

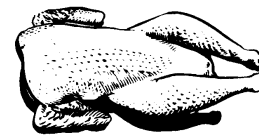


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**Cooperative Extension Service**

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## **PROCESSING TIP . . .**

### **WILL ONLINE REPROCESSING BECOME EXTINCT?**

According to an excellent review of the history of online reprocessing by Dr. Stan Bailey of the USDA-Agricultural Research Service (ARS), approximately 0.5 to 1% of processed broilers require reprocessing. This percentage equates to 45 to 90 million carcasses per year. Prior to 1989, the USDA-FSIS would allow a fecally contaminated carcass to be inspection passed if the part that had feces on it was trimmed from the carcass. In 1989, the Code of Federal Regulations was amended such that, under the supervision of a USDA inspector, reprocessing treatments including trimming, vacuuming, washing, or a combination were allowed. If internal contamination was present or treatments other than trimming were to be used, then the entire carcass must be washed with water containing 20 ppm chlorine (Bailey, 2006). After the new regulation went into effect, Blankenship reevaluated offline reprocessing in 1993 and found that inspection passed carcasses were microbiologically indistinguishable from fecally contaminated and manually reprocessed (offline reprocessed) carcasses with aerobic plate counts (APC) of 3.66 and 3.52, respectively, *E. coli* counts of 1.71 and 1.37, respectively, and *Salmonella* prevalence of 54.6 and 59.8%, respectively. These data indicate that poultry processors were able to take fecally contaminated carcasses and manually wash and sanitize them such that they were microbiologically equivalent to carcasses that were inspection passed with no fecal contamination. In the same year, Dr. Amy Waldroup, while on faculty at the University of Arkansas, conducted a study on manually reprocessed broilers and found that, although some variability was noted between plants, *Salmonella* prevalence and numbers were not different for inspection passed broilers when compared to fecally contaminated and manually reprocessed broilers. Dr. Waldroup also reported that *Campylobacter* numbers on manually reprocessed broilers were the same as or, in some cases, lower than those on inspection passed broilers. In 1997, Dr. Dan Fletcher of the University of Georgia conducted a landmark study that demonstrated that if broilers were processed using an online reprocessing system instead of manually reprocessing (washing the carcasses by hand with chlorinated water) the broilers, no differences could be observed in APC, *Salmonella*, or *Campylobacter* numbers. Dr. Fletcher concluded that online reprocessing of visually contaminated carcasses could greatly reduce the number of carcasses being subjected to offline reprocessing without negatively impacting bacterial counts and, specifically, *Salmonella* and *Campylobacter*. This helped to usher in the new era of online reprocessing. When companies began using online reprocessing (OLR) systems, although the OLR chemicals were expensive, the companies were able to justify the cost of the OLR system because they were not spending as much on labor to manually reprocess the chickens. Likewise, they do not have to deal with labor issues related to those individuals such as absenteeism,

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

repetitive movement injuries and the like.

This begs the question, how well do online reprocessing systems work? A company funded study by Alcide, Kemp and others in 2001 found that acidified sodium chlorite (Sanova, now sold by Ecolab) performed exceedingly well. The researchers reported that fecally contaminated carcasses that were treated with Sanova had significantly lower microbial levels than those that were fecally contaminated and manually reprocessed (Bailey, 2006). In fact, *E. coli* and *Campylobacter* were reduced by 1.78 and 1.75  $\log_{10}$  when online reprocessed over and above the amount reduced by manual reprocessing, and *Salmonella* prevalence was 21.6% less for the online processed carcasses. **These data suggest that online reprocessing is far superior to offline manual reprocessing. Moreover, the online reprocessed chickens were microbiologically superior to inspection passed carcasses.** This is a huge incentive for USDA-FSIS to encourage the use of online reprocessing.

What factors may be responsible for enabling online reprocessing to be so superior to offline manual reprocessing? With offline reprocessing, only chlorinated water is used. Chlorinated water is insufficient to penetrate the biofilms on the surface of the chicken and, in general, the “higher tech” chemistries are superior to chlorine with regard to bacterial killing power and their ability to remain active on the surface of the carcass; whereas chlorine becomes inactive as soon as it contacts the skin of the chicken. Another very important factor is that the USDA-FSIS requires that salvaged carcasses remain in the salvage area until inspected before they are released to the chiller. Usually, carcasses are stored in a warm area and the time required for inspectors to come to the salvage area and inspect the carcasses may be between 30 and 45 minutes, allowing bacteria on the surface of the chicken to multiply during that time. The reasons listed above are often used for dissuading a processor from using manual reprocessing, along with the labor expense associated with the employees required to manually reprocess the chickens.

It can be concluded that these systems have been scientifically demonstrated to be equal to or significantly better than offline reprocessing because this was the criteria used for their approval by USDA-FSIS. This begs a very important question, “If it is not broken, why fix it?” On April 3, 2007, the USDA-FSIS issued a letter to the companies that supply online reprocessing chemicals. The letter is a severe warning sign that the bar has been raised. In the future, for each company to achieve approval for the use of their chemistry in an online reprocessing capacity, they must prove **that carcasses that were fecally contaminated and went through the OLR system are microbiologically equivalent to or better than carcasses that were inspection passed that went through the OLR system.** This is completely different than requiring that online reprocessing systems be able to reduce bacteria on fecally contaminated carcasses to a level that is equal to or better than a carcass that was inspection passed. This is very unlikely to be accomplished because of a common tenet in microbiology: junk in equals junk out. If the OLR is expected to reduce bacterial levels by 1  $\log_{10}$  and the OLR is working as expected, then how can carcasses that start with higher bacterial levels (fecally contaminated carcasses) become equal to the inspection passed carcasses? It is likely that very few of the companies that supply OLR chemistries to the poultry industry will be able to achieve the new requirement. In reviewing data from over 2,700 carcasses that were processed using a variety of OLR systems in numerous poultry plants, a chilling conclusion can be drawn. **The new regulations by the USDA-FSIS may effectively shut down the use of OLR systems nationwide. Also, the new rule completely ignores the original purpose for OLR systems in the first place which was to make fecally contaminated carcasses microbiologically equivalent to those that are inspection passed.** If the USDA-FSIS, continues along this path, OLR systems will likely become a thing of the past.

For additional information:

**Bailey, J. S., 2006.** Reprocessing of fecal contaminated carcasses and the use of antimicrobials.  
[http://www.fsis.usda.gov/PDF/Slides\\_022306\\_SBailey2.pdf](http://www.fsis.usda.gov/PDF/Slides_022306_SBailey2.pdf)

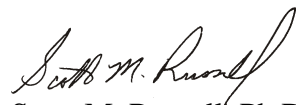
**Blankenship, L. C., N. A. Cox, S.E. Craven, A. J. Mercuri, R. L. Wilson, 1975.**  
Comparison of the microbiological quality of inspection-passed and fecal contamination-condemned broiler carcasses. Journal of Food Science 40 (6), 1236–1238.

**Blankenship, L.C., J.S. Bailey, N. A. Cox, M. T. Musgrove, M. E. Berrang, J. L. Wilson, M. J. Rose, S. K. Dua, 1993.** Broiler Carcass Reprocessing, A Further evaluation. J. Food Prot. 56:983-985.

**Kemp G. K., M. L. Guerra, and K. R. Schneider, 2001.** Continuous online processing of fecal- and ingesta-contaminated poultry carcasses using an acidified sodium chlorite antimicrobial intervention. J. Food Prot. 64(6):807-12.

**Fletcher, D. L., E. W. Craig and J. W. Arnold, 1997.** An evaluation of on-line reprocessing” on visual contamination and microbiological quality of broilers. J. Appl. Poult. Res., 6: 436-442.

**Waldroup, A. L., B. M. Rathgeber, and R. E. Hierholzer, 1993.** Effects of reprocessing on microbiological quality of commercial prechill broiler carcasses. J. Appl. Res. 2(2): 111-116.



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