

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
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources			100%	
	Total			100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	4.0	0.0
Actual Paid Professional	0.0	0.0	0.3	0.0
Actual Volunteer	0.0	0.0	1.2	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
0	0	43579	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	44144	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	60589	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The main research activities are to develop more efficient analytical methods to detect toxic chemicals in food and other consumer products, to determine if consumer products are safe, and to determine if pesticides are causing honey bee mortality. A pilot collaboration program was established in a previous reporting period with the CT Department of Public Health to test foods for unwanted chemicals and microbials. Decisions on whether or not foods are "safe" depends on tolerance levels established for chemicals by the US Environmental Protection Agency (EPA) or the Food and Drug Administration (FDA). Good progress was made on all objectives. The activities, services, and events that reach people are designed to assist a broad, diverse group of stakeholders by mainly disseminating scientific information to the public through the media, publications, and exhibits. People will have equality of service, ease of access to scientific results, and the ability to see laboratories and field plots. The state-generated outputs include numbers of food samples tested, scientific publications, and talks and interviews. The following activities were planned: (1) new analytical chemistry procedures will be developed, (2) staff members will disseminate new information on analytical test results to visitors at open house events and in scientific displays at agricultural fairs, (3) oral presentations will be given to civic groups, and (4) laboratories will be opened to allow adults and youth to meet staff members and see analytical equipment. Direct interactions with a broad base of stakeholders provide a mechanism for public input on the research program. Non-traditional stakeholders are reached at agricultural fairs when they visit Station displays. Two open house events are scheduled annually on Station properties to allow the public to hear oral presentations on research results and to offer comments. Results of these activities will lead to specific outcomes, such as removing tainted or adulterated food items from the markets and greater public awareness of research on food safety.

2. Brief description of the target audience

A diverse group of targeted audiences includes: state and federal public health officials and regulators, state and federal legislators and their staff members, food producers and importers, managers of supermarkets, educators, extension specialists, researchers in the food sciences, and the general public. Women, members of minority organizations, and children are examples of under-represented and under-served groups who are expected to receive benefits.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	609	9750	74	1950

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	3	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Total research papers

Year	Actual
2012	8

Output #2

Output Measure

- # of talks and interviews

Year	Actual
2012	99

Output #3

Output Measure

- # of tests performed

Year	Actual
2012	978

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of stakeholders gaining knowledge of food safety
2	# state and federal regulatory agencies making decisions on test results

Outcome #1

1. Outcome Measures

of stakeholders gaining knowledge of food safety

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There have been several instances when foods were contaminated with toxic chemicals or microorganisms. Food producers, retail operators, and consumers want safe foods. Federal and state regulators request analyses of foods and enforce laws by recalling contaminated products from commerce. These programs include livestock feed, such as alfalfa.

What has been done

Fifteen consumer complaints were received for Nutramigen-based products as part of the Women, Infants, and Children (WIC) Program. This number of complaints far exceeds that of any other product in the WIC Program. The complaints ranged from off-color or appearance; in these cases, the infant was not given the formula. However, in the majority of cases, the infants consumed the formula and symptoms ranged from projectile vomiting to diarrhea. Both liquid and powdered samples were delivered to the Department of Analytical Chemistry at The Connecticut Agricultural Experiment Station (CAES) for chemical analysis and the CT DPH Laboratory for microbial analysis. Samples were extracted and analyzed for over 850 pesticides, poisons, and toxins. Since the samples appeared to have large globular fat-like material in the solution, an acid hydrolysis method was also performed to determine total fat content.

Results

All samples were found to be free of chemical and microbial contamination. The acid hydrolysis results indicated that the fat content matched the label claim. A final determination was made indicating that the emulsification of the fats in the formula was compromised and that this effect was likely exacerbated by exposure to low temperature. The precise cause of this phenomenon is not known but may be the result of a formulation issue during manufacturing and processing. No other complaints have been found outside of CT, but due to new restrictions in the state mandating Bisphenol A-free containers, manufacture and processing of this product for CT occurs separately. In consultation with CAES chemists, DPH laboratory personnel, and Department of

Consumer Protection officials, this product has been removed from the CT State WIC nutrition program and replaced with an alternative product from another manufacturer. This change in actions will prevent human illnesses. Stakeholders gained knowledge of the test findings and the actions taken to correct the problem.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

Outcome #2

1. Outcome Measures

state and federal regulatory agencies making decisions on test results

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food and other products are tested for unwanted chemicals to determine if they are in compliance with labels or safe to use by consumers. People are concerned about potentially contaminated products. State and federal regulatory officials are mandated to enforce consumer protection laws. In the 1970's, urea-formaldehyde foam insulation was first used by homebuilders and homeowners as a wall cavity filler to increase energy efficiency. By the 1980's, concerns arose over the release of formaldehyde vapor during the curing process and during the breakdown of old materials. Preliminary data showed that emissions rates as low as 100 parts per billion caused toxicity to humans. Observed effects in some people exposed at these levels included watery eyes, nose irritations, wheezing and coughing, fatigue, skin rash, severe allergic reactions, burning sensations in the eyes and throat, nausea, and difficulty in breathing. Consumers and health officials were concerned about the safety of these spray-foam insulations.

What has been done

A consumer complaint was lodged with the Connecticut Department of Consumer Protection (DCP) Trade Practices Division regarding the potential presence of urea formaldehyde in the insulation of a specific manufacturer based in New York State. DCP inspectors obtained six

samples of different types of insulation offered by this manufacturer. For comparison as a positive control, staff members in the Department of Analytical Chemistry at The Connecticut Agricultural Experiment Station (CAES) acquired spray foam insulation known to contain urea formaldehyde. A significant amount of method development was conducted by CAES analysts.

Results

Upon completion of the method development, all six regulatory samples contained formaldehyde. Four of the samples contained levels ranging from 20-52 parts per million; the other two samples contained levels of 2000-2100 parts per million. These levels are the total amount of formaldehyde in the dry product. Toxicity data above are based on vapors outgassing from the solid material. Results were submitted to the DCP Trade Practices Division, who in turn shared the findings with the State of Connecticut Department of Construction Services. On September 23, 2011, the Deputy State Building Inspector wrote a letter to the manufacturer of the product, indicating that the product was in violation of Connecticut General Statutes (Section 29-277) and, therefore, could not be installed in any building in the State. A variety of non-formaldehyde spray foam insulations are now commercially available. These changes in actions will prevent human illnesses.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Competing Programmatic Challenges
- Other (Staff changes)

Brief Explanation

One scientist retired on August 1, 2008, and with the current hiring freeze in place and continued budget cuts, this vacancy was not filled. This is a critical position because the discipline requires the testing of toxic heavy metals (e.g., lead, arsenic, cadmium, and mercury). However, a Postdoctoral Research Scientist hired last year on a federal grant continues his work. Other scientists, who were working entirely on state projects with state funds, have been reassigned to either part or full-time status on Hatch-funded programs. Work continues in the Department of Analytical Chemistry and planned program objectives were met. Grant-funded positions are now a critical component for food safety programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Information on research and service results was obtained "during the program" written evaluations and oral comments received at public meetings (1 Open House), civic groups' meetings, and at Station exhibits. Positive feedback was received from stakeholders. Observations made during interviews with stakeholders revealed positive stakeholder sentiment about program effectiveness and value.

Key Items of Evaluation

The key items of evaluation and data collection were as follows: stakeholders' written responses concerning food analyses; constructive written feedback from grant peer-reviewers for a competitive USDA grant; and responses and corrective actions by the State of Connecticut to remove subpar infant formula from commerce. The Citation Index indicated that articles written in previous years by 2 scientists were recognized and cited by scientists in this field (total citations = 5 during the reporting period).