Relevance
The Centers for Disease Control and Prevention (CDC) estimate that foodborne diseases cause approximately 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths each year. Populations most vulnerable to foodborne disease include pregnant women, the elderly, the very young, and individuals with a chronic disease as well as those with weakened immune systems.

Foodborne diseases are linked to various bacterial, viral, and parasitic pathogens. According to information from the CDC, over 250 different types of foodborne diseases have been described. Common symptoms of foodborne disease include nausea, vomiting, diarrhea, abdominal cramping, fever, and headache. These symptoms are dependent on the type and amount of microbe ingested.

In 2010, the U.S. Department of Agriculture Economic Research Service estimated that the medical, productivity loss, and premature death costs related to two of the top five foodborne pathogens totaled over $3.0 billion annually. The specific foodborne pathogens used in this estimation included *Salmonella* and Shiga toxin producing *E. coli* O157. Foodborne disease is a costly problem.

More than half of all foodborne illnesses are attributed to improper handling of food prepared away from home. Because almost half of our food dollars is spent on food prepared outside the home, food safety is a top concern among consumers. Therefore, food safety education is a critical prevention component for reducing the risk for foodborne diseases.

Response
To meet the need for quality food safety education in Texas retail food establishments, the Food Protection Management (FPM) program, which consists of several components, was developed. The first component is the Certified Food Manager program. Using the curriculum *Food Safety: It’s Our Business*, this program is conducted at the county level by AgriLife Extension agents. The program’s educational lessons and activities focus on the following areas:

- enhanced use of temperature control measures in food service, such as thermometer use, time and temperature control, safe internal cooking and holding temperatures, thawing procedures, and general storage temperatures;

- increased adoption of proper hygiene and handwashing practices of food service employees and managers;

- increased adoption of practices to avoid cross-contamination, such as proper storage, washing, and sanitizing of utensils and equipment between use, and employee hygiene practices; and
increased adoption of pest management practices to keep insects, rodents, and other disease-causing pests under control.

The second component of the FPM program is the accredited food handler course, *Food Safety: It’s in Your Hands*. This two-hour course is offered by county AgriLife Extension agents and is targeted towards frontline food service workers. It focuses on reducing cross contamination and time/temperature abuse, as well as personal hygiene. The course is also available online at [http://foodsafetyonline.tamu.edu](http://foodsafetyonline.tamu.edu).

The third component of the FPM program is the Cottage Food courses. The first, *Cooking up a Cottage Food Business*, was created to help residents who prepare and sell specific foods from their unlicensed residential kitchen to do so properly and safely. The second course is the accredited Cottage Food-Food handler course, *Food Handlers for Cottage Food Businesses*.

Beginning January 1, 2014, the owner of a Cottage Food business is required to obtain a food handlers card from an accredited program. Our accredited course helps owners learn basic food safety practices and meets the requirement of the state for obtaining an accredited food handlers card. Both courses are available face-to-face as well as online at [http://foodsafetyonline.tamu.edu](http://foodsafetyonline.tamu.edu).

### Results

During 2014, 809 food service employees participated in the *Food Safety: It’s Our Business* Certified Food Manager program. An additional 3,213 individuals completed the *Food Safety: It’s in Your Hands* food handler’s program either face-to-face or online. Also during 2014, 511 individuals completed the *Cooking up a Cottage Food Business* and *Food Handlers for Cottage Food Businesses* courses online.

Program evaluations suggest that participants are significantly increasing their knowledge of basic food safety principles (pre vs. post), particularly in the areas of personal hygiene, maintaining proper temperature, and reducing cross-contamination.

FPM has a high rate of customer satisfaction. In 2014, participants rated the FPM program an average of 1.3 out of a possible score of 5 (a score of 1 = completely satisfied; a score of 5 = not at all satisfied). In addition, more than 58% of respondents identified FPM as their first exposure to Texas A&M AgriLife Extension Service, suggesting that this program is enabling AgriLife Extension to reach audiences that might otherwise not have the opportunity to benefit from Extension education programs.

*Educational programs of the Texas A&M AgriLife Extension Service are open to all people without regard to race, color, sex, religion, national origin, age, disability, genetic information, or veteran status. The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.*

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