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# Microbiological Monitoring Program

## SUPPLIERS, PROCESSING AND ENVIRONMENTAL VERIFICATION PROGRAM
## Est. 2574A

At **Wolverine Packing**, food safety is better controlled through the application of HACCP principles and GMPs. In the context of HACCP and GMPs, microbial testing is a guide to the consistency of the application of appropriate procedures at our meat suppliers and in our processing plant.

**A. Suppliers and Processing Verification Program** includes testing for ***Generic E.Coli*** and ***Total Coliforms***. Most E.Coli are derived, directly or indirectly, from the rumen or the lower intestinal tract contents. For this reason, generic E.Coli is considered to be a specific indicator of potential fecal contamination during slaughter and dressing process. Increases in E.Coli during chilling, storage and distribution suggest that the meat has been subjected to conditions, which would also allow growth of these pathogens. Elevated numbers of coliforms are evidence that processing or unsatisfactory post-process contamination might have occurred, but the history of the product must be examined closely before the precise nature of the nature of the problem can be determined.

The verification program is conducted on a **quarterly basis (four times/year) per each supplier,** and on a **monthly basis to verify the process**. For **supplier verification** purpose, the composite sample is collected prior to entering fabrication, after package removal. For **process verification** purpose, the composite sample is collected after needle tenderizing step, from the main conveyer feeding the fabrication line.

Our **Beef** Suppliers Monitoring Program includes testing the raw material for *Non-pathogenic*, such as *Total Aerobic Counts* and ***Total Coliforms***. Most E.Coli are derived, directly or indirectly, from the rumen or the lower intestinal tract contents. For this reason, generic E.Coli is considered to be a specific indicator of potential fecal contamination during slaughter and dressing process. Increases in E.Coli during chilling, storage and distribution suggest that the meat has been subjected to conditions, which would also allow growth of these microorganisms. Elevated numbers of coliforms are evidence that processing or unsatisfactory post-process contamination might have occurred, but the history of the product must be examined closely before the precise nature of the nature of the problem can be determined.

| Test | Standard procedures | Upper specifications limits* | Materials & Methods |
|---|---|---|---|
| Total Aerobic Plate Count | AOAC # 990.12, USDA FSIS | < 10,000 cfu/g | 3M Petrifilms |
| Total Coliform Count | AOAC # 991.14, USDA FSIS | < 1,000 cfu/g | 3M Petrifilms |
| Total E.Coli Count | AOAC # 991.14, USDA FSIS | < 500 cfu/g | 3M Petrifilms |

***AMS** Microbial requirements for boneless beef

The verification program is conducted on a **quarterly basis per each supplier.** For this **supplier verification** purpose, a composite sample is collected through excision prior to entering storage and/or fabrication, at the receiving point.

Excision Sampling

1. Select samples by using surface excision method of sample and collect enough individual pieces from raw beef to make ~ 1 oz sample.

2. Cut off the beef raw material surface in a sanitary manner, avoiding cross-contamination. The goal is to collect samples from pieces of product taken from the original surface of the beef carcass. They are promptly sent to the lab, and refrigerated until tested (within 8 h post-collection).

Laboratory analysis: The composite samples should weigh at least 1 oz (~28g), and consists of slices placed together in an aseptic bag. A **11 g sample** will be randomly pulled of the collected sample, enriched and analyzed using 3M method for Total Plate Counts, generic E.Coli and Total coliforms. The tests are conducted in-house by our trained quality control personnel, and the results are documented and filed in our QC database.

These monitoring results and reports create a history database, which is shared with the suppliers, production and sanitation personnel, in an ongoing and effective collaboration meant to result in better and safer products.

**B. Environmental Testing:** In addition to the tests described above, an **ongoing microbial environmental sampling** program is conducted on a daily basis to verify the sanitation of the equipment (part of our SSOP program) and the effectiveness of our cleaning and sanitation procedures. Traditional environmental microbiological swabbing and the ATP bioluminescence test are performed daily for this purpose, from contact and non-contact surfaces in our processing areas.

| Test | Standard procedures | Defect tolerance | Description |
|---|---|---|---|
| Aerobic Plate Count | AOAC # 990.12, USDA FSIS | < 100 cfu/cm2 | Corrective actions required when TPC > 100 cfu/cm2 |
| Total Coliform Count | AOAC # 991.14, USDA FSIS | < 10 cfu/ cm2 | Corrective actions required when TCC > 10 cfu/cm2 |
| ATP Bioluminescence | NEOGEN | < 50 RLU - Pass<br>> 50 and < 300 RLU - Caution<br>> 300 RLU - Fail | Corrective actions required when RLU > 300 |

The tests are conducted in-house (Wolverine Packing Corporate Laboratory) by our trained quality control personnel, and the results are documented and filed.

Wolverines Packing laboratory is equipped with the necessary equipment and materials, in order to permit adequate testing of ingredients and finished products.
Our laboratory is evaluated quarterly for microbiological proficiency by Food Safety Net Services. Laboratory is located in the administrative area; it is completely isolated from the processing facilities. No unauthorized personnel are allowed in the laboratory.
The laboratory tests are performed by the following qualified personnel:

- *Steven Kakish,* BS of Food Science, MS of Food Science - Wayne State University.

The materials and solutions utilized in testing are stored and handled in a secure manner.