kemin Internal Data.