

FOOD MANUFACTURING INDUSTRY FORUM

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Holiday Inn Convention Ctr., 441 Electronics Pkwy
Liverpool, NY 13088



Presented by:



Funding provided by the New York State Pollution Prevention Institute through a grant from the NYS Department of Environmental Conservation and CNYTDO, the NIST Manufacturing Partnership (MEP) Center and NYSTAR Regional Technology Development Center (RTDC) for Central New York.

New York State Pollution Prevention Institute (NYSP2I)

Vision & Mission

Vision:

The vision of the NYS P2I is to foster the transformation and development of sustainable businesses and organizations in New York State in a collaborative program committed to making the State a leader in environmental stewardship.

Mission:

The mission of the Institute is to provide a high-impact, comprehensive and integrated program of technology research development and diffusion, outreach, training and education aimed at making New York State more sustainable for workers, the public, the environment and the economy through:

- reductions in toxic chemical use
- reductions in emissions to the environment and waste generation
- the efficient use of raw materials, energy and water

NYSP2I Capabilities

- **Experienced engineering staff:** interdisciplinary approach (*chemical, environmental, mechanical, materials, electrical engineering; business management*) used to provide technical assistance to hundreds of businesses in a broad range of industry sectors including food & beverage
- **Types of food-related projects:** focus on cost-effective improvements related to chemical use, water/wastewater/waste management and energy:
 - Minimize toxic/hazardous chemical use in all phases of operation
 - Reduce water use through equipment modifications
 - Evaluate appropriate filtrations/separation technologies for water reuse in the facility or treatment prior to discharge
 - Determine where process energy savings can be realized
- **Work can be performed as Direct Client Assistance (Waste Reduction/Process Optimization), Sustainable Supply Chain, Research & Development, Green Technology Acceleration**

Case Study: Bedell Cellars on Long Island

- **About the Company:** A Long Island winery helped to start the Long Island Sustainable Winegrowing association, a 3rd party certifier for LI vineyards. Already implemented sustainable practices including:
 - Minimal synthetic fertilizers use
 - Composting of grape waste
 - Integrated pest management practices to minimize pesticide use
 - Low impact fungicides, used only when needed
- **Work Performed:** NYSP2I performed an on site assessment to analyze water, chemical, and energy use. Potential opportunities to reduce water use/wastewater discharge and save energy were evaluated through engineering analyses.
- **Results:** NYSP2I identified improvement/cost saving opportunities:
 - Reduce water consumption and wastewater loading to septic system through utilization of high pressure washers when cleaning equipment (2-3 year payback; 25% reduction in water use, wastewater discharge and water fees). Bedell has already purchased high pressure washers.
 - Save energy through proper insulation of chiller pipes (1-2 year payback, 4% reduction in total energy use and cost).



High Pressure Washer



Heat Loss on Chiller Pipes

Case Study

Abandon Brewing Company

- **About the Company:** Abandon Brewing Company is a start-up craft brewery located in Penn Yan, New York. At the time this project was conducted, the owners were operating a small-scale electric brewery in an adjacent farmhouse and were working to convert a large barn on the property into an operating brewpub.
- **Work Performed:** NYSP2I performed an energy assessment that included:
 - Measuring the energy profile of the small scale brewery
 - Using measured data and information on proposed equipment and the planned production schedule to project the energy profile during full-scale production.
 - Identifying opportunities for energy recovery (hot water recovery), more efficient practices, and/or the use of renewable energy sources.
- **Results:**
 - The analysis conducted provided a basis for recommendations that could save Abandon Brewing \$4900-\$6800 annually (60% reduction).
 - Among the opportunities explored was the use of solar thermal water heating system that would result in an annual savings of \$3,319 with a payback period of 3.9 years.



Case Study: Perry's Ice Cream

- **About the Company:** Perry's (Akron, New York) is a privately owned company producing over 12 million gallons of ice cream annually. Various sustainability initiatives already in place including switching from plastic to paper cups/lids and optimizing on-site warehousing for frozen and refrigerated storage. Perry's uses 60,000 GPD of water and treats/discharges wastewater to sewer. Goal of project was to reuse 50% of water (30,000 GPD) to save on water purchase costs and sewer discharge fees. *Potential savings up to \$120,000/year possible if 50% of water is recycled.*
- **Work Performed:** NYSP2I helped design and evaluate different recycling schemes through on site pilot tests:
 - Basic filtration (multi-media filtration, activated carbon)
 - Membrane technologies (ultrafiltration, nanofiltration, RO)
- **Results:**
 - Membrane technologies needed to ensure sufficiently clean, reusable water.
 - Ultrafiltration would be most cost-effective, but quality needs to be confirmed with State regulatory agency (Ags and Market).
 - More work planned to optimize membrane process (reduce fouling, maximize efficiency).



Case Study: LiDestri Foods, Inc.

- **About the Company:** LiDestri Foods, Inc. is a privately owned food manufacturing company specializing in contract and private label manufacturing. The main products manufactured consist of tomato based sauces and salsas. The total combined cost of water usage and wastewater discharge (including surcharges) is roughly \$465,000 per year. The objectives of this assessment included:

- Developing a baseline of water usage
- Identifying opportunities for water recovery
- Identifying cost effective methods to mitigate organics in wastewater



Image courtesy of LiDestri Foods

- **Work Performed:** A baseline profile of water usage for the food manufacturing operation was developed. The feasibility of water recovery and organic solids recovery from wastewater was investigated. Cost savings and payback analyses were performed for all of the work performed.
- **Results:**
 - Up to 66% of total daily water usage (109,000 GPD of 165,000 GPD) can potentially be recovered. If 75% of potential can be recovered, annual savings of \$61,144 can be realized.
 - An opportunity also exists for LiDestri to separate and concentrate organics in their wastewater to 23% solids using a Gas Energy Mixing (GEM) system. Solids could be sent to an anaerobic digester in Wyoming County, resulting in a potential annual cost savings of approximately \$72,000 for LiDestri.

Upcoming NYSP2I Food Projects

- **Acid Whey Repurposing:**

- Yogurt manufacturers must deal with significant amounts of acid whey
- Disposal costs significant
- Anaerobic digestion increasing in NY and can accept acid whey, but not most cost-effective for yogurt manufacturers
- Proper acid whey management can lead to reduced disposal costs and development of value-added products like food-grade powders

- **Electrodialysis for Wineries**

- Cold stabilization performed to precipitate and remove tartrates from wine
- Significant energy use and long chilling times needed
- Electrodialysis (ED) can achieve same objective more quickly and with much less energy
- Used extensively in CA, Europe and other countries

NYSP2I's

Sustainable Supply Chain & Technology Program



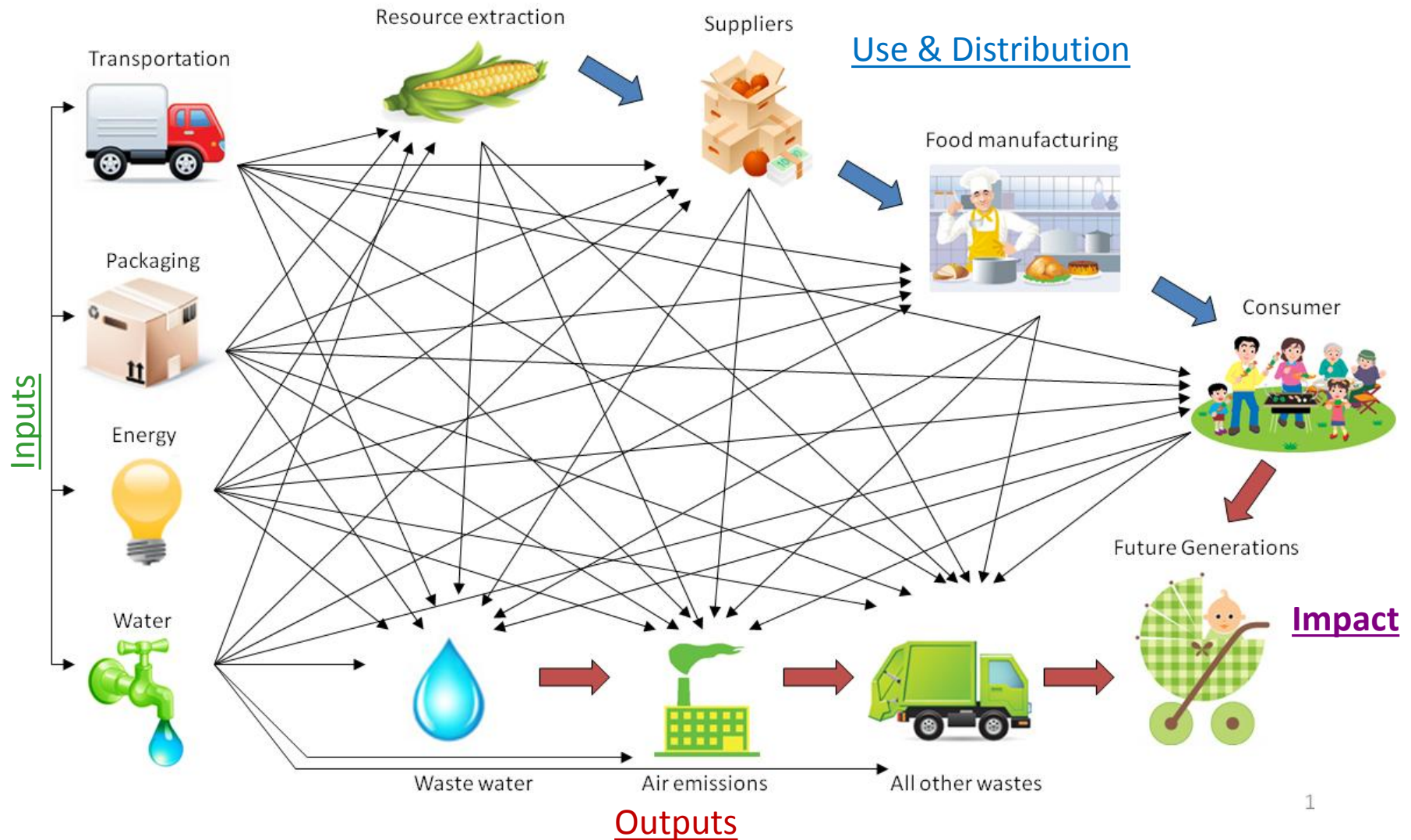
Defining “Supply Chain Sustainability”

- The United Nations Global Compact defines **supply chain sustainability** as “the *management of environmental, social and economic impacts* (sustainability), and the *encouragement of good governance practices* (accountability), throughout the *lifecycles of goods and services* (supply chain)”
- Supply Chain Sustainability aligns with the UN Global Compact’s ten universally accepted principles
- “The objective of supply chain sustainability is to create, protect and grow long-term environmental, social and economic **value** for all stakeholders involved in bringing products and services to market.”

http://unglobalcompact.org/docs/issues_doc/supply_chain/SupplyChainRep_spread.pdf



Stages of Supply Chains



Benefits of becoming a “Sustainable Supplier”



Cost Reduction

- Identify opportunities for efficiency improvements leading to reduction in total cost of ownership

Risk Reduction

- Mitigate business and brand risk by understanding environmental impacts of self and suppliers

Revenue Growth

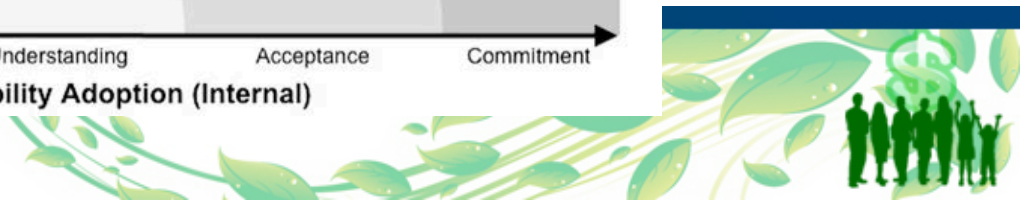
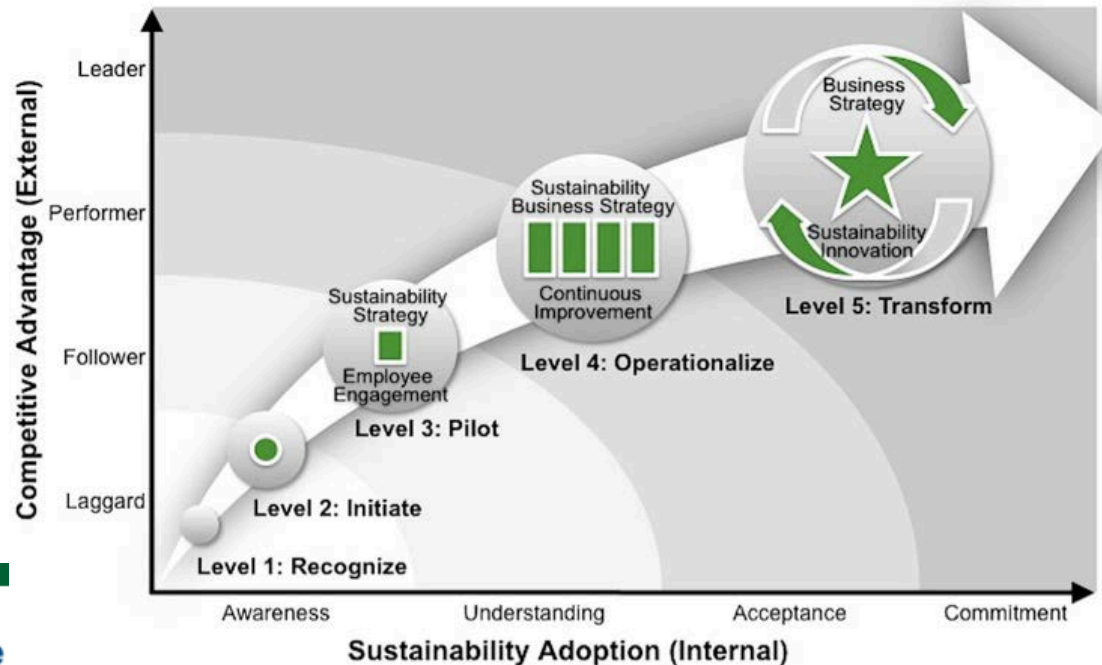
- Seen as a leader verses competition
- Viewed as a trustworthy and respectable company
- Become a supplier of choice



Sustainable Supply Chain & Technology Program

Positions NYS manufacturers to participate in global sustainable supply chain opportunities

- ✓ Conduct customer **scorecard** gap assessment and sustainable manufacturing implementation assistance
- ✓ Assist with attaining an environmental **certification** or conforming to an environmental **standard**
- ✓ Assist with establishing a **responsible supplier program**



Sustainable Supply Chain & Technology Program



The Ecovative Process

- Ecovative's Mushroom Materials start on a farm, with the parts of plants that cannot be used for food or feed.
- A patented process cleans and prepares a blend of agricultural byproducts, and inoculates it with mycelium (mushroom tissue).
- Packaging parts are then "grown" into the required custom shape.



Ecovative Benefits

- By using mycelium and agricultural by-products, Ecovative uses materials that are environmentally low-impact, biodegradable and renewable.
- This product replaces synthetic petrochemical based materials such as Styrofoam™.

SSC&T Project Description

- Provide assistance to Ecovative for obtaining Biodegradable Products Institute (BPI) certification for their packaging products.

SSC&T Project Objectives

- Support Ecovative in preparation of samples for testing to satisfy BPI Requirements
- Develop an in-house disintegration test platform comparable to the ISO 16929 Disintegration test, so that Ecovative may validate new products prior to paying for independent lab testing for BPI certification.

Ecovative's Expected Results

- Forecasts 49 jobs retained; 2 jobs added
- Estimates 20% increase in sales due to project; Up to 20% increase in customers



Sustainable Supply Chain & Technology Program



BALDWIN RICHARDSON FOODS CO.

Baldwin Richardson Foods

Baldwin Richardson Foods (BRF) manufacturers and supplies custom developed food products and ingredients for the food service industry and consumer packaged goods companies. They also manufacture their own consumer brands: Mrs. Richardson's Ice Cream Toppings and Nance's Mustards and Condiments.

BRF Opportunity Areas

- The demand for “green suppliers” in the supply chain
- BRF would like to be a “greener” supplier but need help understanding how to answer to customer demands and identifying means of improving their ability to report their sustainability status



Project Objectives

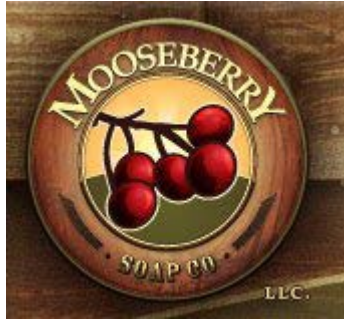
- NYSP2I performed an assessment at BRF using a supply chain sustainability assessment tool, developed by NYSP2I
- This assessment inquired about various common components of internationally accepted sustainability guidelines

Results

- The assessment conducted by NYSP2I concluded that BRF is committed to sustainability, and is well equipped with the resources necessary to create a company with a competitive advantage due to their sustainability focus
- As a “green supplier”, BRF is able to support their supply chain and customer sustainability efforts and influence their suppliers to make sustainable choices



Sustainable Supply Chain & Technology Program



Mooseberry Soap CO.

Producer of bar soap products made from all natural and organic ingredients.

Committed to fair trade and sustainable practices.

Mooseberry Benefits

Soaps are biodegradable, with no preservatives, petroleum products, FD&C colorants or dyes.

SSC&T Project Description

Provide assistance to Mooseberry for obtaining a USDA organic designation, “Made with organic ingredients”, and the NSF/ANSI 305 label for their soap products.

Project Objectives

- Determine which Mooseberry products may qualify for the “Made with organic ingredients” designation
- Conduct a gap assessment of Mooseberry’s products, processes, and documentation verses the USDA and NSF/ANSI standard requirements and provide guidance to close those gaps

Expected Results

Increased marketability and sales of their soap products on the national and global level.





Welcome to TDO

Central New York Technology Development Organization

“Helping CNY Manufacturing Innovate, Compete & Grow”

MEP– Manufacturing Extension Partnership

Central New York Technology Development Organization

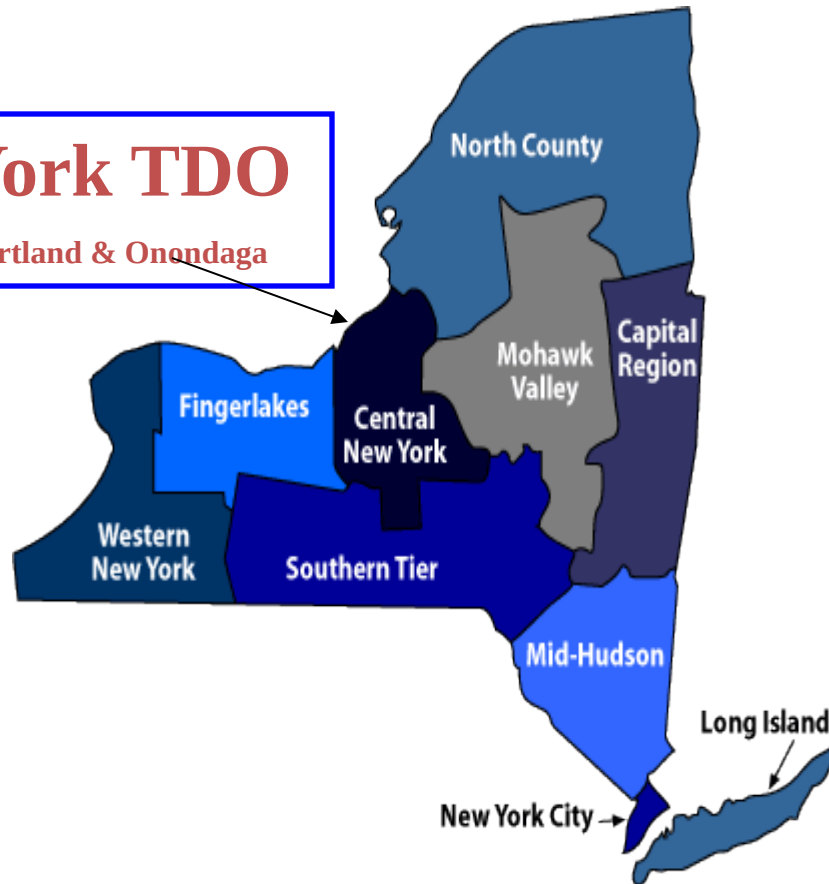
► Who is TDO?

- Partially State/Federal funded
 - One of 10 NYS MEP Centers
 - One of 350 MEP locations country wide
- Center Staff
 - Six Project Engineers/Managers
 - Degreed Engineers
 - Certified Green/Black Belts
 - PMI Certified
 - TWI Institute
 - Wide Variety of Experience

Technology Development Organizations

Central New York TDO

Cayuga, Oswego, Madison, Cortland & Onondaga



Central New York Technology Development Organization

▶ Mission

- Manufacturing
- Small/Medium size
- 5 County Area

▶ What we do

- Assistance on Productivity Improvements
- QMS
- Export assistance
- Innovation Engineering
- Start-up assistance
- Strategic Planning
- Leadership Training

Central New York Technology Development Organization

- ▶ How We Do What We Do
 - Assess Current State
 - Determine Objective with Management Team
 - Draft plan to meet objective
 - Agree on plan/schedule
 - Deliver
 - Coach Internal Resources
 - Assess Results
- ▶ Additional Services
 - Assist with grants/loans as applicable
 - Connect with additional resources (Universities, CATS/CoEs, Cornell CCMR)
 - Connect with Economic Development Community

Case Study #1

- ▶ Background:
- ▶ Opportunity: Turnover and Consistent Quality
- ▶ Approach: Situational Leadership, TWI training and Six Sigma Green Belt
- ▶ Results: Retained sales and reduced turnover

Case Study #2

- ▶ Background
- ▶ Opportunity: Standards for sales process and reduction of lead time/process times
- ▶ Approach: Sandler Sales and Lean Six Sigma Green Belt
- ▶ Results: Retained and increased sales by \$2.1M, Implementing solutions to meet turnaround for first customer approval.

Case Study #3

- ▶ Background
- ▶ Opportunity: Increasing international competition
- ▶ Approach: Situational Leadership, TWI, Lean and Sandler Sales
- ▶ Results: \$1.5M increased/retained sales, \$30K cost savings

Case Study #4

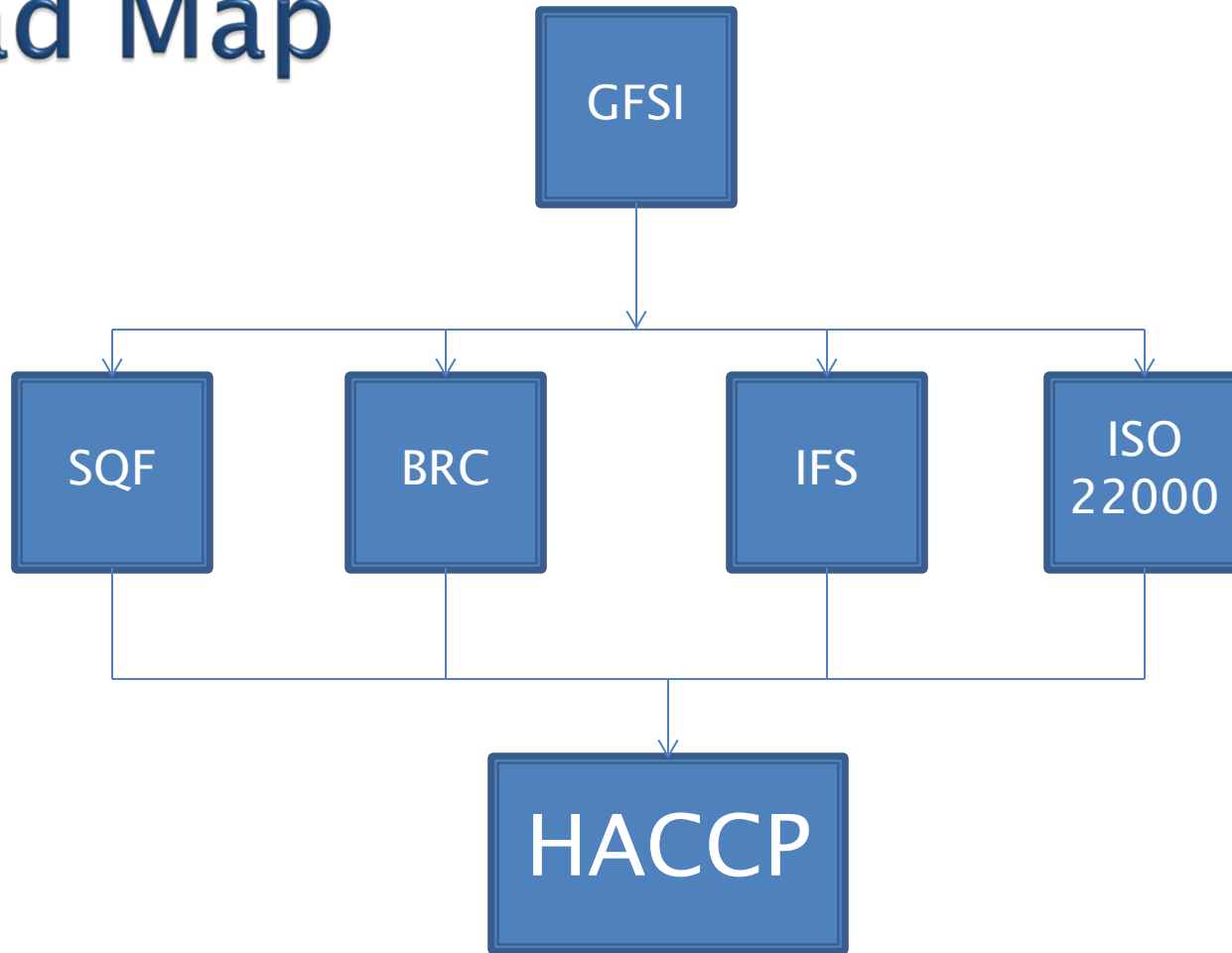
- ▶ Background
- ▶ Opportunity: Expansion and need for better project management
- ▶ Approach: PMP and establishment of PMO
- ▶ Results: Expansion in process to add 60 jobs, PMO has been established and processes put in place.



Global Food Safety Initiative

Things to Know

Road Map



History of HACCP

(Hazard Analysis and Critical Control Points)

- ▶ 1950's NASA initiative for safe food during space travel
- ▶ 1969 Pillsbury application of HACCP to retail products
- ▶ 1988 US Government recognizes

Should you use HACCP?

- ▶ Takes commitment– resources, time and work
- ▶ Prevents food safety problems
- ▶ Competitive issues (customer driven)
- ▶ HACCP is a safety program
- ▶ What is a safe product?
- ▶ How does it relate to a quality product?

Prerequisites

- ▶ Raw materials specs, including letters of guarantee and verification of specs.
- ▶ Incoming goods inspection
- ▶ Allergen control
- ▶ Employee training
- ▶ Temperature control
- ▶ Pest control
- ▶ Sanitation control

Prerequisites

- ▶ Physical premises
- ▶ Complete SOP's
- ▶ Receiving and storage
- ▶ Equipment performance and maintenance
- ▶ Recall programs

The next step: HACCP

1. Hazard Analysis

The core of HACCP

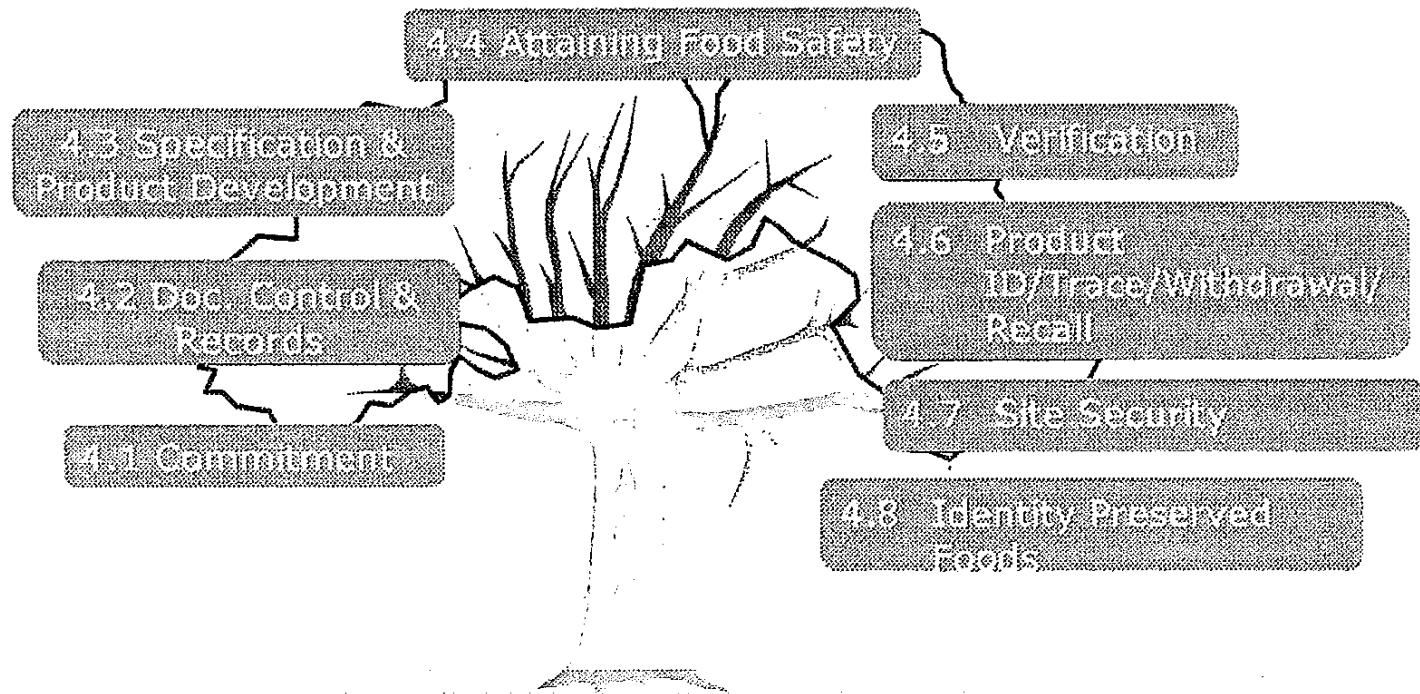
- ▶ Bacterial threats
- ▶ Physical contaminants
- ▶ Chemical threats

Look for significant hazards

2. identify CCPs

- ▶ Critical control points
 - Originate from the previously identified hazards
- ▶ The point at which the hazard may be controlled or eliminated.

The SQF Program



Pre-requisite Programs
Food Safety Fundamentals

2008 SQF INSTITUTE (A DIVISION OF FMI)



SQF Requirements:

- ▶ Certified HACCP Manager on staff
- ▶ Certified SQF Practitioner on staff
- ▶ Compliance to SQF Standard
 - Level 1
 - Level 2
 - Level 3

Thank you!

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