

Communication and Cooperation through Laboratory Networks: Positive Outcomes of 9/11



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LABORATORY NETWORKS

- Late 1990s: establishment of Laboratory Response Network (LRN), partnership created by the Centers for Disease Control and Prevention (CDC) with state departments of public health to enhance capability and capacity of analyzing clinical samples for contamination.
- Response to 9/11: formation of additional networks with broader analytical expertise
 - Food, Food Emergency Response Network (FERN)
 - Environmental samples, eRLN
 - Radiological contamination, LRN-R.
- CAES Department of Analytical Chemistry assisted with formation of FERN during 2003 to 2005 and has been a FERN Chemistry Cooperative Agreement laboratory since 2005.
 - CAP offers opportunities to **communicate** and **cooperate** with federal and state laboratories. Resources in Analytical Chemistry have been leveraged across all activities with **enormous positive impact** on our day-to-day operations.



The Challenge



Mutual enhancement of state and FERN work to make the whole greater than the sum of the parts for food safety as well as environmental monitoring and natural products



State
Obligations



Federal
Obligations



ANALYTICAL CHEMISTRY

- **Department Organization** ●

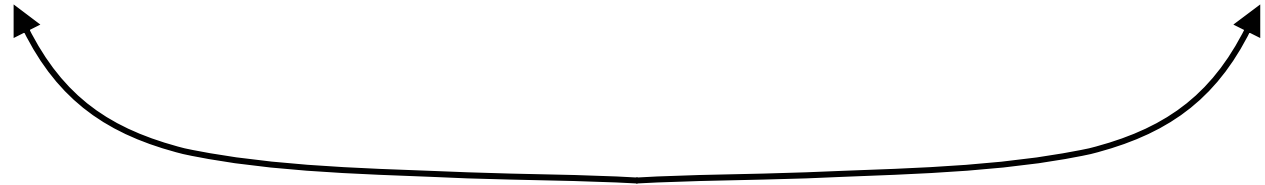
Focus Areas: **Environmental Monitoring Food Safety Natural Products**

Activities:

Service

Outreach

Research



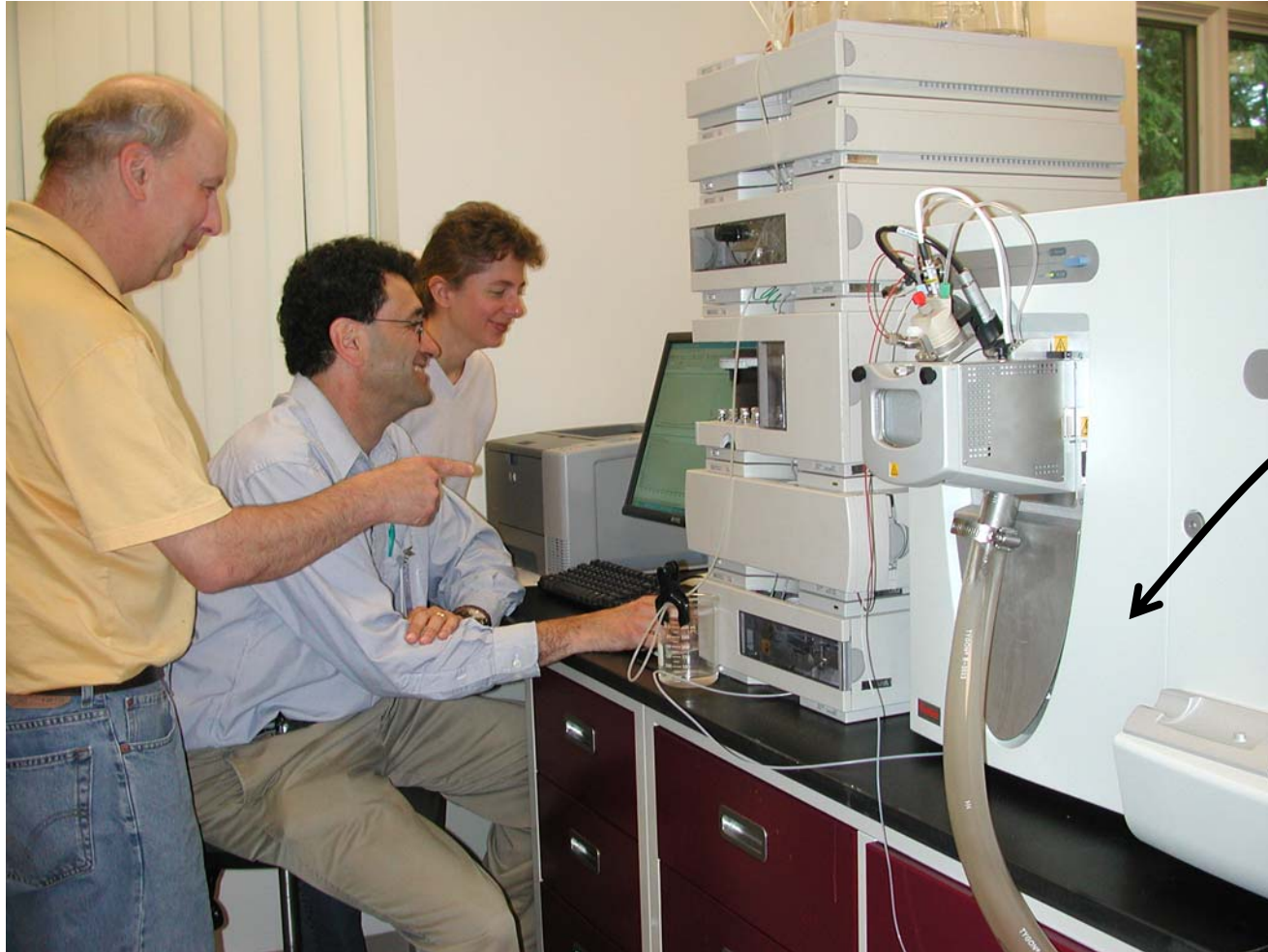
Food Safety

Department of Analytical Chemistry has been selected as one of 8 state laboratories nation-wide to receive support under a three-year cooperative agreement with FDA as part of the FERN (Food Emergency Response Network) to conduct food safety activities related to intentional and unintentional adulteration of the food supply.

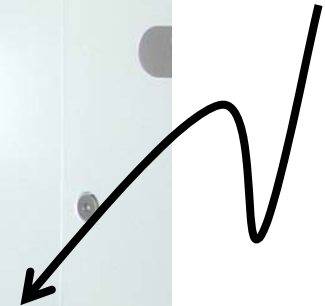
EUREKA!!!



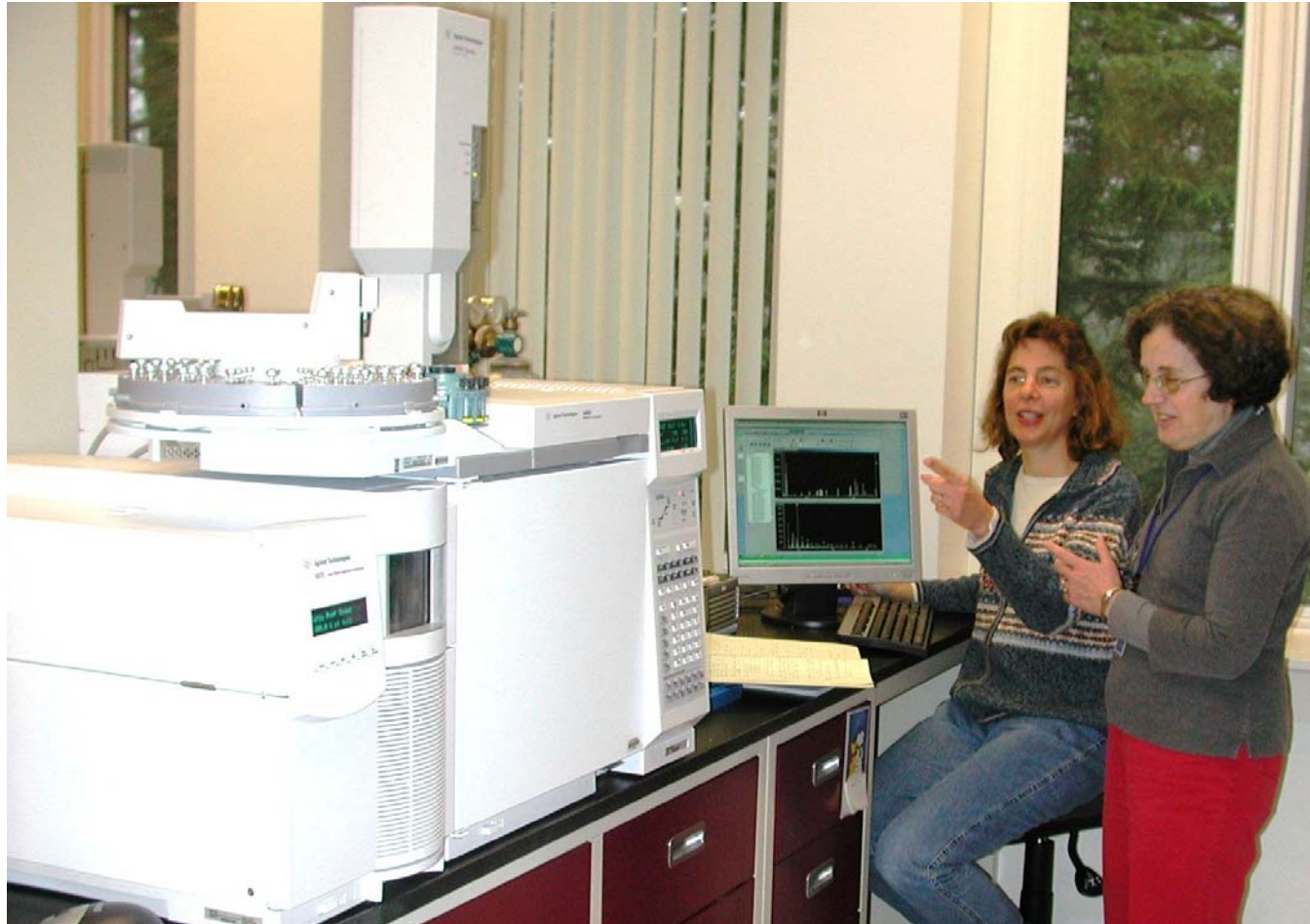
FERN Cooperative Agreement Program Contributions to CAES Liquid Chromatography/Mass Spectrometry



Cooperation:
funds
received from
CT DPH



FERN Cooperative Agreement Program Contributions to CAES Gas Chromatography/Mass Spectrometry



FERN Cooperative Agreement Program Contributions to CAES Enzyme Linked Immunosorbent Assay (ELISA)



FERN Cooperative Agreement Program Contributions to CAES Inductively Coupled Plasma/Mass Spectrometry





Cooperation: funds
received from CT DPH



Gas Chromatography/Mass Spectrometry



CAES Contributions to the FERN

- Instrument and method evaluations
- Participation in proficiency tests (PTs)
- Participation in surveillance exercises



Examples: participation in surveillance exercises

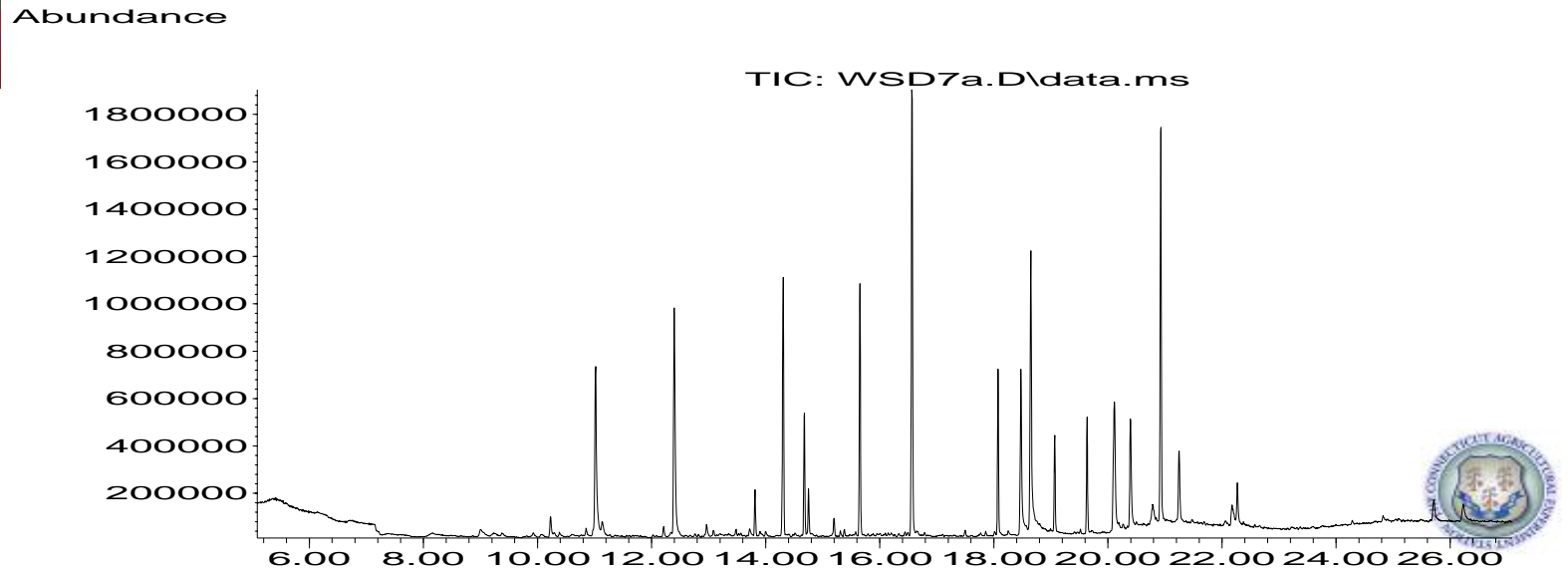
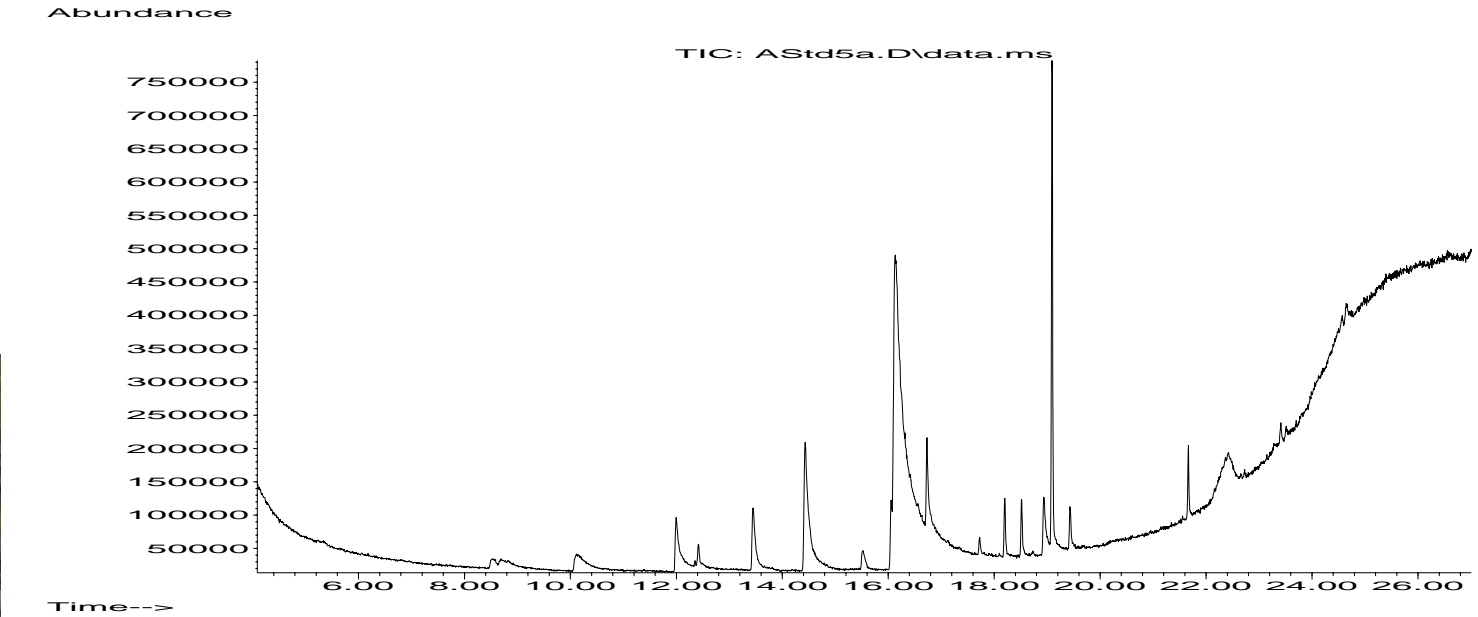
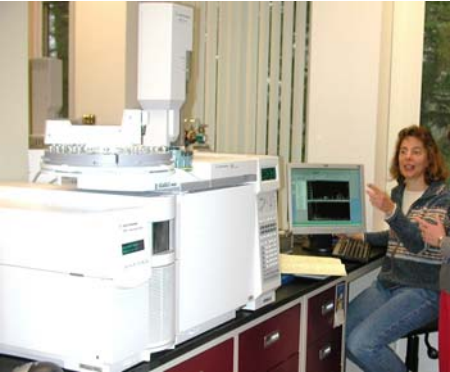
Pet Food



- dog and cat foods compounded with wheat gluten containing melamine
- melamine added to enhance % nitrogen and by association to enhance protein content
- fatalities associated with kidney failure
- analytical method from FDA; participated in follow-up exercise to analyze imported vegetable protein products
- received and analyzed 26 products; detected melamine and analogues in one fish food



Examples: CAES contributions to FDA methods



Examples: enhancements to state work

Toothpaste



- imported products compounded with ethylene glycol (EG) and diethyleneglycol (DEG) rather than glycerol
- EG and DEG are toxins
- samples from state hospitals and emergency kits submitted
- analytical method from FDA; enhancements accomplished through communication with other FERN labs
- emergency kits distributed nationally
- adulterated products removed from commerce





Examples: enhancements to state work

Marketbasket Survey

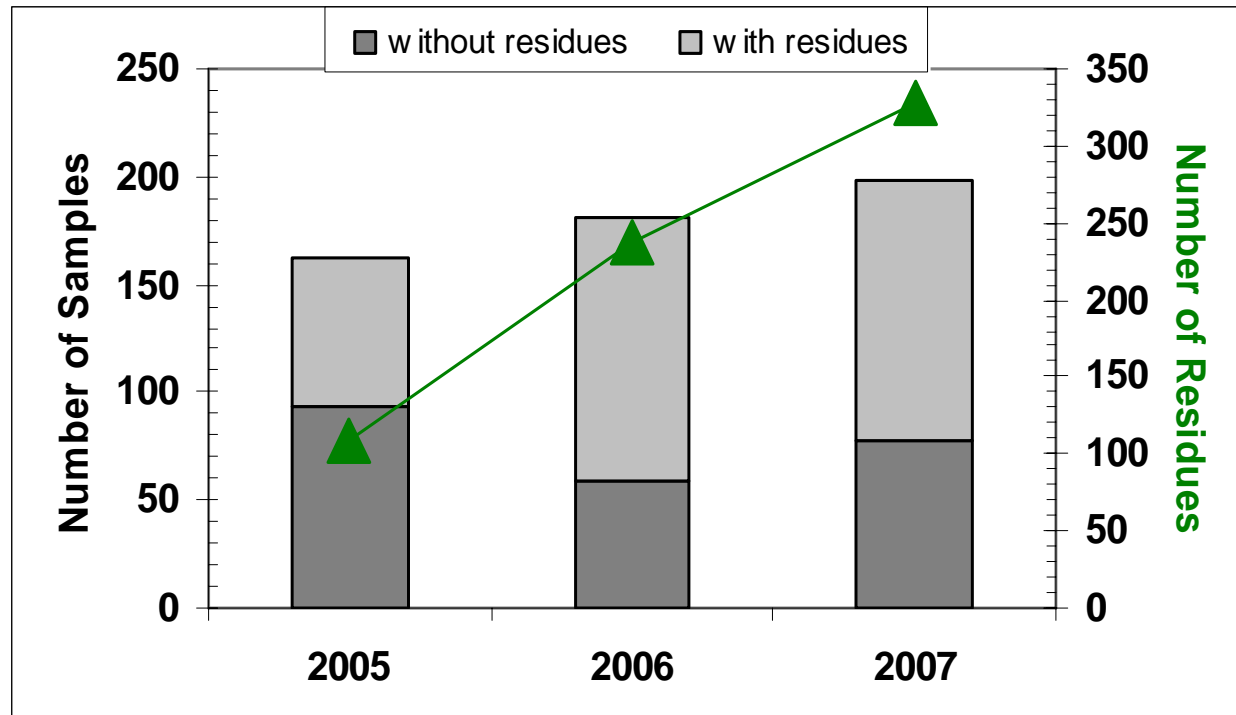
- fresh and processed foods analyzed for presence of agrochemicals
- several new active ingredients added to list for GC/MS analysis
- new method of sample preparation (QuEChERS) implemented in our lab with resultant reduction of time and money
- Screen all samples through GC/MS and LC/MS



Examples: enhancements to state work

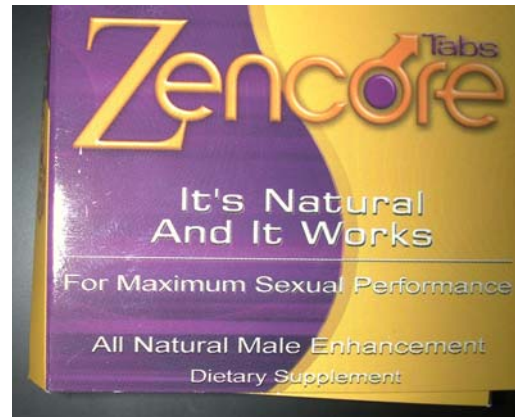
Marketbasket Survey

- Screen all samples through GC/MS and LC/MS for increased number of agrochemicals



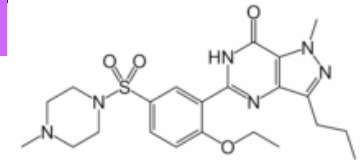
Examples: enhancements to state work

Toxins (drugs in supplements)



Supplements	
Serving size 2 capsules:	
L- Arginine 160 mg	
Proprietary Blend 840 mg *	
Tribulus	Dong Quai
Guava	Indian Woodapple
Desert Broom rape	Astragalus
Cordyceps	Rehmannia
Maca	Safflower
Fo-ti	Tienchi
Epimedium	Reishi
Ginseng	Eucommia
Chinese Dodder Seed	Ginger
Wild Yam	
Morinda	
* Daily Value Not Established	
Other ingredients: Gelatin, Silicon dioxide, Magnesium stearate, Maltodextrin.	

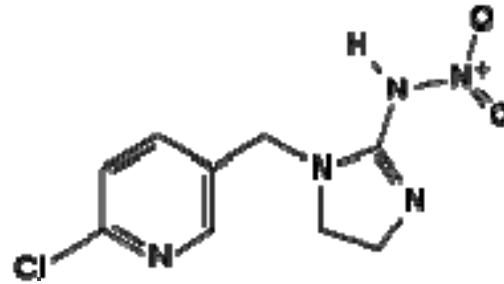
sildenafil



Examples: enhancements to state work

Research

- Role of agrochemicals in pollinator decline (CCD)



imidacloprid



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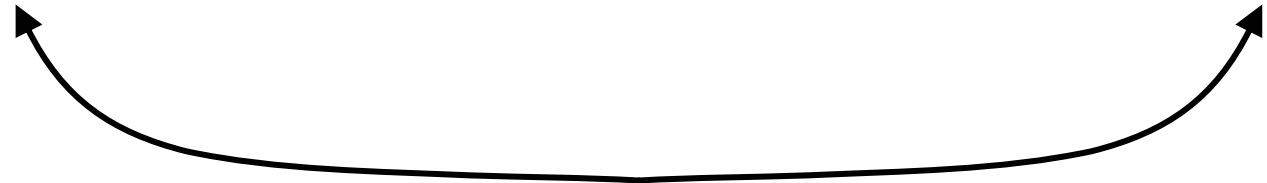
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Environmental Monitoring

■ Lead in Toys

- Analysis of painted toys submitted primarily by Connecticut Department of Consumer Protection
- National recalls by CPSC based on our work



■ Community Gardens

- Soil analyses for substances which could impact food crops
- Cooperation with US EPA region 1
- Interfacing with urban groups to address public health issues such as obesity and food security

■ Artificial Turf

- Environmental impacts of crumb rubber from recycled tires



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CAES + biofuels + Connecticut

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