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PROCESSING TIP . . .

POST-CHILL DIP TANKS ARE GAINING POPULARITY

The USDA and CDC are extremely concerned that *Salmonella* prevalence is increasing nationwide and the number of people becoming ill as the result of ingesting *Salmonella* is not decreasing at a rate that is considered acceptable by USDA. For example, *Salmonella* prevalence nationwide was 7.5 % in the year 2000. However, since that time, the national prevalence has increased to approximately 22 % in 2005. Similarly, the number of processing plants that are failing the *Salmonella* performance standard has increased from 3.6 (2000) to 11.7 % (2003). Poultry plants throughout the U.S. have made Herculean efforts in implementing intervention strategies to control *Salmonella*; nevertheless, the numbers are still increasing.

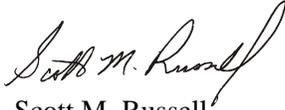
Traditional approaches to controlling *Salmonella* have included application of chlorine to all equipment rinses along the processing line. Companies generally use chlorine as an intervention to the inside/outside bird washer (IOBW); however, a comprehensive research study conducted by Northcutt et al. (2005) clearly demonstrated that adding chlorine to the IOBW has absolutely no impact on aerobic plate counts, *Escherichia coli* counts, *Salmonella* prevalence or *Campylobacter* counts on carcasses. A variety of chemicals have been added to the online-reprocessing system (OLR) including trisodium phosphate, acidified sodium chlorite, peracetic acid, chlorine dioxide, a mixture of hydrochloric, citric, and phosphoric acid, cetylpyridinium chloride, and electrolyzed oxidative acidic water. Although most of these systems are excellent at lowering bacterial numbers, they are not usually sufficient by themselves to reduce *Salmonella* to the acceptable level (<23%) if the flocks are highly contaminated. The chiller has also been an excellent means of reducing bacterial numbers and controlling *Salmonella* prevalence. Chlorine, chlorine dioxide, peracetic acid, and monochloramine have all been used in the chill systems in the U.S. Using an intervention strategy in the chiller is ideal because of the extensive contact time (45 minutes to 6 h-aging chillers).

Although many of these interventions have been effective in the past when used collectively throughout the process, heavy contamination of flocks with *Salmonella* because of changes in weather, disease conditions, or other factors, has resulted in failures to meet the standard. Thus, many poultry processors are now experimenting with post-chill dip systems. These systems are advantageous in that the chickens are as clean as they will be throughout the process and the ability of any given chemical to

PUTTING KNOWLEDGE TO WORK

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contact bacteria on the surface of the skin without interference from organic material is highest at this point. The chemicals that are being used include acidified sodium chlorite, peracetic acid, a mixture of hydrochloric, citric, and phosphoric acid, chlorine dioxide, and electrolyzed oxidative acidic water. These dip tanks vary from 50 to 100 gallons to much larger (5,000 to 10,000) gallon pre-chiller type tanks. Likewise, the contact time used by these poultry companies varies from 8 seconds to 30 minutes. The results from these studies have been promising and plants are finding that the interventions throughout the plant, combined with a post-chill dip system can be effective for lowering *Salmonella* to acceptable levels.



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References: Northcutt, J. K., D. P. Smith, M. T. Musgrove, K. D. Ingram, and A. Hinton, Jr., 2005. Microbiological impact of spray washing broiler carcasses using different chlorine concentrations and water temperatures. *Poultry Science* 84:1648-1652.

“Your local County Extension Agent is a source of more information on this subject.”