

A Stakeholder” Approach to Teaching a “Farm to Fork” Case Study

Often in the news, we hear about outbreaks of illness caused by contaminated foods. One of the terms used is “HACCP,” or “Hazard Analysis of Critical Control Points.” The original supporters of HACCP, such as the U.S. Department of Agriculture, believed the system was a science-based approach, “farm to fork” strategy for protecting the nation’s food supply from the transmission of pathogens. (Become more informed by conducting an online keyword search of terms.)

Assign each student to take the role of a stakeholder in the issue of protecting the community from foodborne illness and the nation's food supply. Guide the students toward researching their own positions and, ideally, other stakeholders' positions. Research can be Internet- and library-based, but an excellent addition is for students to go into the community to learn of practitioners' views and experiences.

The focus of students' research is the problem: "How can our food supply be made safer?"

Motivate the students by identifying local cases of foodborne illness.

When the students' research is at a point where they have a firm grasp on the issues and on their stakeholder points of view, you may invite them to participate in a Food Safety Forum. Their goal would be to identify barriers and opportunities surrounding the issues and then to formulate recommendations. They would be charged with using group processes that enhance communication even as they share quite different points of view. Ultimately, they would attempt to come to consensus on solutions to the problem of making the nation's food supply safer."

Stakeholder roles may include:

- USDA inspectors
- Restaurant owners
- Meat and/or poultry industry owners whose food safety programs were proactive; i.e., who practiced an HACCP-type system before the government adopted the strategy.
- Meat and/or poultry industry owners whose food safety program was reactive; i.e., improving processes in response to USDA inspection findings .
- Farmers
- Consumer advocates
- Elected officials who favor industry
- Elected officials who favor consumer advocates
- Research scientists
- Families who have lost someone to hemolytic uremic syndrome
- Public health officers/epidemiologists
- Journalists
- Policymakers
- Importers of international foods
- Other possibilities, if needed: Veterinarians, accountants, transporters, secondary processors (e.g., frozen entrée producers).

The research and the forum phases are both most effective if all Stakeholders are viewed from the beginning as positive people with potentially valid points of view. This atmosphere will foster analytical and evaluative thinking more than a "good" versus "bad" approach.

The next section on Ideas for Multidisciplinary Collaboration may stimulate a wider study of Farm to Fork issues within your school.

Ideas for Multi-disciplinary Collaboration

Because the topic of Emerging and Re-emerging Infectious Diseases is inherently multidisciplinary, it lends itself well to an integrated teaching approach, involving a variety of colleagues and departments. Some high schools and colleges are looking for themes that tie their departments together while providing subject matter that enables teachers to align with their academic and occupational standards.

This section includes examples of concepts that could serve teachers who are looking for ways to integrate their departments with others and who enjoy a cooperative venture. Examples of disciplinary focuses may include, but not be limited to, the following:

Environmental technology: Research the EPA, OSHA, and DOT federal regulations concerning the management and disposal of medical waste, the protection of workers from bloodborne pathogens, and packaging and transport of biologic samples (which DOT refers to as "etiologic agents").

Biological Sciences: Compare characteristics of common foodborne pathogens, such as *E. coli* O157:H7, *E. coli* non-O157:H7; *Salmonella*, *Campylobacter*, and *Listeria monocytogenes*. Investigate genome-mapping status of each. Identify the Critical Control Points from Farm to Fork where pathogens may enter the process or grow in number.

Language Arts: 1) In the popular press and fiction, read and evaluate examples of fiction and nonfiction related to the topic of infectious disease. 2) Develop food safety handling procedures (e.g., training materials, posters, guidelines, standard operating procedures) for various audiences, using the Food Safety Code as the basis for the procedures.

Social Sciences: Survey peers on human behaviors that may put them at risk of exposure to pathogens.

History: Study historical patterns of infectious disease transmission, such as the theories of Jared Diamond in his Pulitzer Prize winning *Guns, Germs, and Steel - The Fates of Human Societies* (1997).

Economics and Business: Project the costs for a small business of developing and implementing an HACCP plan. Research economic and image consequences of contaminated food recalls.

Fine Arts: Explore the role of the visual and musical arts in moving audiences to action on issues. Create artistic messages that aim to protect people.

Government: Examine food safety decisions and public health support by the Executive branch and Congress.

Allied Health: Recognize the signs and symptoms of food poisoning and apply barrier nursing methods that prevent nosocomial (hospital-based) spread of infections.

Agriculture: Develop flow diagrams for food production processes on the farm level, identifying Critical Control Points where pathogens may enter or increase.

Mathematics: Devise ways to make small and large numbers comprehensible, such as the relative sizes of viruses, bacteria, and protozoa or the mathematical progression of pathogens as they multiply. Apply logic in an epidemiological investigation of an outbreak.

Multidisciplinary Teaching Opportunities and Emphases

Department	Examples of module concepts
Family and Consumer Sciences	Child safety Cross contamination Hygiene Restaurant code Safe food handling
Fine Arts	Risk communication via music, visual arts, drama, literature
Health and Physical Education	Chronic and acute illness Bloodborne disease precautions Health careers Hygiene Immune system Transmission
Language Arts	Persuasion Process writing Research Science writing Technical writing
Mathematics	Exponents Metrics Statistics
Science	ecology microbes health effects zoonoses, vectors
Social Sciences	Government Cultural traditions Economics History of disease Psychology Public policy/decisionmaking Public opinion surveying
Technology	Environmental sampling and monitoring GIS and GPS Regulatory compliance Worker safety