

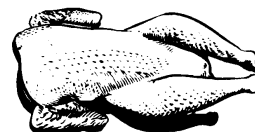


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## **PROCESSING TIP . . .**

### **SALMONELLA INTERVENTION STRATEGIES AND TESTING METHODS DIFFER GREATLY BETWEEN THE U.S. AND EUROPE-**

#### **WHAT ARE THE IMPLICATIONS?**

Countries that produce poultry on a large scale have evolved different methods of production, processing, and testing especially with regard to controlling and testing for *Salmonella*. The implications of these differences will be discussed.

#### **Production differences:**

In the U.S., companies are limited as to the types of interventions they may use to control *Salmonella* in poultry during breeding, hatching, and growout. These limitations are placed on the industry by economic factors, the U.S. Food and Drug Administration, and the sheer scale of production. For example in Europe, some countries test all breeder flocks for *Salmonella* and destroy any breeder flock that is found to be positive. In this way, they have significantly reduced *Salmonella* to 3-6% on birds coming into the processing facility. This approach is impossible in the U.S., as we produce twice as much poultry in Athens, GA, than is produced in Sweden, where these practices are common. Some countries in Europe use competitive exclusion (CE) to prevent *Salmonella* colonization of baby chicks. This approach is illegal in the U.S. because the bacterial cultures used to inoculate chicks (which occupy the attachment sites in the intestine and produce by-products that kill *Salmonella*) are undefined (the particular species used are not specifically identified). *Salmonella* vaccines are available in the U.S., but are often cost prohibitive. Because of these limitations, the U.S. poultry industry has placed much more emphasis on eliminating *Salmonella* in the processing plant, whereas in Europe, all of the effort to eliminate *Salmonella* is concentrated on the breeding and growout operations.

#### **Processing differences:**

In the U.S., over 99% of companies use immersion chilling systems. In Europe, air chilling is most commonly used. This is important because immersion chilling is by-far the most effective intervention tool available for poultry processors. In Europe, no chemicals are used to reduce *Salmonella* during processing, including chlorine. What happens when a flock that is contaminated with *Salmonella* enters the plant or what happens when the interventions used in

#### **PUTTING KNOWLEDGE TO WORK**

the field breakdown? In a word, nothing. The E.U. does not have any *Salmonella* regulations for poultry carcasses. The E.U. considers *Salmonella* on carcasses to be a sanitation indicator, not a food safety issue (Dr. Nelson Cox, USDA-ARS).

### **Sampling differences:**

In the U.S., the USDA-FSIS inspectors rinse a chicken with 400 mL of sterile buffered peptone water (whole carcass rinse). In the EU, they take a 25-gram neck skin composite sample from 3 carcasses and pool them. Cox et al. (2008) conducted a study to the methods of the U.S. and E.U. These researchers found that both methods are fairly equivalent for detecting *Salmonella* but that neither is sensitive enough to be considered perfect. For example, on many carcasses, the neck skin method picked up the *Salmonella*, but none was found in the carcass rinse for that carcass and in other cases, the reverse occurred. Based on this study, both methods would need to be used together to really get a good idea of actual prevalence. It is important to note that in some countries around the world, in particular for exported product, the test method is completely different. The chicken skin is sterilized using a blow-torch or iodine solution, then the skin is removed using sterile tweezers and a sample of deep breast muscle is taken and tested for *Salmonella*. It is interesting that *Salmonella* is never found using this technique, allowing the company/country to boldly state that they do not have any *Salmonella* on their poultry. This is misleading and causes great confusion. By this testing method, a company could say that their chicken is sterile, which is of course, impossible. Meanwhile, the USDA-FSIS is forcing companies in the U.S. that are in Category 2 or 3 to post their *Salmonella* prevalence, names, addresses, and USDA Plant Numbers (P-numbers) on the internet for the world to see.

### **Implications**

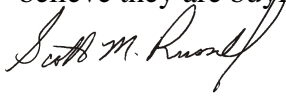
Poultry companies in this country are placed in a very difficult situation. They are required to use chemicals in the plants to lower *Salmonella* to acceptable levels for the USDA. They do an excellent job in this regard. However, because they use chemicals, they cannot export to Europe. Moreover, they cannot use cost effective measures such as CE to control *Salmonella* during growout because they are too expensive or are against the law due to FDA regulations. Even though they effectively lower *Salmonella* to 7.5% nationwide on post-chill carcasses, this is not acceptable to countries that have a “zero tolerance” for *Salmonella* regulation for imported poultry, which is based on an inaccurate testing method. To add to the difficulty, now the companies that are in Category 2 or 3 of the *Salmonella* performance standard must have their *Salmonella* data posted on the internet, which eliminates their exportation to “zero tolerance” countries.

### **Considerations**

An extremely important question that must be answered is, what are the Europeans getting for the incredible expenditure of effort and money trying to eliminate *Salmonella* from the breeders, hatchery, and growout operation? For example, what impact does this effort have on human salmonellosis? Cox et al. (2008) reported that the total number of people who have salmonellosis is far greater (42.8 per 100,000 people in Sweden versus the U.S. where it is 14.9 per 100,000 people) in a country where extraordinarily expensive measures are used to eliminate *Salmonella* from the flocks prior to processing.

There should be an effort by leaders of these countries to use sound scientific principles to come together and agree on compatible methods for eliminating and testing for *Salmonella*. There is no logical reason why a method used in the field for many years in Europe to eliminate *Salmonella* from the flock (competitive exclusion) without any adverse effects, cannot be used in

the U.S. This causes great confusion for companies that operate globally and for consumers who believe they are buying “*Salmonella* free” chicken.



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References:

Cox, N. A., L. J. Richardson, J. A. Cason, R. J. Buhr, D. P. Smith, P. F. Cray, and M. P. Doyle, 2008. Comparison of neck skin versus whole carcass rinse for prevalence of *Salmonella* and *E. coli* counts recovered from broiler carcasses. Presented at the U.S. Poultry and Egg Association Exposition, Atlanta, GA.

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