

**V(A). Planned Program (Summary)**

**Program # 2**

**1. Name of the Planned Program**

Food Safety

Reporting on this Program

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	15%		15%	
703	Nutrition Education and Behavior	30%		20%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	15%		15%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	30%		30%	
723	Hazards to Human Health and Safety	0%		10%	
724	Healthy Lifestyle	10%		0%	
802	Human Development and Family Well-Being	0%		10%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	58.0	0.0	19.0	0.0
Actual Paid Professional	57.0	0.0	19.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
65297	0	565828	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
331704	0	4306	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
6228036	0	533596	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

• Develop new rapid methods for the surveillance, detection, isolation, and quantification of microbes and chemical residues in animals, plants, and food products. • Develop risk monitoring techniques to detect potential hazards in the distribution chain. • Validate the efficacy of techniques in controlling and eliminating microbial and chemical hazards. • Disseminate food safety and bio-security information through extension and research seminars, workshops, and resident and distance education programs, using a variety of media options and communication tools. • Offer safe food production, handling, and sanitation education to groups involved in all levels of food production and service. • Identify best management practices to prevent foodborne illness and to enhance the security of the food supply throughout the food chain. • Develop technology to reduce the hazards and improve the quality of animal food products, which will complement the development of HACCP programs by USDA. • Develop, complement, and maintain an aggressive technology transfer system that effectively communicates work about Food Safety to consumers, students, industry, government, and other scientific investigations.

### 2. Brief description of the target audience

• Growers and processors of agricultural commodities, commercial and non-commercial food service personnel, market and home gardeners, other food handlers, retail markets, consumers, and educator; • Families and individuals of all ages living in Kansas, including populations with limited resources; low literacy skills; varying ethnicities; disabilities, diseases, or impairments; and documented or identifiable health disparities; • Economic stakeholders, and policy and funding agencies; • Health care, education, and nutrition professionals; • K-State Research & Extension faculty and staff with responsibilities for food and/or nutrition; • Government; and • Consumer groups (i.e., STOP).

### 3. How was eXtension used?

eXtension was not used in this program

## V(E). Planned Program (Outputs)

### 1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	700	0	300	0

**2. Number of Patent Applications Submitted (Standard Research Output)**

**Patent Applications Submitted**

Year: 2013

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2013	Extension	Research	Total
Actual	0	1	1

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of rapid methods developed for the surveillance, detection, isolation, and quantification of microbes and chemical residues in animals, plants, and food products

Year	Actual
2013	1

**Output #2**

**Output Measure**

- Number of therapeutic, chemical, and physical treatments developed for animals and plants and their products to eliminate or reduce contamination with potential hazards

Year	Actual
2013	1

**Output #3**

**Output Measure**

- Number of ServSafe certification workshops

<b>Year</b>	<b>Actual</b>
2013	23

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Increase knowledge level and improve attitude of clientele in safe food production, handling, and sanitation programs; best management practices to prevent foodborne illness; and social, economic, and communications issues related to food safety and agricultural bio-security (Measured by number of participants increasing knowledge)
2	Increase adoption of recommended safe food handling practices at the individual, family, community, production, and supply system levels (Measured by number of participants in food service manager certification class who successfully complete the exam)
3	Reduce incidence of foodborne illness (Measured by number of foodservice facilities with trained employees)
4	Increase number of viable technologies to improve food safety (Measured by number of viable technologies developed or modified for the detection and characterization of food supply contamination from foodborne threats)
5	Increase understanding of the ecology of threats to food safety from microbial and chemical sources (Measured by number of students enrolled in Food Safety and Defense graduate certification)

## **Outcome #1**

### **1. Outcome Measures**

Increase knowledge level and improve attitude of clientele in safe food production, handling, and sanitation programs; best management practices to prevent foodborne illness; and social, economic, and communications issues related to food safety and agricultural bio-security (Measured by number of participants increasing knowledge)

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	52

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

The food industry requires a pool of individuals trained in food safety protection and defense to enter the workforce.

#### **What has been done**

The curriculum has been provided for educators to use.

#### **Results**

Curriculum results have been presented to the educators and researchers at the 2012 annual meeting of the National Center for Food Protection and Defense. Those results are being considered to structure for credit courses.

1. 25 students are enrolled In the Food Safety and Defense Graduate Certificate
2. 27 Interns are completing their internships

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

## **Outcome #2**

### **1. Outcome Measures**

Increase adoption of recommended safe food handling practices at the individual, family, community, production, and supply system levels (Measured by number of participants in food service manager certification class who successfully complete the exam)

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	305

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

The U.S. Centers for Disease Control and Prevention estimates that roughly one in six people in the U.S., about 48 million get sick, 128,000 are hospitalized and 3,000 die of foodborne illness each year.

#### **What has been done**

ServSafe Food Safety training was provided to foodservice managers, entry-level food handlers, and community organizations who provide food to the public. In 2013, our efforts resulted in over 300 contact hours of food safety education. In 2013, ServSafe® Food Safety Manager Classes reached more than 355 foodservice workers statewide. Also, 738 participants completed the ServSafe® Food Handler class. Twenty-eight percent of the participants in the ServSafe® Food Handler classes self-reported being Hispanic, Black/African American, or other minority group.

#### **Results**

These classes resulted in 305 foodservice employees receiving ServSafe® Food Protection Manager Certification. Participants indicated that they had increased knowledge and skills of best food safety practices. More than 90.5% of the participants in the ServSafe® Food Handlers classes indicated they plan to use what they learned at work and/or at home. Participants reported they intend to wash their hands, check food temperatures and use food thermometers more often, and to be more cautious of cross contamination and food left out at room temperature.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

**Outcome #3**

**1. Outcome Measures**

Reduce incidence of foodborne illness (Measured by number of foodservice facilities with trained employees)

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	127

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The U.S. Centers for Disease Control and Prevention estimates that roughly one in six people in the U.S., about 48 million get sick, 128,000 are hospitalized and 3,000 die of foodborne illness each year.

**What has been done**

In 2013, the Food Safety Manager Classes reached more than 355 foodservice workers statewide. K-State Extension also provides research based information to citizens via the Food Safety website. In 2013, the website had 9,698 page views. The most popular page was the ServSafe Food Safety page (944) followed by Food Safety for Boomers and Beyond (667) and the Food Safety Education publications page (502).

**Results**

This educational effort resulted in a reported 127 Kansas food establishments, volunteer/community groups and organizations, schools, nursing homes or day care facilities having staff who are food safety trained.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

## **Outcome #4**

### **1. Outcome Measures**

Increase number of viable technologies to improve food safety (Measured by number of viable technologies developed or modified for the detection and characterization of food supply contamination from foodborne threats)

### **2. Associated Institution Types**

- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	2

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

For example, the livestock and meat industry and consumers are significantly impacted by shigatoxigenic E. coli (STEC). The control of those types of hazards is the goal.

#### **What has been done**

The electrostatic technology is being evaluated for industry use.

Ground beef systems have been "mapped" for E. coli and anthrax dispersion during processing.

#### **Results**

The electrostatic chamber at the Kansas State University Biosecurity Research Institute is available for use by industry and other researchers.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

## **Outcome #5**

### **1. Outcome Measures**

Increase understanding of the ecology of threats to food safety from microbial and chemical sources (Measured by number of students enrolled in Food Safety and Defense graduate certification)

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	25

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Understanding of the ecology of threats to food safety from microbial and chemical sources is a prerequisite to improvements in the industry and consumer education.

#### **What has been done**

Validation of technologies to control microbial hazards for direct use by industry or inclusion into process deviation models is a major focus.

#### **Results**

Twenty-five students are enrolled in Food Safety and Defense graduate certification.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

## V(H). Planned Program (External Factors)

### External factors which affected outcomes

- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

### Brief Explanation

{No Data Entered}

## V(I). Planned Program (Evaluation Studies)

### Evaluation Results

#### TYPE of study;

Kansas State University has been designated as the education theme leader for the National Center for Food Protection and Defense, a Center of Excellence for the Department of Homeland Security and the USDA, AFRI CAP Grant focused on controlling shigatoxigenic E. Coli. Additionally, the validation of technologies to control microbial hazards for direct use by industry or inclusion into process deviation models is a major focus.

Over the next two years 40 interns will be trained in food safety, protection, and defense. Additionally, short term externships will also be conducted. Those individuals will learn about intervention technologies that are being validated. The food industry requires a pool of individuals trained in food safety, protection, and defense to enter the work force.

The industry also needs the technologies to control hazards. Eight interns are currently working with fulltime researchers with 22 to be added in the summer and fall 2013. The remaining internships (N=9) and externships will be completed in 2014.

Forty interns will have completed their internships by the end of the program year.

#### TIME of study;

2013 - 2017 (Depending on continued DHS and USDA funding)

#### Type of MEASURES.

1. Number of internships and externships
2. Number of technologies validated
3. Number of process deviation models developed

### Key Items of Evaluation

As research results are available, detection and validation models will be develop. That research is in progress.