



MASTER BREWERS ASSOCIATION OF THE AMERICAS

Providing technical leadership for the brewing industry

# HACCP for the Brewery

A Practical Example

# Preliminary Steps

1

- Assemble HACCP Team

Establish a team to put this together, review and maintain it

2

- Describe product and its distribution

What are we making?

3

- Describe the intended use and consumers

How is the product going to be used?

4

- Develop flow diagram

How is the product made?

5

- Verify flow diagram

Confirmation on the floor that it is really made like we said in Step 4

# Preliminary Task 1 – Assemble the HACCP Team

- The team will be responsible for developing and verifying the HACCP plan
- Need knowledge of product, process, HACCP, hazards, control measures, corrective actions, etc.
- Should be multi-disciplinary
  - Production, engineering, QA, R&D, sanitation/facilities
- Consider external experts for assistance

# Preliminary Task 2 – Describe the Product and its Distribution

- General description of the product or product types
- What are you making?
- How is it packaged?
- How is it stored and distributed?
- What is the expected shelf life?
- Any special consumer handling instructions?

# Preliminary Task 2 - Example

- Product name – Beer
- Composition – water, malted barley, hops, yeast, ethanol, carbon dioxide
- Method of preservation – pasteurization, temperature control
- Inner packaging – glass bottles
- Outer packaging – Outer case, 6 bottles per case
- Storage conditions – cellar temperature (45-55F typical)
- Distribution method – truck, temp. controlled as needed
- Shelf life – 1 year under cellar temperature range
- Special labelling – Alcohol content and health statement

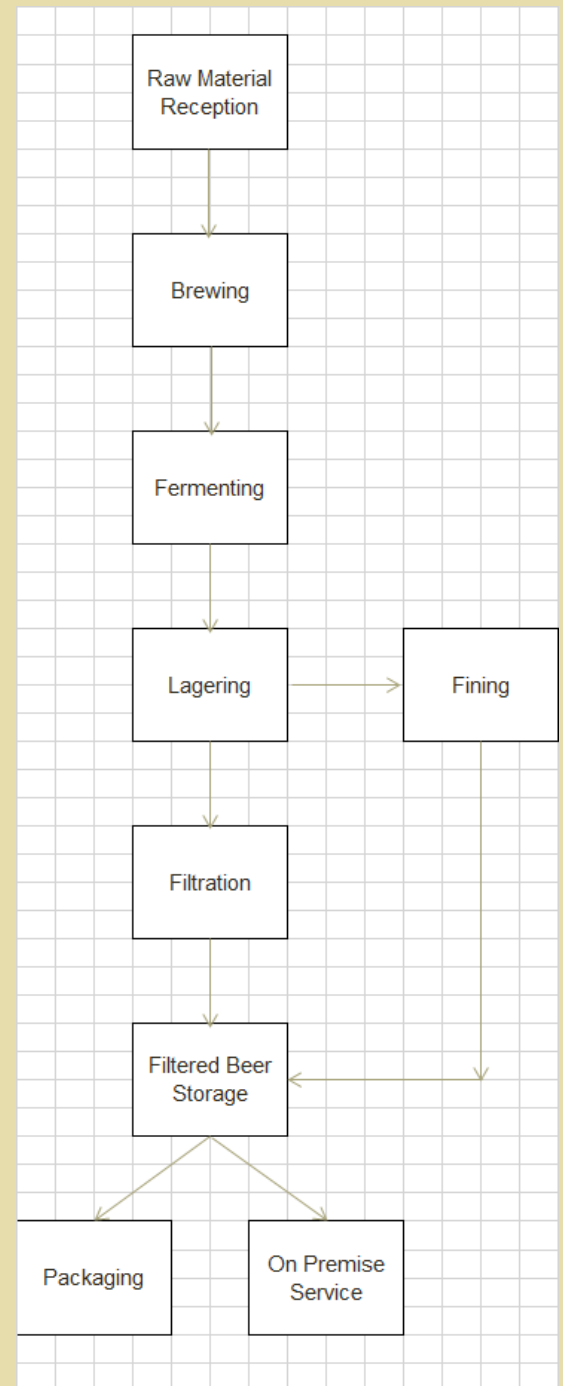
# Preliminary Task 3 – Describe the Intended Use and Consumers

- What is the normal expected use of the product?
- Identify the target population for the product
- Example for beer:
  - Intended use: Consumption as an adult alcoholic beverage
  - Consumers: Persons of legal drinking age

# Preliminary Task 4 – Develop a Flow Diagram

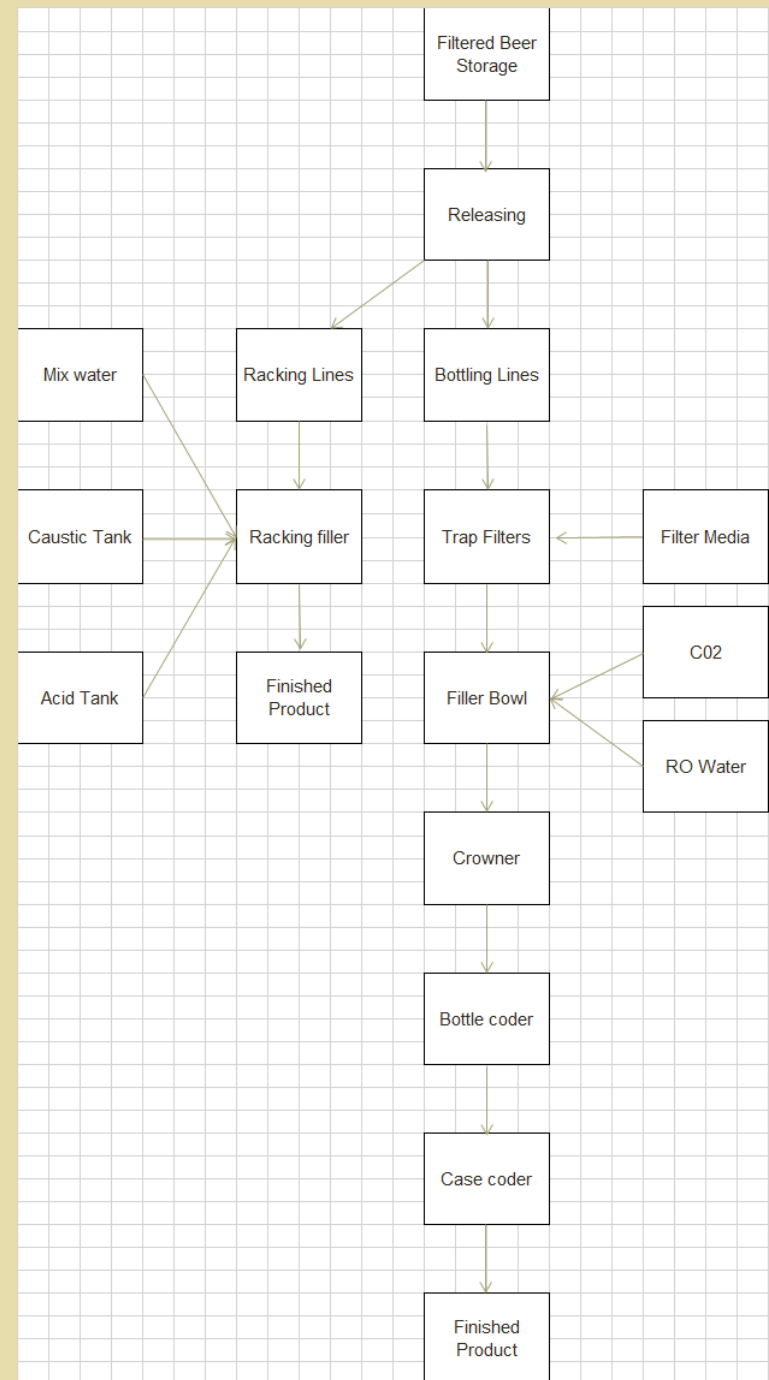
- Clear, simple outline of the steps involved in making your product
- Define the scope (start and end of process)
- Consider what happens in the supply chain before and after your process
- Keep it simple
- Break down into stages if needed (brewing, packaging, etc.)

# Flow Diagram Example: Brewing Process





# Flow Diagram Example: Bottling Process



# Preliminary Task 5 – Verify the Flow Diagram

- On-site review
  - Walk the process to confirm each step and make sure it is accurate
- Don't miss a step
- Document this verification

You are now ready to start  
applying the 7 HACCP  
principles

# Seven Principles of HACCP

- 1 • Conduct a Hazard Analysis
- 2 • Determine CCPs
- 3 • Establish Critical Limits for each CCP
- 4 • Establish a Monitoring System for each CCP
- 5 • Establish Corrective Actions
- 6 • Establish Verification Procedures
- 7 • Establish Record Keeping and Documentation Procedures

# Principle 1: Conduct a Hazard Analysis

- Conducted by the HACCP team
- Use the flow diagram as a guide
- Develop a list of hazards that are reasonably likely to occur at each step
- 2 stages
  - 1 – Hazard identification – brainstorming
  - 2 – Hazard evaluation
- Consider the severity, likely occurrence, effects, etc.

# HACCP Scope: Significant Hazards Only

- **Significant hazards need to be controlled through HACCP**
  - **A hazard likely to cause illness or injury in the absence of control**
- Need to consider all hazard types (biological, chemical, physical)
- What is not a hazard
  - Undesirable contaminants which are not likely to cause injury or illness to the consumer
  - Controlled via prerequisite programs and therefore not included in the HACCP plan

# Principle 1: Conduct a Hazard Analysis - Example

Step	Potential Hazard	Justification	To be addressed in HACCP plan?	Control Measures
Beverage Preparation	Chemical – residual sanitizer on equipment and lines	Residual cleaner from CIP may remain. Product recalls have been associated with this situation.	No	Prerequisite program – CIP cleaning & sanitation program
Empty Bottle Inspection	Physical – failure of the system to detect foreign matter Chemical – failure of the system to detect residual liquid and caustic	Foreign matter (glass), defective glass and residual liquids could reach consumers and cause injury.	Yes	Packaging Line SOP's which include test/inspection procedures
Labeling	Chemical – potential allergens	Potential to affect consumers with allergies	No	Controlled through prerequisite ingredient screening process

# Principle 2: Establish CCPs

- Review your hazard analysis
- Use a scientific tool to determine whether or not a step is a critical control point (CCP)
  - Tools available on MBAA website
- Definitions:
  - Critical Control Point – A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level
  - Control Point – Any step at which biological, chemical or physical factors can be controlled



# Principle 2: Establish CCPs - Example

Step	Hazard	Justification	Control Measures	CCP?	Reason for Decision
Empty Bottle Inspection	Physical – failure of the system to detect foreign matter Chemical – failure of the system to detect residual liquid and caustic	Foreign matter (glass), defective glass and residual liquids could reach consumers and cause injury	Packaging Line SOP's	Yes	No subsequent step will reduce likelihood of physical or chemical hazard getting into finished product.

# Principle 3: Establish Critical Limits for Each CCP

- Critical limits must be applied to all CCPs
- They must be measurable
- If the process does not meet the critical limit, a hazard may exist
- Deviation always triggers documented action
- Must be validated (did the control measure achieve the intended result?)
- Must be correctable

# Principle 3: Establish Critical Limits for Each CCP - Example

Step	Hazard	CCP?	Critical Limit
Empty Bottle Inspection	Physical – failure of the system to detect foreign matter Chemical – failure of the system to detect residual liquid and caustic	Yes	Physical - EBI (Empty Bottle Inspection) Test failure (100% test bottle rejection) Chemical – RLD (Residual Liquid Detector) Test bottle failure (100% test bottle rejection)

# Principle 4: Establish Monitoring Procedures for Each CCP

- Monitoring – To conduct a planned sequence of observations/measurements to assess whether a CCP is under control (relative to its critical limit) and to produce an accurate record for future use in verification.

# Principle 4: Establish Monitoring Procedures - Example

Step	Hazard	What	How	Frequency	Who
Empty Bottle Inspection	Physical – failure of the system to detect foreign matter Chemical – failure of the system to detect residual liquid and caustic	EBI and RLD testing	Refer to SOP describing EBI and RLD testing. The Packaging Operator or QA personnel signs and dates the EBI and RLD Test Bottle Monitoring Form	At start up, hourly and at end of shift	Packaging Operator/ QA personnel

# Principle 5: Establish Corrective Action

- Corrective Action – Procedures followed when a deviation occurs
- Elements include:
  - Determine cause of noncompliance
  - Correct the noncompliance
  - Isolate affected product and determine disposition
  - Take action to prevent recurrence
  - Document the actions

# Principle 5: Establish Corrective Action - Example

Step	Hazard	Corrective Action
Empty Bottle Inspection	Physical – failure of the system to detect foreign matter Chemical – failure of the system to detect residual liquid and caustic	If the CCP tests fail, the line is stopped by Packaging Operator/ QA. Manager/ Supervisor is notified.  Hold product from last successful test.  100% inspection of product since last successful test is done (accept/ reject product based on inspection).  Repair/ fix equipment and verify.

# Principle 6: Establish Verification Procedures

- Verification – Those activities (other than monitoring) which determine the validity of the HACCP plan and the operation of the system according to the plan.
  - Verification of the HACCP plan effectiveness (regular reviews)
  - Verification that the HACCP plan is being followed (regular review of CCP monitoring and corrective action records)
  - Establish a verification schedule or frequency



# Principle 6: Establish Verification Procedures - Example

Step	Hazard	Verification
Empty Bottle Inspection	Physical – failure of the system to detect foreign matter Chemical – failure of the system to detect residual liquid and caustic	Pre-start check completed on system by electricians.  Line Supervisor reviews records after each shift and signs & dates records.  Monthly QA record review.  Annual validation of auto-flush.

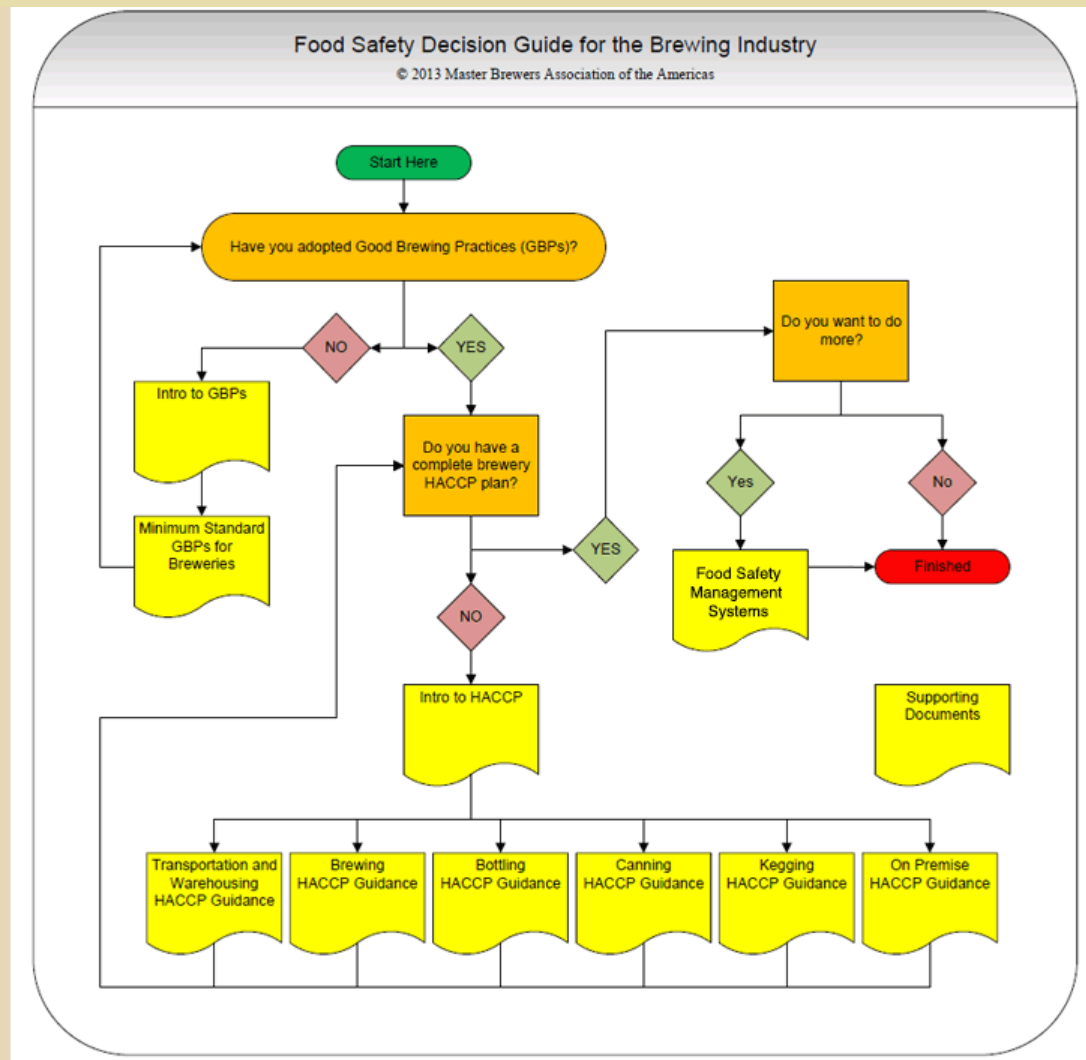
# Principle 7: Establish Record Keeping and Documentation Procedures

- HACCP Program
  - Preliminary steps 1-5
  - CCP summary table
  - Validation of the HACCP plan by competent authority
  - HACCP Plan
- Other Records
  - Supplier conformance (COA's, audits, etc.)
  - Processing, storage and distribution records
  - Monitoring
  - Verification
  - Corrective action
  - Product disposition
  - Validation of shelf life
  - HACCP team meeting minutes
  - Employee training

# Principle 7: Establish Record Keeping and Documentation Procedures - Example

Step	Hazard	HACCP Records
Empty Bottle Inspection	Physical – failure of the system to detect foreign matter Chemical – failure of the system to detect residual liquid and caustic	RLD Test Bottle Monitoring Records Auto-Flush Monitoring Records Corrective Action Records Verification Records Annual Auto-flush Validation Records Product Hold & Inspection Records Product Destruction Records

# MBAA Food Safety Resources – Food Safety Decision Guide



# MBAA Food Safety Resources – Support Documents



The screenshot shows the Master Brewers Association of the Americas (MBAA) website. The header features the MBAA logo, the organization's name, and the tagline "Providing technical leadership for the brewing industry". A search bar is located in the top right corner. Below the header is a navigation menu with links for ABOUT, MEMBERSHIP, DISTRICTS, MEETINGS, EDUCATION, PUBLICATIONS, BREWING RESOURCES, JOB CENTER, and STORE. The main content area is titled "HACCP - Food Safety Decision Guide for the Brewing Industry - Supporting Documents". It is divided into four sections: Good Brewing Practices (GBPs), Hazard Analysis and Critical Control Points (HACCP), Training & Publications, and Industry Information and Audit Guidelines. The GBPs section includes links for "Introduction to Good Brewing Practices (GBPs)" and "Minimum Standard GBPs for Breweries". The HACCP section includes links for "Introduction to Hazard Analysis and Critical Control Points (HACCP)", "Guide to Creating a HACCP Plan", "Implementing a HACCP Plan", "Clemson HACCP for Microbreweries", and "Hazard Analysis and Critical Control Point Principles and Application Guidelines". The HACCP by area section includes links for "Brewing HACCP Guidance", "Bottling HACCP Guidance", "Canning HACCP Guidance", "Kegging HACCP Guidance", "On Premise HACCP Guidance", and "Transportation and Warehousing HACCP Guidance". The Training & Publications section includes links for "MBAA HACCP for Brewery Operations (link coming soon)", "Cornell University – (GMP)", "Cornell University – (Seafood HACCP)", "HACCPtraining.org", "Retail Food Alliance", "GMA", and "FDA guidance on FSMA for Brewers/distillers re: spent grain". The Industry Information and Audit Guidelines section includes links for "Intro to SQF / SQF links", "Mycotoxins in Hops", "Vendor Requirements Letter", "Glass Breakage Protocol", and "Glass Breakage Log".

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Master Brewers Association of the Americas > BREWING RESOURCES > Food Safety > HACCP > HACCP - Supporting Documents

**HACCP - Food Safety Decision Guide for the Brewing Industry - Supporting Documents**

**Good Brewing Practices (GBPs)**

- Introduction to Good Brewing Practices (GBPs)
- Minimum Standard GBPs for Breweries

**Hazard Analysis and Critical Control Points (HACCP)**

- Introduction to Hazard Analysis and Critical Control Points (HACCP)
- Guide to Creating a HACCP Plan
- Implementing a HACCP Plan
- Clemson HACCP for Microbreweries
- Hazard Analysis and Critical Control Point Principles and Application Guidelines

**HACCP by area**

- Brewing HACCP Guidance
- Bottling HACCP Guidance
- Canning HACCP Guidance
- Kegging HACCP Guidance
- On Premise HACCP Guidance
- Transportation and Warehousing HACCP Guidance

**Training & Publications**

- MBAA HACCP for Brewery Operations (link coming soon)
- Cornell University – (GMP)
- Cornell University – (Seafood HACCP)
- HACCPtraining.org
- Retail Food Alliance
- GMA
- FDA guidance on FSMA for Brewers/distillers re: spent grain

**Industry Information and Audit Guidelines**

- Intro to SQF / SQF links
- Mycotoxins in Hops
- Vendor Requirements Letter
- Glass Breakage Protocol
- Glass Breakage Log

# MBAA HACCP Course

- 2 day comprehensive course
- Any brewery planning to implement a HACCP plan should strongly consider sending a member of their HACCP team to the course
- Course tuition includes a voucher to take the Certified Food Safety HACCP Manager examination
- The next MBAA HACCP course is May 2-3 in Philadelphia