



Reducing Toxics in the Food & Beverage Sector

February 12, 2018



Massachusetts

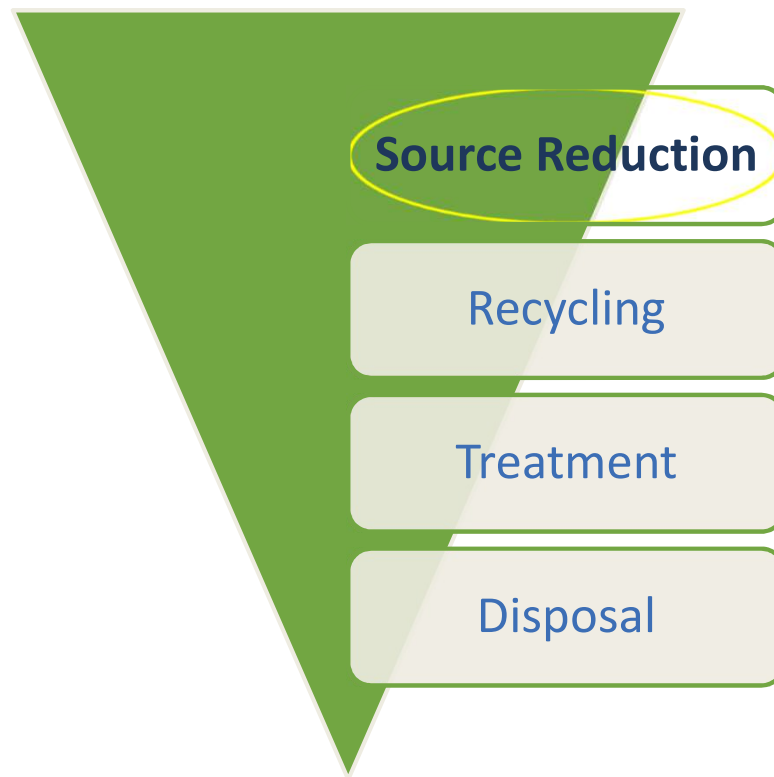
Toxics Use Reduction Act (TURA)

- 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



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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.



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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.

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Advanced Equipment

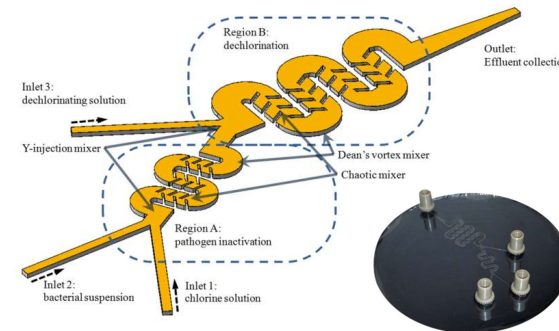
Quartz Crystal Microbalance – Dissipation (QCM-D):

- 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

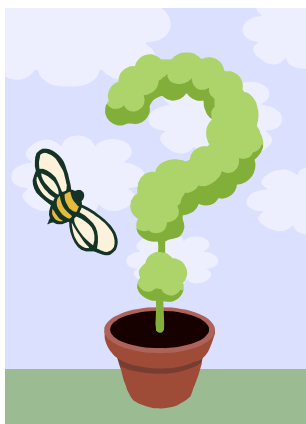


Photo: Kettle Cuisine website

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





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