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## Improving Food Safety Knowledge Through an Online Training Program

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## Improving Food Safety Knowledge Through an Online Training Program

### Abstract

Foodborne illness is a major public health concern in the U.S. The CDC estimates that approximately 48 million Americans become ill, 128,000 hospitalized, and 3,000 die of foodborne illnesses annually. Most of these illnesses are attributed to improper food handling. To meet the growing demand for food safety training, the Texas A&M AgriLife Extension Service developed an online course to educate food handlers in food safety best practices. Since 2008, over 7,200 food service workers have completed the online course, demonstrating that such a tool can be used to expand Extension's outreach to this important audience.

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## Introduction

Foodborne illness is a major public health concern in the United States. Estimates from the Centers for Disease Control (CDC) predict that approximately 48 million Americans become ill, 128,000 hospitalized, and 3,000 die of foodborne illnesses annually (Scallan et al., 2011). Economic costs of foodborne illness exceed \$77 billion annually, excluding costs to the food industry and public health agencies (Scharff, 2012).

Most foodborne illnesses in the U.S. are attributed to improper food handling, which includes foods consumed in retail establishments such as restaurants. This is significant because an estimated 48% of Americans' food dollars are spent on food prepared outside the home (USDA Economic Research Service, 2010). The National Restaurant Association estimates that there are 13.5 million employees working in restaurants in the U.S., the majority of which handle foods served to consumers (National Restaurant Association, 2014).

Despite the relatively high incidence of foodborne illness in the U.S., trend data indicates that progress is being made in reducing several foodborne infections. The CDC attributes the overall decline in many common foodborne illnesses to several key factors, including enhanced knowledge of preventative measures, cleaner slaughter methods, microbial testing, better inspections, and increased awareness

in food service establishments and homes of the risk of consuming undercooked ground beef (Scallan et al., 2011).

In order to reduce the risk of foodborne illness in retail establishments, many states require food service employees to complete an accredited food safety course and obtain what is often called a "food handler's card" before handling food served to the public. In Texas, which employs over 1 million food service workers (Texas Restaurant Association, 2013), accredited food handler programs must address the following topics:

- Foodborne illness,
- Good hygienic practices,
- Preventing contamination by employees,
- Cross contamination, and
- Time and temperature (Texas Department of Health and Human Services, 2013).

Extension educators have extensive experience in developing and providing food safety education to food service employees and those who work in food recovery (Dean et al., 2008; Dooley, Van Laanen, & Fletcher, 1999; Rajagopal, 2013; Gentry-Van Laanen, & Nies, 1995). While many programs are delivered in a face-to-face format, there is growing interest in using self-study methods, such as Web-based delivery, to enhance and expand outreach to Extension clientele (Green, 2012; Jayaratne, Harrison, & Bales, 2009). In addition, as the population grows and financial resources become constrained, it becomes imperative to explore ways that enable Extension professionals to maximize their reach without compromising the quality of their programs. As a result, the Texas A&M AgriLife Extension Service developed an online food handler safety course to educate Texas food handlers in food safety best practices. This article provides readers with an introduction to the online training, demonstrating how such a tool can be used to expand Extension's outreach to an important segment of the workforce.

## Program Development

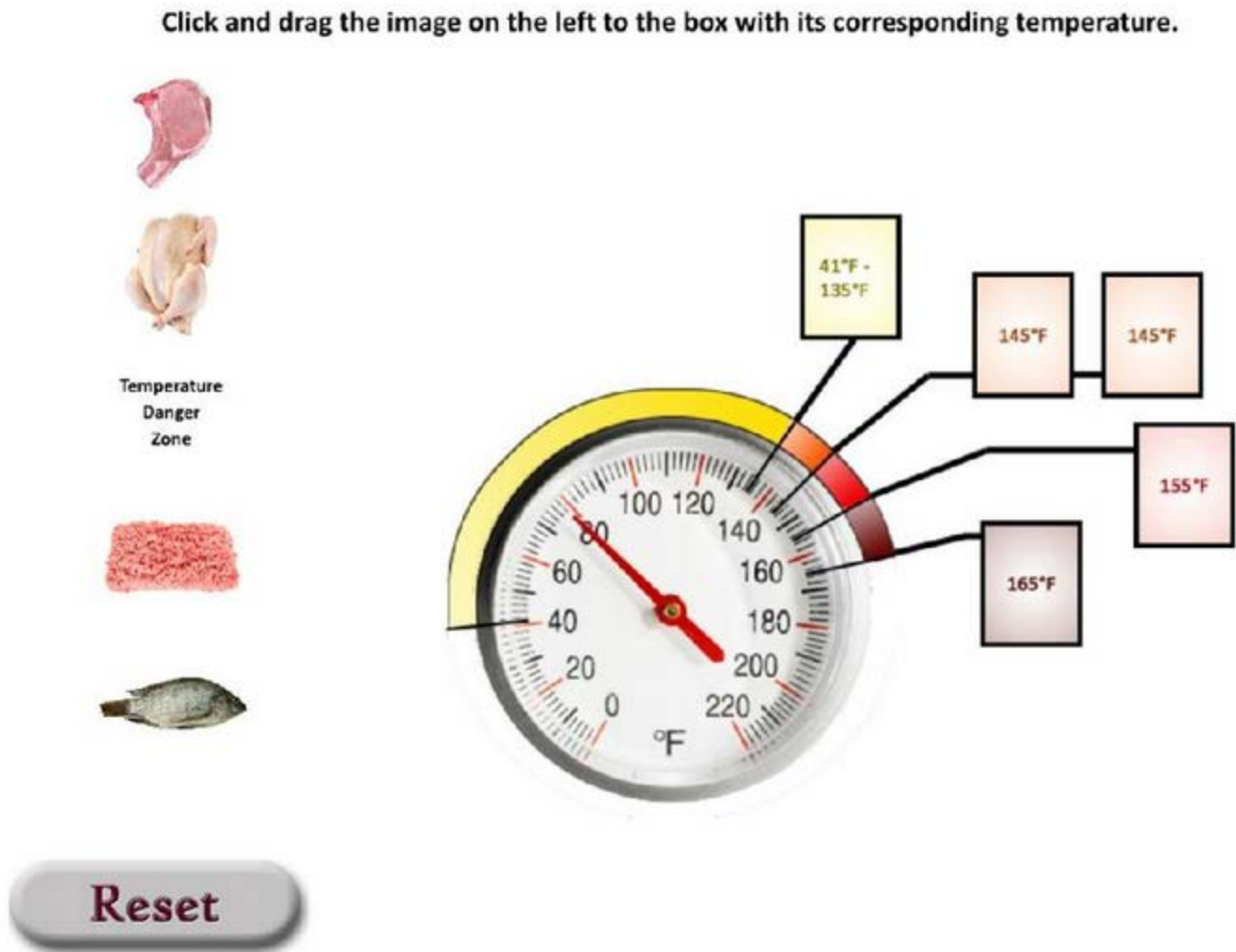
The food handler program (Food Safety: It's in Your Hands) was developed in response to Texas Senate Bill 552, which was passed in April 2008. The program was developed by Extension specialists, pilot tested in selected counties, and reviewed by local health inspectors prior to submission to the Texas Department of State Health Services (DSHS). The curriculum met the criteria established by DSHS and became accredited in May 2008. The course was initially offered by trained county Extension agents (Family and Consumer Sciences) in a face-to-face format, but later expanded to an online format, which made the program accessible to foodservice employees across the state.

The course addresses personal hygiene, time and temperature control of food, steps to prevent cross contamination, and cleanliness and sanitation, using scientific research and the Food and Drug Administration's Food Code (FDA, 2009). Within the course are interactive activities (see Figure 1 below) and handouts to help reinforce key concepts. The course is approximately 2 hours in length

and includes a 15-item pre- and post-test that allows program administrators to assess knowledge gained by participants.

**Figure 1.**

Time and Temperature Activity



The program is offered in an asynchronous format, meaning an individual can complete the course at any time. Upon successful completion, a traceable food handler's card is generated that can be printed by the participant. The course is offered at a reasonable price (\$15), and discounts are available for large groups. The Texas A&M Agrilife Extension Service has been marketing the program to large groups, such as school foodservice departments, and has added a feature that allows an individual (e.g., Food Service Director) to establish a group account. The group account enables the individual to track which employees have completed the course as well as their scores on the pre- and post-tests.

## Program Reach

Since 2008, more than 7,200 current and/or prospective food service employees have completed the online course, which is available in English, Spanish, and Chinese Mandarin. Participants have enrolled and completed the course from 168 out of the 254 counties in Texas. Moreover, a growing number of

food service employees from outside the state are completing the course. A recent analysis of participants' pre- and post-test scores over a 5-year period reveals statistically significant increases in participants' knowledge of the targeted food safety practices.

## Summary

The use of an online delivery method to enhance the knowledge of food safety best practices can be an effective way to increase program outreach to populations that otherwise might not access Extension learning opportunities. The growing number of food service employees completing the course from Texas and beyond demonstrates that such a tool can be used to expand Extension's outreach to an important segment of the workforce.

### For More Information

To learn more about Texas A&M AgriLife Extension Service's food handler safety course, go to <http://foodsafety.tamu.edu>, or e-mail Rebecca Dittmar at [rsdittmar@ag.tamu.edu](mailto:rsdittmar@ag.tamu.edu).

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