Reducing Toxics in the Food & Beverage Sector

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Massachusetts
Toxics Use Reduction Act (TURA)

• Helps Massachusetts companies and communities:
  – *Reduce the use of toxic chemicals* while promoting competitive advantage of Massachusetts businesses.
Core principles of Toxics Use Reduction

- Reduce toxics at the Source
- Look for opportunities to eliminate or reduce hazard
- Primary prevention of disease
Food Safety Lab @ UML
Why are chemicals used in the food industry?
• Ingredient residual/biofilm buildup;
• Residual: adulteration, allergen (low threshold), food safety;

Commonly used chemicals
• Phosphoric acid (listed under TURA)
• Potassium hydroxide (listed under TURA)
• Sodium hydroxide (listed under TURA)
FSMA does not contradict TURA!

What we can do:

• Reduce toxic chemical usage.
• Screen greener cleaner/ sanitizer options for food processors.
• Develop zero toxic alternatives using Generally Recognized as Safe (GRAS) substances.
Food Safety Lab @ UML
Research Capacity & Equipment

• Food Analysis: Liquid Chromatography; Gas Chromatography
• Food Safety Engineering: FSMA validation; residual and biofilm cleaning & sanitization; allergen/pathogen detection.
• Biosafety Level 2 (BSL-2) Lab – industrial simulation of growth and removal of foodborne pathogen and spoilage bacteria.
Quartz Crystal Microbalance – Dissipation (QCM-D):

- Simulated sanitation process for screening alternative chemicals.

Microfluidic device:

- Validation of sanitization efficacy (FSMA compliance).
- Screening ‘green’ alternatives.
TUR Opportunities

• Cleaning and Sanitizing
• Surfaces and clean-in-place
• Investigate soils, surfaces, processes, and chemicals
  – Look for opportunities to eliminate or reduce hazard
  – Don’t forget about water and wastewater treatment
Field Work:
Cleaning Operations at Lettuce Grower

Photo: Little Leaf website
Field Work:
Cleaning and Sanitizing in Microbreweries
Field Work: Cleaning Chemicals at Soup Producer

Photo: Kettle Cuisine website
TURI Resources & Activities

- Education & training
- Grants
  - Large & small businesses
  - Municipalities, regional governments & community organizations
  - University research on safer alternatives
- Demonstration sites
- Laboratory & library services
- Facilitated work groups for industry sectors
- Policy analysis