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

• How to read a scientific or technical resource
  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

• **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

• 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

The number one consideration is:
• How is the establishment applying or using the information in their HACCP system?
• Does this application “make sense”?

EIAO Role
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

• 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

Questions?