

## Module 4b: Microbiological Sampling—Salmonella

### Script

The final rule FSIS establishes the pathogen reduction performance standards for *Salmonella*, which complement the process control performance criteria for fecal contamination and *E. coli* testing.

Product contamination by *Salmonella* is affected by the amount of fecal contamination, the condition of incoming animals, and cross contamination among carcasses during the slaughter process and further processing. Under HACCP, establishments are expected to implement controls that address and reduce the risk of harmful bacterial contamination. The *Salmonella* pathogen reduction performance standards will help FSIS and industry to observe the cumulative effects in reducing harmful bacteria through HACCP controls.

You might be wondering what the differences are between *Salmonella* testing and *E. coli* testing. Although there are some common aspects of the testing programs, there are two major differences. First, with *Salmonella* testing performance standards are set for industry. Performance standards are regulatory requirements, enforceable by FSIS. When HACCP is implemented, establishments must consistently meet the *Salmonella* performance standards as a condition of maintaining inspection. For *E. coli* testing, performance criteria are used by the plant to indicate how well sanitary dressing controls to prevent contamination are working. These criteria, by themselves, are not enforceable regulatory standards. The criteria are intended to aid slaughter establishments in achieving results similar to those already achieved by a large majority of slaughter facilities in the U. S.

A second difference is who collects the sample. You remember that plant employees must collect carcass samples for *E. coli* testing. For *Salmonella* testing FSIS inspectors will collect *both* carcass and ground product samples.

FSIS has selected *Salmonella* for microbiological testing for four reasons. First, it's the most common bacterial cause of foodborne illness. Second, FSIS baseline data show that *Salmonella* lives in the intestinal tract of a variety of mammals and birds. It occurs often enough to be detected and monitored. Third, current methodologies can recover *Salmonella* from a variety of meat and poultry products. And, finally, intervention strategies aimed at reducing *Salmonella* on raw product should be effective against other pathogens.

The *Salmonella* standards in the regulations were based on a national baseline study conducted by the Agency. FSIS believes all establishments can meet, or do better than, the current baseline prevalence for *Salmonella* contamination by implementing process controls that prevent contamination, and by using food safety technologies and procedures to remove contamination.

FSIS requires that beef, swine, chicken, and turkey carcasses are sampled for *Salmonella* testing. Ground products, which consist of ground beef, fresh pork sausage, and ground chicken and turkey, are also sampled.

Sponge sampling is conducted on beef, swine, and turkey. Sponging sites are the same as those used for *E. coli* sampling. Recall that for beef the sample sites are the flank, the brisket, and the rump. For swine, they're the belly, ham, and jowl. And for turkey, the two sample sites are the back and the thigh. Chickens are sampled using the whole bird rinse. A ground sample consists of 25 grams of the ground product.

Because *Salmonella* is more likely to be present on raw, ground, or comminuted products than on the carcasses from which they're derived, raw, ground, or comminuted product is the focus of FSIS compliance testing in establishments that slaughter and produce raw ground product.

The *Salmonella* testing program will be implemented in two phases: a pre-implementation phase, followed by a compliance phase. During pre-implementation, FSIS will take about 250 samples from each establishment over a one-year period. Pre-implementation testing should be completed before the date performance standards are implemented in each establishment, that is, before the compliance phase begins.

Slaughter establishments and establishments producing raw, ground, and comminuted product must meet the *Salmonella* standard at the same time the establishment implements HACCP. HACCP implementation is based on establishment size. The large establishments will be under HACCP and under the *Salmonella* performance standard by January 1998.

This is how *Salmonella* testing will work. FSIS will sample each category of raw product on an unannounced basis according to a schedule. Each sample will be tested for *Salmonella*. The number of positive test results will be compared to the maximum number of positive results permitted by regulation for that product. *Salmonella* test results are reported differently than *E. coli* test results. *E. coli* test results were quantitative, that is, results were reported in specific numbers of bacterial colonies. *Salmonella* tests, however, only report the presence or absence of the organism, not the number of organisms. Any positive test result indicates *Salmonella* contamination is present.

As I said, the performance standards specify a maximum number of positive test results permitted in a specified number of samples for each species and category of raw product.

Here's how to use this table from the regulations. Consider steers and heifers. The performance standard is set at one percent. To meet the standard an establishment can have no more than one positive sample result out of every eighty-two carcasses sampled.

FSIS will keep records of *Salmonella* test results. Plant employees keep records of *E. coli* test results. Unlike *E. coli* test records, there's no moving window for *Salmonella* test results. In our example of steers and heifers, each set of eighty-two tests stands alone.

The pathogen reduction performance standard applies to establishments, not to individual products. Products are not tested to determine their disposition, but, rather, to measure the effectiveness of the process in limiting *Salmonella* contamination. If an establishment fails to meet the standard, it must take corrective actions to lower the incidence of *Salmonella* on all the product of that type it produces. The effectiveness of the corrective action is then measured by subsequent testing. Another positive test result would show that the corrective action wasn't effective. A negative result would show that it was.

If an establishment continues to fail to meet the product performance standard, it must, ultimately, stop producing that product. We'll talk more about what happens when the plant fails to meet *Salmonella* performance standards in Session II of this training.

The *Salmonella* pathogen reduction standards are likely to change as new data becomes available. The test result targets currently reflect what is achievable using today's technology. FSIS will continue to collect data on *Salmonella* by conducting follow-up tests.