
Interpreting Results of Testing Carcasses for Generic (Biotype I) *E. coli*

Why is this testing done?

Generic, or Biotype I, *Escherichia coli* is found in the feces and intestinal tract of all meat and poultry animals. Finding this bacterium on a slaughtered and dressed carcass is viewed as an indication that fecal contamination has occurred. The USDA requires processors to do carcass testing for generic *E. coli* in order for them to evaluate the hygiene of the plant's slaughter and dressing procedures. If high levels of generic *E. coli* are detected, then the processor is to make adjustments to the slaughter/dressing process so that it is more sanitary.

When is this testing done?

For large plants, the testing is done at specified intervals, e.g. at least once for every 300 cattle, 1,000 swine, 22,000 chickens, or 3,000 turkeys. In very small plants, one carcass is tested per week from the 1st full week of June through August for a total of 13 samples. The testing is done on the species slaughtered in the largest numbers. If slaughter is not done during one of the weeks, the testing program is extended until 13 samples are obtained.

How is the testing done?

A sponge-sample is obtained with beef and pork carcasses at least 12 hours after slaughter. Three sites are sponged in a specified order (flank → brisket → round for beef, and belly → ham → jowl for pork). Chicken carcasses are sampled after the chill tank or at the last accessible point before packing/cut up using a rinse method. Turkey carcasses are sampled either by the sponge method or the rinse method. Specific directions can be found at Federal Register pages 38929 - 38943 of this link <http://www.fsis.usda.gov/OPPDE/rdad/FRPubs/93-016F.pdf> . After the samples are obtained they are shipped or delivered under refrigeration to a laboratory for analysis.

How do I interpret the results I get back from the laboratory?

If the test laboratory is familiar with carcass testing, the results will be reported back in terms of quantity of *E. coli* cells (colony-forming units, or CFU) per square centimeter of beef, pork, or turkey carcass sampled by sponging. For chickens or turkeys sampled by rinsing, the results will be in CFU per ml of sampling rinse.

Ask the lab to define what the detection limit of their method is. For beef and pork carcass sponges analyzed using the popular Petrifilm method, the detection limit is 0.083 CFU per square centimeter. So, when no cells are detected, the result will be stated as “< 0.083 CFU/cm²”.

There are no enforceable regulatory standards for an acceptable level of generic *E. coli*. The simplest approach to interpreting your results is to use the 80th and 98th percentile values suggested by USDA as boundaries for marginal (at or above 80th percentile but below 98th percentile) and unacceptable (at or above 98th percentile). These values are shown in the table below.

Class of Product	Unacceptable value (at or above 98 th percentile)	Marginal value (at or above 80 th percentile but below 98 th percentile)	No. of marginal samples allowed out of 13
Cattle carcasses (sponge-sample)	3.1 CFU/cm ²	0 CFU/cm ² (or detection limit)	3
Pork carcasses (sponge-sample)	400 CFU/cm ²	0.46 CFU/cm ²	3
Turkey carcasses (sponge-sample)	190 CFU/cm ²	7.8 CFU/cm ²	3
Chicken carcasses (rinse-samples)	390 CFU/cm ²	35 CFU/cm ²	3

For your last 13 samples, check and see if any had a result greater than the 98th percentile value. If so, you must take a corrective action in slaughter/dressing procedures. Be sure to document the corrective action. Possible corrective actions include adding an intervention treatment, changing carcass-washing procedures, slowing down line speed, re-training employees, or requiring more frequent knife/saw sterilization.

If you have more than 3 results in the marginal range, you must also take a corrective action and document it.

If you have 3 or fewer results in the marginal range, but the results show an increasing trend, you may also want to take a corrective action.

An alternative approach is to set up a Process Control Chart using your results from previous years. To get help with this procedure, contact your state's meat or food safety extension specialist.

State HACCP Contacts and Coordinators are listed here:

http://www.fsis.usda.gov/Contact_Us/State_HACCP_Contacts_&_Coordinators/

In Wisconsin the contact is: Dr. Steve Ingham, Extension Food Safety Specialist, Phone: (608) 265-4801; Fax: (608) 262-6872; scingham@factstaff.wisc.edu

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For more information contact: Steve Ingham, Extension Food Safety Specialist (608) 265-4801, scingham@wisc.edu August, 2007

The University of Wisconsin-Madison Center for Meat Process Validation provides science-based HACCP support to small meat processors in meeting state and federal mandates for safe food processing and handling. For more information on the Center contact Dr. Steve Ingham, 1605 Linden Drive, UW-Madison, Madison, WI 53706 (608) 265-4801 Email: scingham@wisc.edu

