Investigation of Canned Food Spoilage Incidents

SPOILAGE: THE PROCESS OF DECAYING

The primary reasoning behind spoilage diagnosis is to distinguish between post process contamination and insufficient thermal processing.

Spoilage diagnosis can only be completed with both inspectional and analytical evidence.

- Complementary:
  • Laboratory evidence may assist the CSI in determining the cause of spoilage.
  • Investigative evidence can provide assistance to the laboratory in determining the type of tests to perform.

- Analytical evidence includes identification of:
  - Gross container defects
  - Container seam/seal defects
  - Product appearance
  - Product chemical characteristics
    • pH, Water activity
  - Product microbiological test results
    • Identification of organism(s) and their growth characteristics

Normal and abnormal container appearances may help to diagnose type of spoilage.

- An abnormal container is a container with any signs of swelling or product leakage or any evidence that the contents of the unopened container may be spoiled
- Defective containers are severe dents near seams, gross seam defects, severe rust, etc.
- Need to separate to determine % in lot

Reference Material for examinations:

- FSIS Canning Reference Manual
  • FDA, Bacteriological Analytical Manual Chapter – Examination of Container Integrity (Glossary and References
  • Examination of Containers
    • Canned Foods
    • Glass
    • Flexible and Semi-rigid Containers
  • FSIS Microbiological Laboratory Guidebook

Microbiology_Laboratory_Guidebook--Chapter_10 (usda.gov)
Sample Submission to the FSIS Lab

- CSIs are to follow the specific instructions provided by the Western lab from the initial call
  - If the affected product is reprocessed or retained pending disposition by a PA, they still submit samples to the lab.
  - If the establishment decides to destroy the product, no further action is required by the CSI, except verifying the establishment properly documents and disposes of the product.
- CSIs are to complete and submit the following original forms with the product samples
  - FSIS Form 10,000-2, Laboratory Report;
  - FSIS Form 10,000-3, Canned Foods--Abnormal Containers; and
  - FSIS Form 7500-1 Canned Food Sample Reporting Form.
- CSIs send one copy of each form, and any additional information requested to:
  - The DO
  - The PDS canning team
- CSIs retain one copy of each form in the government office file
- Number of containers in the lot
- Total number of containers examined
- Product information, e.g., product name, container type, and code(s) lot breakdown
- Processing information, e.g., type of retort, process schedule, deviation noted, etc.
- Storage temperature
- Location where abnormalities were found, e.g., incubator, warehouse, in distribution
- The type and number of each type of container abnormality found
- Correlate with samples (lab must confirm inspectors observations). Swollen cans can change over time.

- Possible explanation for abnormal containers
- Location of each type of defect noted
- Use side seam as a marker or mark 12 o'clock position on container
- Location in lot where sampled container was taken

Affected Lot Disposition -

- Under-processing: below public health cook
  - Reprocess or destroy
- Process less than commercially sterile - above minimum health
  - Incubate and sort, determine pH
- Post-processing contamination; non-health hazard
  - Sort out swells/defects
  - Dud detection (sort out cans with little or no vacuum)

Link to the FSIS Directive 7530.2 Rev. 1:


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