

## **Poultry farmers often overlook biofilm growing in watering system**

*By the Technical Team, Ziggity Systems, Inc.,  
101 Industrial Parkway East, Middlebury, Indiana 46540, USA*

A threat to broiler flocks that many poultry farmers overlook is the presence of biofilm in the watering system.

Bacteria create a sticky, nutrient rich biofilm when they attach to a solid surface in water. Biofilm attracts additional bacteria, as well as anything else in the water, and it rapidly becomes an active colony of pathogens. The bacteria feed off the biofilm and any other nutrients in the water. The result: enclosed watering systems designed to keep birds healthier turn into the instruments delivering pathogen rich water.

Enclosed watering systems operate on low pressure, producing no turbulence that can breakup this buildup. As a result, a producer can deliver hygienic water to the poultry house and yet the watering system gives contaminated water to the birds. As the birds drink, bacteria enter their 41.1-degree C (106-degree F) digestive tracts. This environment acts like an incubator. The diseases fostered by this contamination can severely challenge a flock and hinder performance.

Biofilm also can inhibit the effectiveness of the drinker itself by coating internal drinker parts, hindering the way they work. This can cause the drinkers to leak. The leakage results in wet litter conditions and ammonia releases — an additional health threat to the flock.

Many producers use their watering system to give flocks vitamins and medications. Vitamin interventions usually use glucose as a base. Medical interventions often use powdered milk as a medium. These organic substances

will coat the walls of the watering system's pipes and provide bacteria in the biofilm all nutrients they need to thrive.

Producers can determine the scope of biofilm contamination in their operations by taking apart a drinker and looking at the parts. Installing a clear, transparent pipe at the end of the water line will help farmers monitor their systems for organic buildup.

Producers commonly will introduce chlorine or other sanitizing agents into the system to kill bacteria. This practice will produce hygienic water, but it does not kill bacteria embedded in biofilm. Nor does it break up the biofilm. The bacterial load in the water will quickly return to the pre-sanitized level. In 24 hours at 32 degrees C (90 degrees F), a single E. coli organism multiplies into trillions of E. coli.

To combat biofilm, producers must find a way to break it up. A regular schedule of flushing with 1.5 to 3.0 Bars (20 to 40 psi.) pressure will dislodge biofilm.

An additional and highly effective tool for eliminating biofilm is the use of a hydrogen peroxide-based cleaner. Properly formulated, hydrogen peroxide is a powerful oxidizing agent. The oxidizing action scrubs the interior of the pipe clean of biofilm, making the system ready for flushing.

An added benefit: hydrogen peroxide breaks down into water and oxygen, producing no environmental hazard. Additionally, it does not harm the birds or impact the taste of the water. Sanitizing agents, such as chlorine, can alter the water's taste to the point where the birds will not drink, hurting the feed conversion rate.

Enclosed watering systems make a regular flushing schedule easy with the bypass valves on flush-through water regulators. Ziggity Systems recommends flushing:

- Immediately after any intervention of medication.
- One minute for every 30.3 meters (100 feet) of pipe length.
- Daily but at least once a week.
- More than once a day during warm weather.

Warm weather encourages microorganism colonization and increases reproduction as water temperature rises. High-pressure flushing not only prevents biofilm from forming but also flushes out tepid water and replaces it with cooler water that is less hospitable to microorganism growth.

Producers can take much of the labor out of flushing lines by installing automatic flushing equipment. Sensors that detect when the water temperature exceeds a certain point will trigger the equipment to flush.

Biofilm can pose a serious threat to broiler flocks. A little vigilance on the part of the poultry farmer can go a long way in reducing the threat of biofilm and keep the watering system clean.

*Ziggity Systems, Inc. is the only manufacturer 100 percent focused on poultry watering for improved performance. For more information, write Ziggity Systems, Inc. at 101 Industrial Parkway, P.O. Box 1169, Middlebury, Indiana 46540-1169 USA, call +1 574.825.5849, fax +1 574.825.7674, or visit its Web site at [www.ziggity.com](http://www.ziggity.com).*

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