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## Microbiological Monitoring Program

### SUPPLIERS, PROCESSING AND ENVIRONMENTAL VERIFICATION PROGRAM Est. 2574B and 2574C

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

#### 1. Raw Materials Testing

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	< 50 cfu/g	3M Petrifilms
Total E.Coli Count	AOAC # 991.14, USDA FSIS	< 50 cfu/g	3M Petrifilms

\*AMS Microbial requirements for boneless beef

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.

#### 2. Finished Product Testing

Each production day, finished ground beef products are tested microbiologically in our in-house laboratory. Samples of finished product are randomly taken every day, and sent to the lab to be analyzed for the following microbiological characteristics:

Finished product test	Procedure	Defect tolerance	Description
Total Aerobic Plate Count	AOAC # 990.12, USDA FSIS	< 10,000 cfu/g	Corrective actions required when TPC > 10,000 cfu/g
Total Coliform Count	AOAC # 991.14, USDA FSIS	< 50 cfu/g	Corrective actions required when TCC > 50 cfu/g

The tests are conducted in-house by our trained quality control personnel, and the results are documented and filed in the QC database.

### 3. 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 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/cm <sup>2</sup>	Corrective actions required when TPC > 100 cfu/cm <sup>2</sup>
Total Coliform Count	AOAC # 991.14, USDA FSIS	< 10 cfu/ cm <sup>2</sup>	Corrective actions required when TCC > 10 cfu/cm <sup>2</sup>

The tests are conducted in-house 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.
- QC technicians.

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