Food Safety and Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

Finding and Assessing Scientific/Technical Materials

EIAO Course

Objectives

- Upon completion of this module you will be able to:
  - Locate scientific and technical resources
  - Identify the sections of a scientific paper
  - In given scenarios, evaluate and determine the adequacy of supporting documentation
  - In a given scientific article, determine what the article can support in a HACCP system

EIAO Internet Resources

- How to locate scientific and technical resources using the internet

FSIS & Other Government Websites

- AskFSIS
- Microbiology Laboratory Guidebook
- Small Plant News
- Compliance Guides Index
- FSIS Website – Thermometer Calibration
- FoodSafety.gov
- Food & Drug Administration
    - FDA Bad Bug Book
- Centers for Disease Control and Prevention

Scientific & Technical Research

- National Agriculture Library - DigiTop
- Journal of Food Protection
- NAL Catalog
- Food Safety Research Information Office
- PubMed
- Association of Official Analytical Chemists
  - AOAC Official Methods
  - Journal of AOAC
- Journal of Microbiological Methods

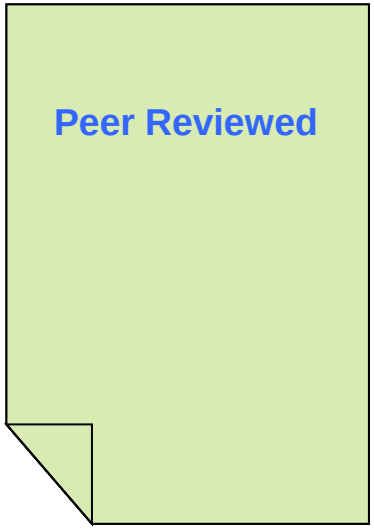
Academic Sources of Information

- International HACCP Alliance, TAMU
- University of Wisconsin – Center for Meat Process Validation
- Meat Science Extension - OSU
- Kansas State University – Thermometer Calibration Guide

Assessing Materials

Peer Reviewed or Refereed Journals:

- Articles are reviewed by other experts in the field to get their opinion
- Considered a reliable source of scientific or technical information



Format of a Scientific Paper

- **Summary or abstract** – gives a brief background to the topic/purpose. It describes the major findings and the implications of the findings in a concise manner
- **Introduction** – Presents background necessary to understand why the study will advance knowledge
  - Brief discussion on current published literature
  - Purpose of the study or problems investigated
  - Rationale for study approach/technique used

Format of a Scientific Paper -2

- **Materials and Methods** – Entity (what is) being studied; description of the study site; protocol for collecting data; and how the data was analyzed
- **Results** – Describes the experiments and documents the experiment outcomes
- **Discussion** – Analyzing and interpreting the data from the results section

Materials and Methods: Questions to Consider

- What products did the researchers study? Are they similar to the establishment's product characteristics?
- What hazards did the researchers study? Are they the same hazards identified in the hazard analysis?
- Can you identify which operational parameters were measured?

Materials and Methods: Questions to Consider -2

- Where were the measurements taken? Is the establishment taking measurements? At what locations?

- What were the operational parameters? Did any change during the research?

Results

- Describes the experiments and documents the experimental outcomes
- Logic of this section generally follows directly from that of the introduction
- Usually contains the bulk of tables and graphs

Discussion

- Analyzing and interpreting the data from the results section
- Relationship of findings to other findings in the field of study
- May provide guidance on appropriate applications of the research

Discussion: Questions to Consider

- Did the authors provide some guidelines as to the limitations of the research or any cautions on application of results?

- For example, were there some parameters that were controlled in the laboratory that differ in-plant? If so, have you considered if those apply to the process?

- If the parameters are different, what is the justification for doing so?

Other Questions to Consider

- How will the critical parameters of the study be applied to the actual production process?

- How does the establishment monitor that the critical parameters are being properly implemented? What records support the process?

EIAO Role in Assessing Scientific Articles

EIAO Role

- As an EIAO you are expected to be knowledgeable in interpreting scientific or technical support. You must evaluate the scientific support being used by the establishment

- You must be able to identify instances where the establishment may not be applying the scientific support appropriately to their process

EIAO Role –2

<u>The number one consideration is:</u>

- How is the establishment applying or using the information in their HACCP system?
- Does this application “make sense”?

Reading a Scientific Paper: Getting Started

- Supporting documentation may exist in various forms. There is no one size fits all
- There is no regulatory requirement for how documentation must be organized and appear on paper
- First consider and review in your mind what you know about the topic

Reading a Scientific Paper

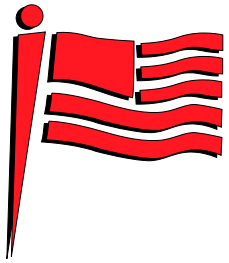
- Discuss the study with plant management in order to gain understanding of how the establishment is applying the study in their HACCP decision making
- Ask questions! (Remember GAD!!)
- How is the scientific support being used in the establishment? How are the critical parameters of the study applied to the establishment's production practices?

Assessing Scientific Support

- If the establishment is applying the parameters used in the study differently, is there justification or additional data to support doing something differently?
- Do production practices appear to make sense based on what is commonly known about hazards?
- Do observations made on the production floor raise a concern that the critical parameters are being properly implemented?

Assessing Scientific Support –2

- Do in-plant records exist to support what the plant is doing?
- What issues raise a “red flag” that a closer review of the establishment’s practices are needed?
- Is there evidence that the establishment does not have support for its food safety practices?



Scientific – Technical Information Workshop

- Work in your groups to discuss the scenario
- Be prepared to report out