Reaching Consumers and the Food Industry with Effective Food Safety Messages

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Summary and Implications

The Food Safety Consortium (FSC) consumer Web site project continues to receive a significant number of site visits and be recognized for its work. More than 380,000 visitors have accessed the food safety Web site home page or one of its links over the past year. Visitors from 130 countries accessed our site and used our information while averaging 11 minutes per visit. Our online training lessons continue to be used. Forty thousand scores were recorded last year to bring the total number of scores to over 95,000 consumers have accessed and completed one of the four interactive food safety lessons.

The Hazard Analysis Critical Control Point (HACCP) demonstration Web site is being revised and will be re-launched as the HACCP Information Center. Sample HACCP materials for meat processing, apple cider processing, egg breaking facilities, and foodservice operations will be available on this Web site.

Introduction

1. Improve understanding of risks and responsible practices in relation to food and health through increased knowledge.
2. Maintain and enhance of Food Safety Consortium Web at http://www.foodsafety.iastate.edu.
3. Post research findings on the Consortium Web site as they become available on and link to http://www.extension.iastate.edu/foodsafety/.

Materials and Methods

Several new research projects evaluating HACCP systems in foodservice operations were conducted this past year. These projects specifically evaluated the extent of prerequisite programs and HACCP programs in school foodservice and restaurant operations.

School Foodservice Prerequisite Programs

A national random sample of school foodservice directors was surveyed to determine the extent of food safety prerequisite programs which are essential to the development of HACCP programs. Of the 1,169 questionnaires mailed, 414 questionnaires were returned for a response rate of 35.4%. Results indicated that 24% of centralized school foodservice operations (n=213) and 19% (n=193) of conventional foodservice operations had a HACCP program.

Twelve food safety practices were analyzed to evaluate underlying factors. Three factors were extracted using principal component factor analysis with varimax rotation: 1) measuring and recording safe food handling practices; 2) storing food properly; and 3) ensuring food safety. Multiple linear regression was conducted using the identified factors and school district and foodservice director characteristics as independent variables.

Restaurant HACCP

HACCP and food safety prerequisite programs were also evaluated in Iowa restaurant operations. A random sample of 800 restaurants was selected from the Iowa Department of Inspections and Appeals database. Of the 690 usable questionnaires, 131 were returned for a response rate of 19%. Approximately 8% of the restaurant managers indicated that they have a comprehensive HACCP plan.

Results and Discussion

Results of these research studies produced significant results that have been used for other research and education projects. In addition to these research projects, work has continued to disseminate research results and other food safety information to the public through several food safety Web sites.

School Foodservice Prerequisite Programs

Most school districts did not have a HACCP program or formal prerequisite programs. School foodservice directors were asked about ten prerequisite programs areas: food production, chemical control, cleaning/sanitation, equipment, facilities, specifications, supplier control, pest control, receiving/storage/ shipping, and training. In the HACCP area, only 22% of directors reported having a comprehensive HACCP plan and only 11% had a HACCP team. Only 28% indicated that they had food product flow charts. Standard operating procedures (SOPs) were implemented by a majority (92%) of school foodservice directors but only 43% had written SOPs for cleaning and sanitizing all equipment.

Varimax rotation identified four factors related to food safety: HACCP, SOPs, training, and storage. Multiple linear regression was done using the total sum and the sum of each factor as dependent variables and the school

foodservice directors' characteristics and district characteristics as independent variables. The models testing the relationship between the total score and the four factor scores and the school foodservice directors' characteristics were not significant. However, models testing the relationship between total score and four factors scores and the district characteristics were significant for over food safety procedures (F=13.14, P=.000) and one factor HACCP (F=14.65, P=.000). Both models had a positive relationship between the number of students and food safety procedures.

Furthermore, the number of students in a district and having an employee with primary responsibility for food safety were positively related to the number of food safety practices implemented. Only the education level of the school foodservice manager influenced food safety practices. Employees were identified as the biggest barrier to implementing additional food safety standard operating procedures.

Restaurant Prerequisite Programs

Restaurant managers also were asked about 10 prerequisite programs areas: food production, chemical control, cleaning/sanitation, equipment, facilities, specifications, supplier control, pest control, receiving/storage/ shipping, and training similar to the school study. Forty-seven percent of the restaurant managers reported they had written SOPs for equipment. Temperature monitoring was another area of improvement as the majority of operations did not have temperature equipment calibration schedules (67%) or temperature monitoring logs (77%). Overall, only 8% of managers reported having a HACCP plan.

Multiple linear regression was used to examine the relationships between the total practices score and the restaurant managers' characteristics and the restaurant characteristics. Model testing between the total practices score and the restaurant managers' characteristics were not significant. The model testing between the total practices score and the restaurant characteristics was significant (F=4.511, P=0.001). The significant variable was the restaurant who had an employee with primary responsibility for implementing and monitoring food safety practices (β=0.357, p<0.001). A similar result was found in school foodservice operations.

Overall, the results indicated that having an employee responsible for food safety was positively related to the number of food safety practices implemented. In addition, female managers and those with higher levels of education were more likely to have food safety programs implemented.

HACCP and Food Safety Training

As a result of these studies, the research team has continued work on developing new HACCP training materials. Complete training resources for foodservice operators, including sample hazard analysis guidelines, critical control point diagrams, standard operating procedures. These materials can be downloaded and are available http://www.iowahaccp.iastate.edu. This Web site has been redesigned, updated, and will be relaunched as the HACCP Information Center with updated materials for meat processors, apple cider processors, and egg breaking facilities. These materials complement the existing HACCP resources for small meat processors.

As part of the effort to improve foodservice prerequisite programs and complement the food safety Web site resources, food safety training sessions continue to be conducted with Iowa nutrition and health extension field specialists. All specialists are conducting ServSafe® and other food safety training workshops throughout the state using research materials developed by the research team which include Microsoft PowerPoint® presentations, marketing and promotion materials, and teaching resources. These resources have been updated for the 2001 FDA Food Code and have been distributed on CD-ROM and posted on the World Wide Web.

Fourteen ServSafe® training sessions have been done throughout Iowa for almost 300 participants this past year. The availability of these sessions has been integrated into another USDA funded project working to implement HACCP in 40 school districts across the state of Iowa.

The Consumer Control Point (CCP) Kitchen education program, based on HACCP principles, continues to be successful for marketing simple food safety messages to consumers. More than 60,000 bookmarks have been distributed to consumers this past year. Additionally, reprinting privileges have been requested from several organizations in the past year.

Other Food Safety Education Materials

Current Web site resources have been maintained for common foodborne pathogens, symptoms of foodborne illness, and other food safety information. Our partnership with the University of Guelph, Ontario, Canada, continues to provide daily international food safety news from newswires and scientific journals.

We provided people with information in various formats. The World Wide Web and print media enabled us to disseminate food safety information by providing access to links to HACCP, food law information and government agencies, on-going research from the Food Safety

Consortium, educational tools, such as Critical Control Point Kitchen, food safety news, descriptions of common foodborne pathogens, probable sources of foodborne illness, and seasonal food safety tips. Visitors have viewed this content more than 380,000 times during the past year and come from 130 countries.

The food irradiation section (http://www.extension.iastate.edu/foodsafety/rad/irradhome.html) has been updated with the latest information for consumers. This section includes a consumer friendly description of how it works, a visual depiction of the Iowa State University linear accelerator, a history of irradiation, commonly asked consumer questions, a glossary of terms, irradiation resources, and research findings. The research team has also provided a listing of companies working on food irradiation as interest peaked in irradiation equipment with the anthrax outbreak.

The Food Safety Project Web site has received several awards during the past year:

- Bronze award winner for World Wide Web Health Award for "one of the best health-based sites for consumers and professionals."
- Recommended for use in classrooms by the American Association for the Advancement of Science.
- Food irradiation information was recommended and included into the SciLinks program, a service of National Science Teachers Association.
- The Food Safety Lessons and foodborne pathogen information also was selected and included in the SciLinks program.
- Recognized as "One of the Top Food Safety Web Sites" from Restaurants and Institutions' Food Safety Update magazine.

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