


# Continuous Improvement in Food & Beverage Manufacturing



Oregon Dairy Industries

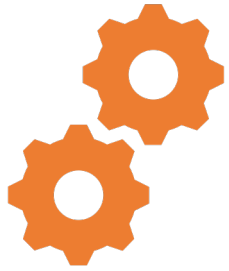
2024 Conference

Scott Butler

What is Continuous  
Improvement in Food and  
Beverage Manufacturing?

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# Continuous Improvement?



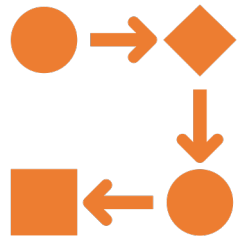
**A philosophy aimed at constantly optimizing processes to achieve better results.**



**Not a one-time fix or effort but an ongoing cycle of:**

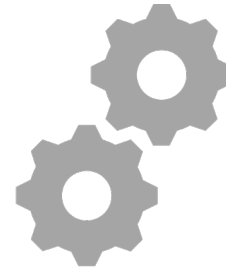
- Identifying areas for improvement
- Implementing changes
- Measuring effectiveness
- Use learnings to drive more improvement

# The Continuous Improvement Cycle (PCDA)



**Continuous Improvement is a virtuous cycle made up of:**

Planning  
Checking  
Doing  
Acting



**The processes and tools used in Continuous Improvement focus on the following:**

Small, incremental changes for the better  
Data-driven decision making  
Employee Engagement

# Benefits of Continuous Improvement Programs

- Increased efficiency and productivity by eliminating waste and streamlining processes.
- Improve quality with formalized processes to reduce variation and reduce risk of process failures.
- Enhanced customer satisfaction – reduce lead times, more competitive pricing, more consistent quality.
- Increased team member engagement – involving employees in the improvement process.

# Lean Manufacturing in Food Processing

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- An ownership change and new operations leadership led to a complete review of the company supply chain with the goal of identifying improvement opportunities. A review by an international consulting firm resulted in a recommendation improve performance with **Lean Manufacturing**.
- Supply chain included 19 manufacturing facilities and 5 distributions centers.
- Lean program started with the hiring of 3 professionals with experience with lean in the automotive industry.
- Lean program startup supplemented with the support of regional lean consulting firms.
- Early success led to the expansion of the program with the hiring of 12 additional Lean mentors that were embedded in faculties located across the country along with the additional of a Director - Lean

# Tools used to support lean in food production

- 5S – Workplace organization
- Fishbone diagramming for root cause analysis
- 5 why – another form of root cause investigation
- Kaizen events - 4–5-day focused improvement activity
- OEE – use of Overall Equipment Effectiveness metric to measure production line improvement opportunities
- Use of A3 reporting to track project results and document Kaizen events.
- Active use of “visual factory” techniques.

# Benefits of Continuous Improvement beyond production operations

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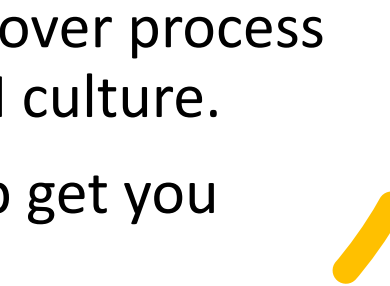
- Lean and other CI programs can improve performance beyond improvements to production line waste reduction.
- Any transactional process in the company can be improved.
- Examples include:
  - Pallet movements in a distribution center
  - Deduction clearing processes in the sales organization
  - IT help desk transactions
  - Accounts payable/receivables
  - Truck/rail car demurrage costs



# Five-year cost/benefit of a Lean implementation

- Staffing and program costs – \$1 to \$1.5 million per year
- Direct cost savings from waste reduction - \$100+ million
- Other benefits
  - Improved employee retention
  - Reduction in lost time accidents
  - Fewer customer complaints
  - Better on-time delivery performance
  - Standardized production methods across the company
  - More consistent team member training

# Scale of a Continuous Improvement Program

- It is possible and sometimes preferable to start a CI program without a significant upfront cost.
  - It is reasonable to start with one department, one production line or one plant to find what works best in your organization.
  - As CI has become a common element in many production systems, you may already have people in your organization who are proficient in CI tools and would be excited to help get the process started in your company.
  - Look to hire people in the normal turnover process that have experience in working in a CI culture.
  - Outside resources are available to help get you started.
- 

# Starting and sustaining a CI Program

Launching a successful CI program requires a strategic approach that emphasizes both cultural shift and the use of practical tools.

- Define Goals and Metrics
  - Identify areas for improvement. Focus on aspects critical to your operation (food safety, quality, efficiency, waste reduction, customer satisfaction)
  - Establish metrics to track progress
- Foster a Culture of Improvement
  - Leadership Commitment: Sr. management needs to champion the program, allocating resources and demonstrating personal involvement.
  - Employee Engagement: Empower team members at all levels to identify problems, suggest solutions, and participate in improvement projects

# Starting and Sustaining a CI Program

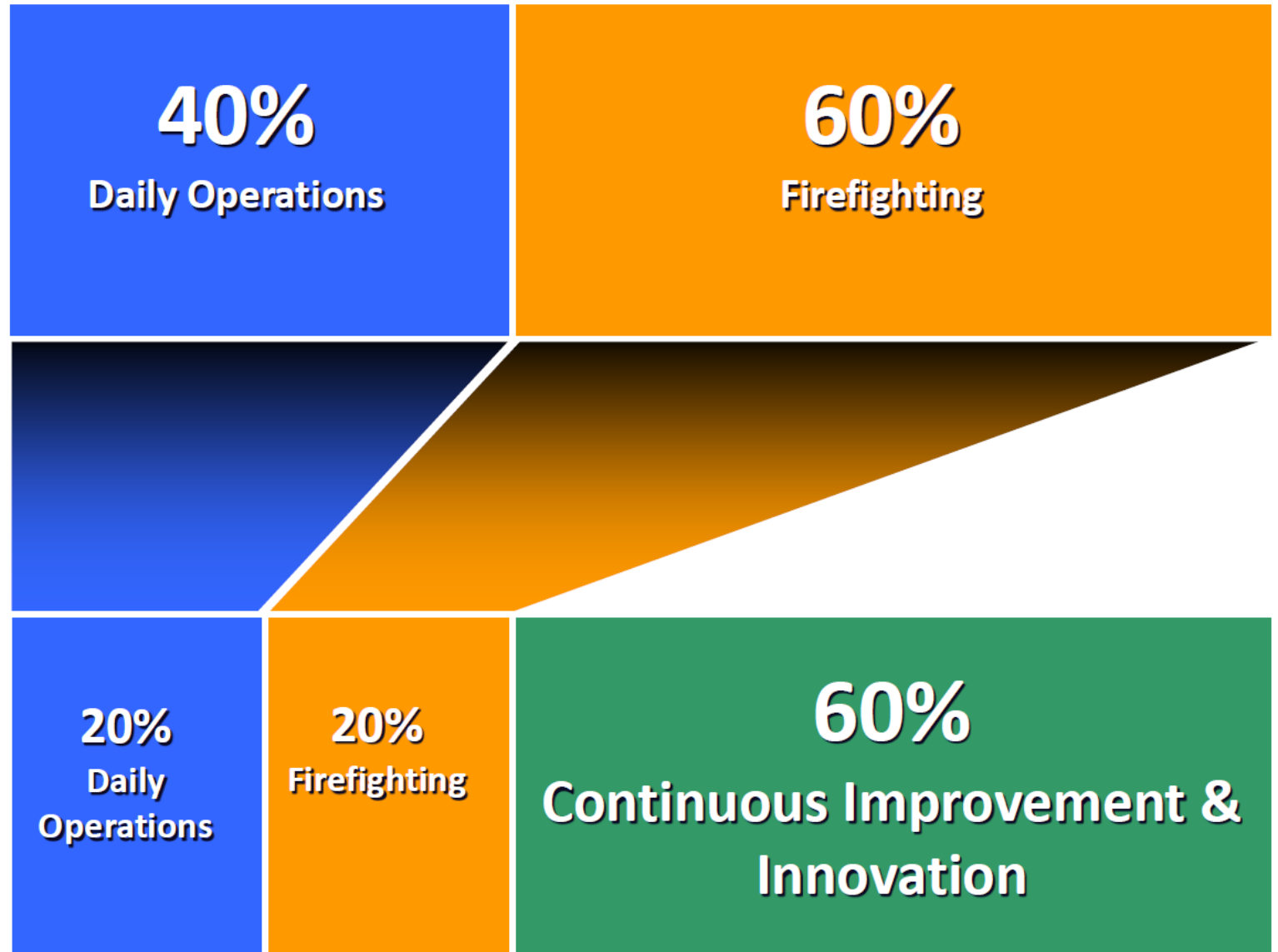
- Leverage Continuous Improvement Tools:
  - Standardization: Develop and Implement standardized procedures for core process to ensure consistency and quality. Develop a common language to describe your improvement options.
  - Use tools that are appropriate for your business.
  - Data Analysis: Collect and analyze data to identify trends, root causes of problems, and measure the impact of implemented changes.
- Implement, Monitor, and Adapt:
  - Pilot your chosen improvement initiatives on a smaller scale before full implementation.
  - Regularly assess progress through defined metrics.
  - Be prepared to adapt and refine your approach.
  - Make it sustainable – integrate CI into your culture, making it an ongoing process, not a one-time project.

**Where Most of Us Get It Wrong  
When It Comes to Continuous Improvement**

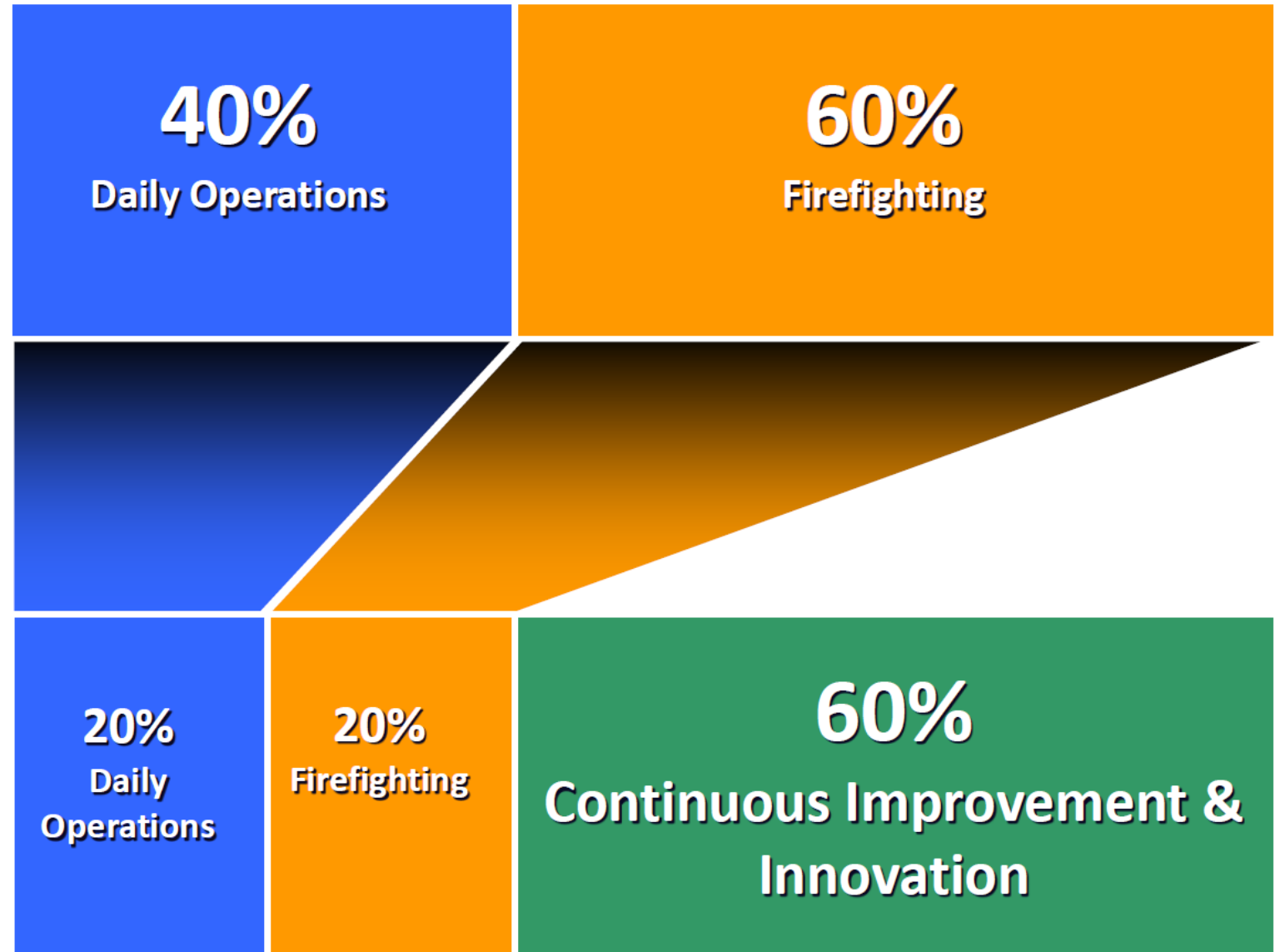
Russ Ellsworth – ODI Conference 2024

*Tillamook*

**Mistake:  
Not  
Understanding  
People Make  
Continuous  
Improvement  
Happen**



**Rather:  
Sponsor helps  
team member  
have some  
time to work  
on (not in) the  
business**



# **Mistake: Since We Can Measure It, We Need to Improve It**





# Standing on the Scale Every Day **Will NOT** Guarantee I Reach My Target Weight



# Mistake: When the Tool Needs a Job to Do



**Instead, Let the Need for the Tool  
Present Itself**



# The Process Improvement Framework

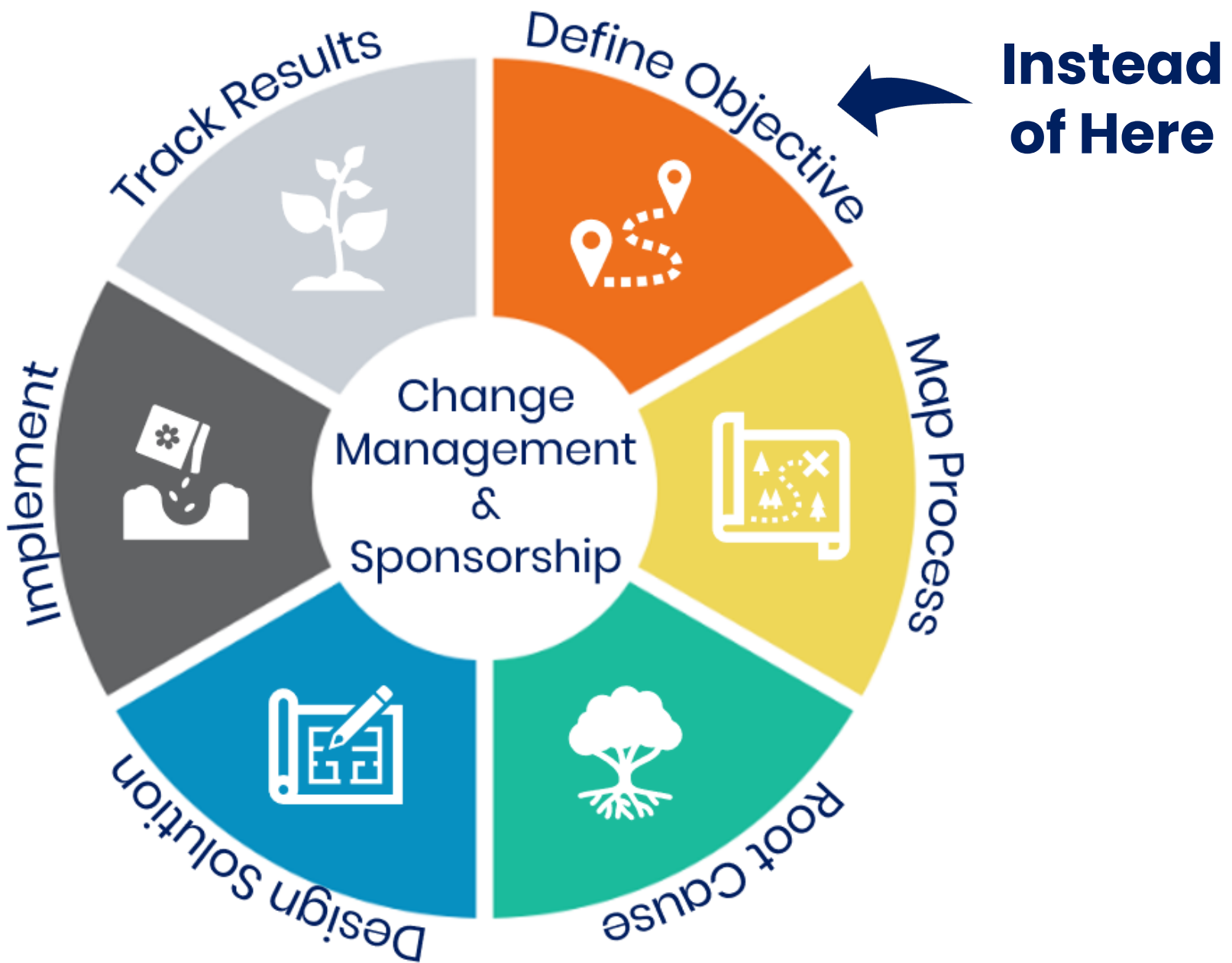


# The Process Improvement Framework



**Mistake:  
Starting Here** →

# The Process Improvement Framework



# The Tools Unlock the Mind

*Tillamook*



**Continuous  
Improvement**

**=**

**Process  
Improvement**



**Continuous  
Improvement** = **Process  
Improvement**

What **Process** Do We  
Improve? ...

## What's Wrong with the Process?



**Unreliable**

← **Six Sigma:** Variation is the Enemy



**Can't Keep Up**

← **Theory of Constraints:** Bottleneck



**Resource Heavy**  
Time, \$, Attention

← **Lean:** Organize for Efficiency



**Six Sigma:** Variation is the Enemy



**Lean:** Organize for Efficiency



**Theory of Constraints:** Bottleneck



## What tools do these methodologies have in common?

- Understand the Process (**Process Map**)
- Find Earliest Point of Failure/Deviation (**5 Why**)
- Organize for Efficiency (**5S**)
- Trim Out the Fat (**7 Wastes**)
- Rhythm of the Process  
(Metronome is the **Bottleneck**)

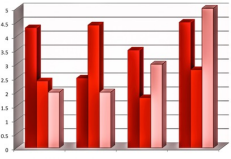
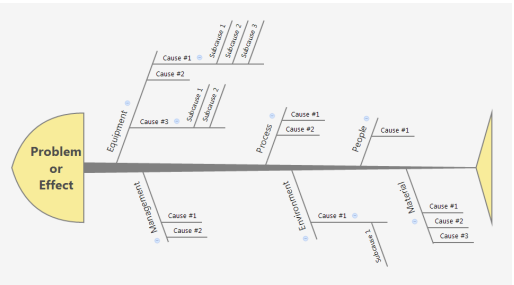
# Hierarchy of Business Result

1. Absolutely Nail the Reason Your Customers **Hire Your Product**
2. Provide That to **More People**
3. Expand **Margin**  
↑ Sales ↓ Expenses
4. **Invest in the Business**
  - **People & CAPEX**

**THANK YOU**



□ HA □ I □ A3?





# A3



## ASQ A3 Report



Division/Location/Dept.:	Project Name:	Project #:	Version:	Start Date: Last Updated:	Close Date:															
<b>Team Members and Roles</b>			<b>Goals/Targets/Metrics Impacted</b> (Specific outcomes required, including current and future goals.)																	
Project champion: _____																				
Process owner: _____																				
CI facilitator: _____																				
Other team members: _____																				
<b>Problem Statement and Possible Constraints</b> (Clearly and succinctly define the presenting problem. Why are we talking about it?)			<b>Analysis/Think</b> (Identify root cause and solution and/or design future state. What do you know and how do you know it?)																	
_____																				
<b>Scope—Define start and end of process</b> (Define the elements of what is in scope for the project.)																				
_____																				
<b>Current State</b> (Where do we stand today? Have you gathered and verified facts—not just data and anecdotes—to clearly understand current state? Have you gone to the gemba?)			<b>Action Items—Improve/Implement</b> (Activities required to achieve proposed future state. When updating a process, make sure all procedures get updated.)																	
_____			<table border="1"> <thead> <tr> <th>Description</th> <th>Responsible</th> <th>Completion Date</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>			Description	Responsible	Completion Date												
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			<b>Measures to Control/Sustain</b> (Ensure an ongoing plan, do check, adjust)																	
			_____																	
			<b>Sign Off Project Completion</b>																	
			Champion: _____		Process Owner: _____															

# A SIMPLE ADVANCED EXAMPLE THE SIMPLE

- C [Barcode]

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### 1. Clarify the Problem

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**Ideal Situation:** No Off Taste

**Current Situation:** Withdrawals of seven different milk type/codes. Seven involved withdrawing items from the shelves, one held as a precaution.

**Problem Statement:** What elements of receiving, processing, and packaging are causing off taste in milk produced on various production days

### 2. Breakdown the problem

The following are the products with suspected off flavor and have been held or withdrawn

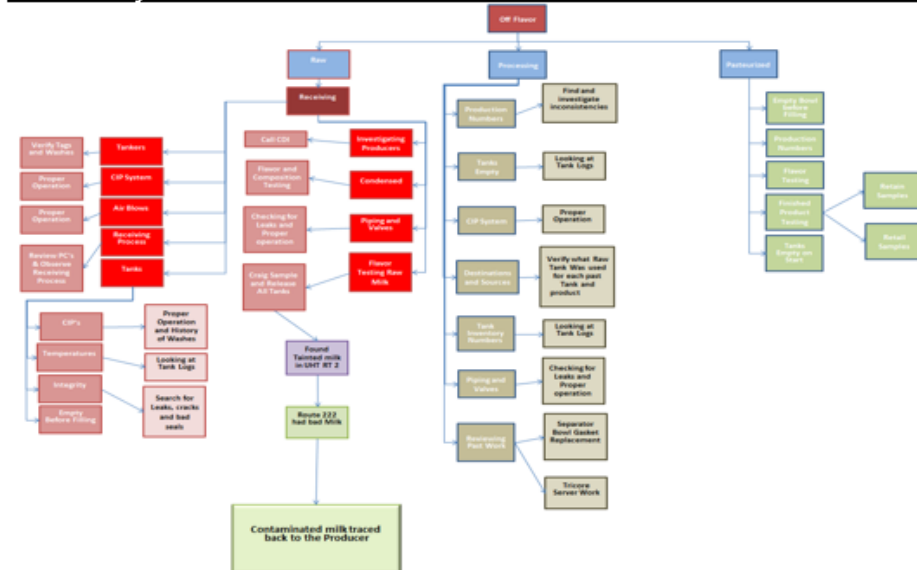
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### 3. Target setting

Eliminate this series of complaints by reviewing the following:

- 1) Procedures in Raw Receiving, Processing, and packaging
- 2) CIP Practices
- 3) Reviewing Production history

### 4. Cause Analysis



### 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following	
	Smell Upon Sampling
	Flavor After Heating-Receivers or Lab Techs
	Raw Tanks Released By Supervisor
	Lab Tech will release if Supervisor is not available

### Developed a Finished Product Flavoring SOP

Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

### Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
1 Raw Flavoring SOP	Complete	12/1/2022
2 Finished Product Flavoring	Complete	12/1/2022
3 Contact Computer Programmer to update report	Complete	12/5/2022
4 Processing Records of Raw Tank	Complete	12/4/2022
5 Raw Tank Optimization	Complete	12/3/2022
6 Forensics Lab	Complete	12/5/2022
7 Report Training	Complete	12/3/2022
8 Receiving Composition	Complete	12/4/2022
9 Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### In Development

1	SOP for Optimizing Raw Tank inventory
2	Forensics Lab for quicker results in the future
3	Better Training for those who can run Computer Reports
4	Receivers testing Composition before Products are received
5	Timely notification of Co-Pack Customers

### Processing Developments

1	Processing Record includes Raw Tank used for each batch
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4	

### 7. Monitor Results and Process

#### The Result

No new complaints for off flavor from production dates after the withdrawal

#### The Process

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Recall and Retrieval SOP on workbook below  
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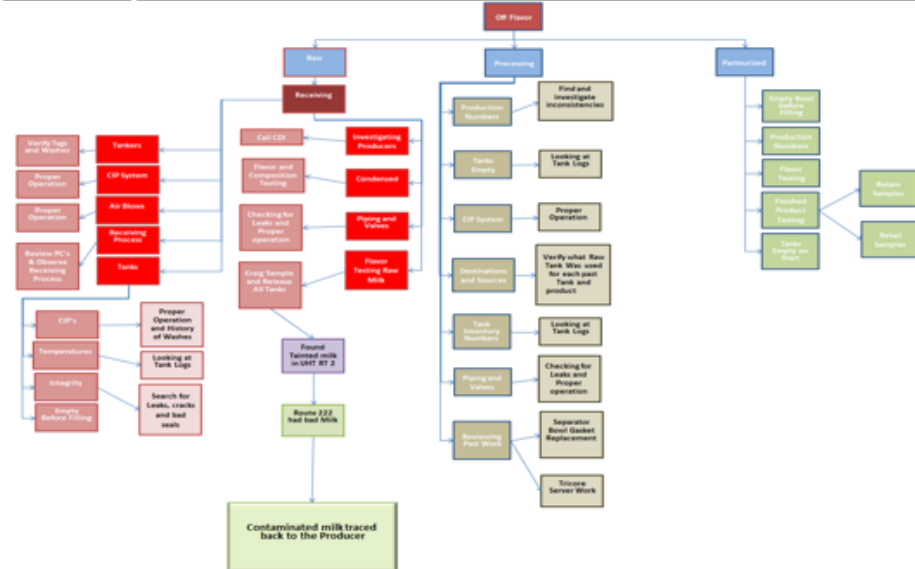
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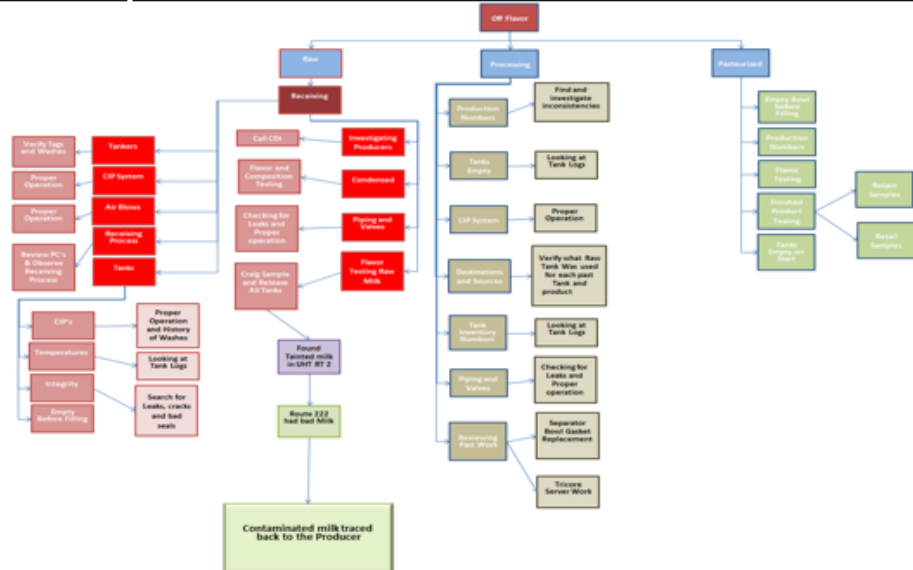
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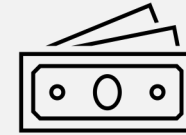
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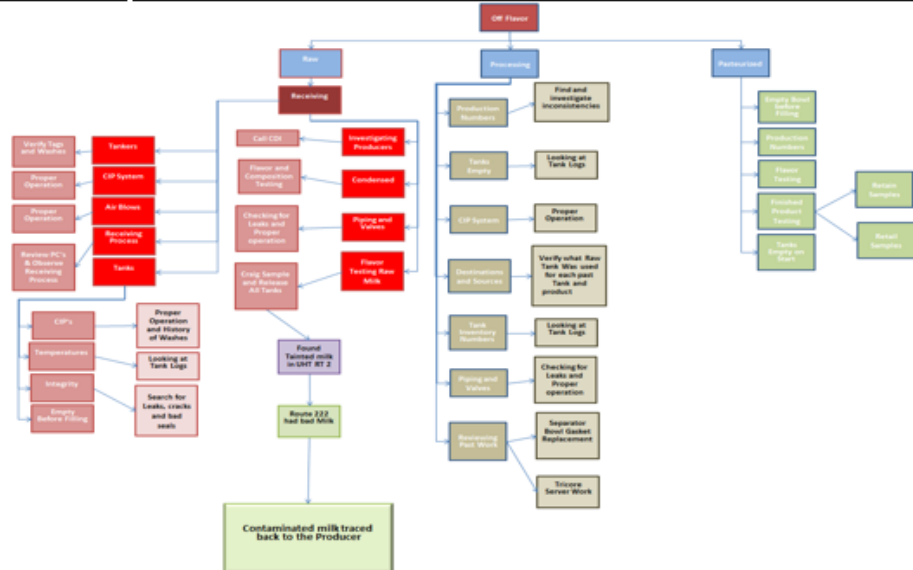
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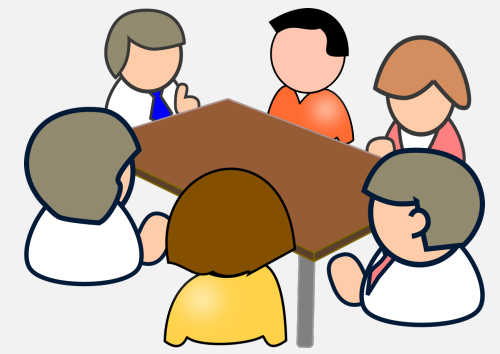
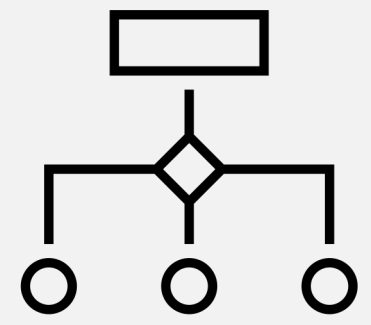
Recal and Retrieval SOP on workbook below

[Withdrawal and Recall ProceduresRecall-Withdrawal Procedure at the Plant Level.pdf](#)



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### 1. Clarify the Problem

**Ultimate Goal:** Identify and Eliminate the Off Taste in various milk types on various production dates on the HTST Milk Lines

**Ideal Situation:** No Off Taste

**Current Situation:** Withdrawals of seven different milk type/codes. Seven involved withdrawing items from the shelves, one held as a precaution.

**Problem Statement:** ... What elements of receiving, processing, and packaging are causing off taste in milk produced on various production Days

### 2. Breakdown the problem

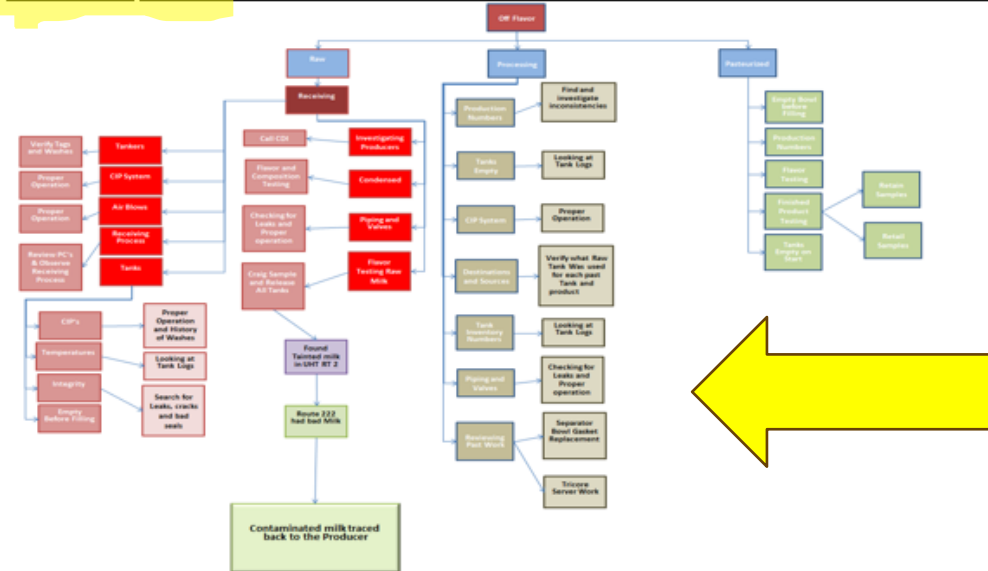
The following are the products with suspected off flavor and have been held or withdrawn

Brand	Product Type	Size	UPC	Code Date	Status
Good Times	1% Low-fat	Gallon	122-333	2-Nov	Withdrawal
Good Times	Vit D Whole Milk	Gallon	122-334	2-Nov	Withdrawal
Lucky Day	Vit D Whole Milk	Gallon	123-335	9-Nov	Withdrawal
Lucky Day	2% Reduced Fat	Gallon	123-337	3-Nov	Withdrawal
Good Times	Vit D Whole Milk	Gallon	122-334	9-Nov	Withdrawal
Good Times	Fat Free	Gallon	122-666	3-Nov	Withdrawal
Lucky Day	Fat Free	Half Gallon	122-667	3-Nov	Withdrawal
Lucky Day	Half & Half	Quart	122-668	11-Nov	Held

### 3. Target setting

Eliminate this series of complaints by reviewing the following:  
 1) Procedures in Raw Receiving, Processing, and packaging  
 2) CIP Practices  
 3) Reviewing Production history

### 4. Cause Analysis



### 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following

Smell Upon Sampling
Flavor After Heating-Receivers or Lab Techs
Raw Tanks Released By Supervisor
Lab Tech will release if Supervisor is not available

**In Development**

1) SOP for Optimizing Raw Tank inventory
2) Forensics Lab for quicker results in the future
3) Better Training for those who can run Computer Reports
4) Receivers testing Composition before Products are received
5) Timely notification of Co-Pack Customers

### Developed a Finished Product Flavoring SOP

Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

**Processing Developments**

1) Processing Record includes Raw Tank used for each batch
2)
3)
4)

### Contacting Programmer

Raw Tank Inventory Recording
Raw Tank Labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
1) Raw Flavoring SOP	Complete	12/1/2022
2) Finished Product Flavoring	Complete	12/1/2022
3) Contact Computer Programmer to update report	Complete	12/5/2022
4) Processing Records of Raw Tank	Complete	12/4/2022
5) Raw Tank Optimization	Complete	12/3/2022
6) Forensics Lab	Complete	12/5/2022
7) Report Training	Complete	12/3/2022
8) Receiving Composition	Complete	12/4/2022
9) Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### 7. Monitor Results and Process

#### The Result

No new complaints for off flavor from production dates after the withdrawal

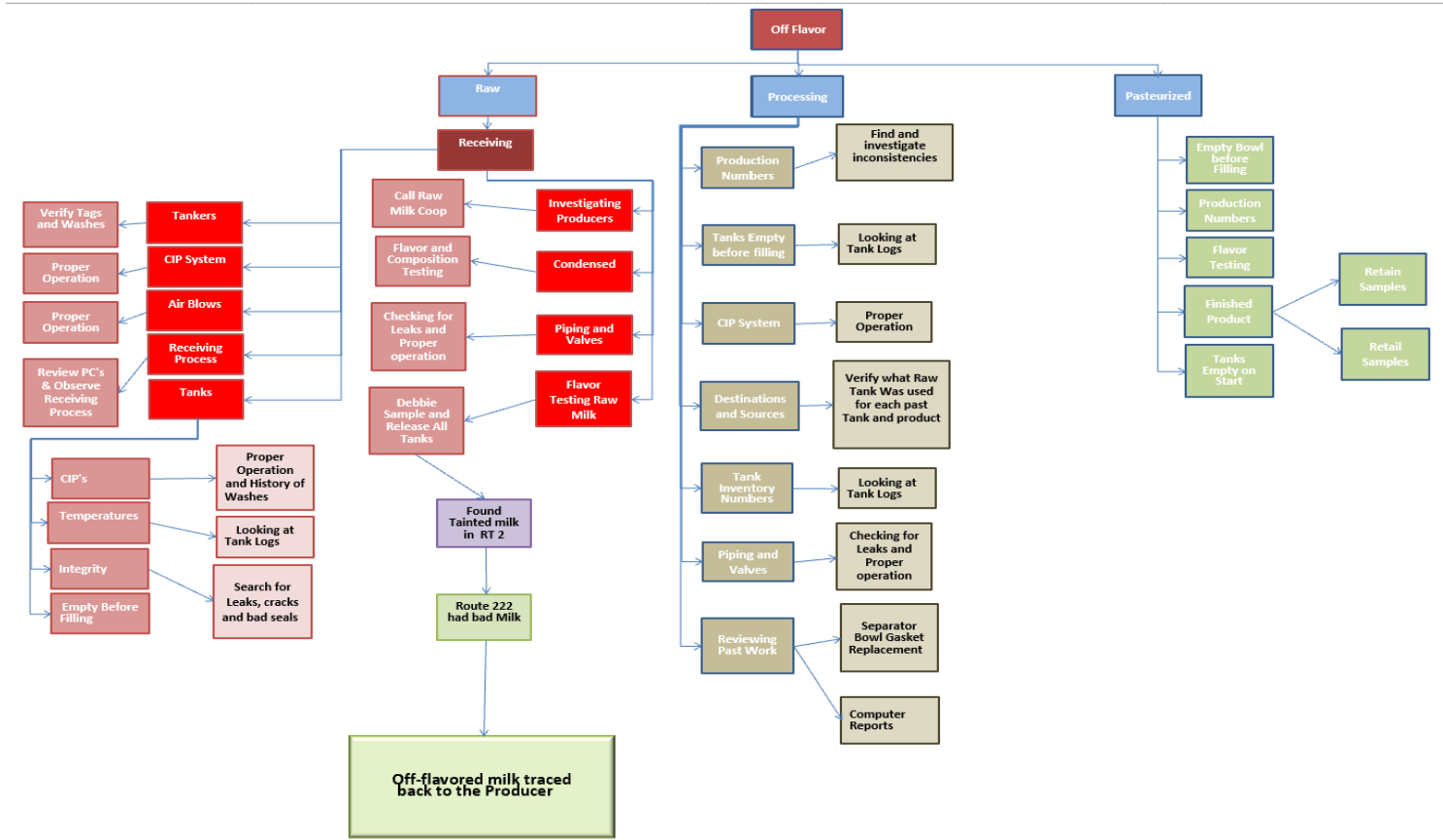
#### The Process

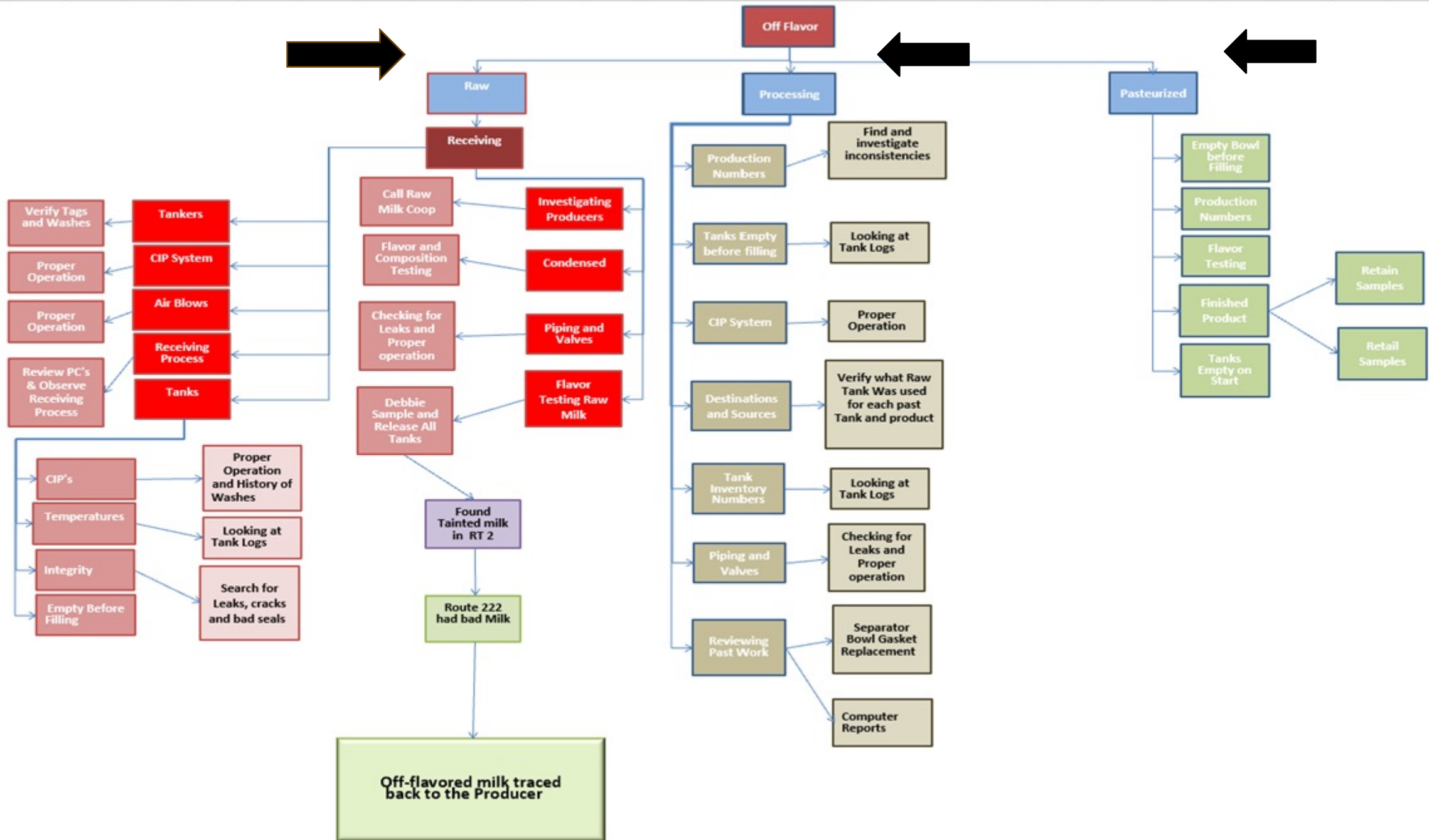
Countermeasures	Status	Target Date	Owner
1) Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2) Report Training	Complete	1/7/2023	Jesus
3) SOP for CO-pack	Complete	1/7/2023	Plant Manager

### 8. Standardize Successful Processes

Recall and Retrieval SOP on workbook below

[Withdrawal and Recall Procedures/Recall-Withdrawal Procedure at the Plant Level.pdf](#)





### 1. Clarify the Problem

**Ultimate Goal:** Identify and Eliminate the Off Taste in various milk types on various production dates on the HTST Milk Lines

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### 2. Breakdown the problem

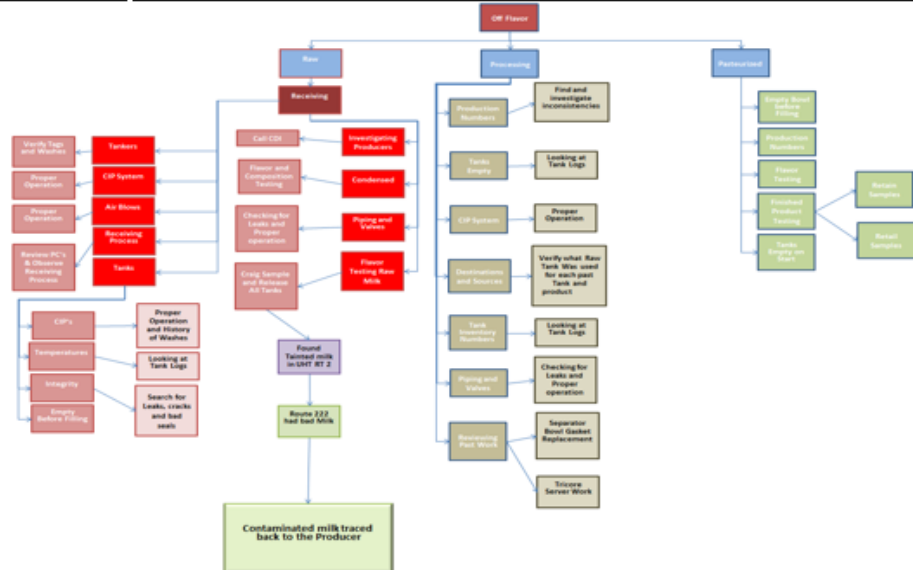
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Lucky Day	Vit D Whole Milk	Gallon	123-335	9-Nov	Withdrawal
Lucky Day	2% Reduced Fat	Gallon	123-337	3-Nov	Withdrawal
Good Times	Vit D Whole Milk	Gallon	122-334	9-Nov	Withdrawal
Good Times	Fat Free	Gallon	122-666	3-Nov	Withdrawal
Lucky Day	Fat Free	Half Gallon	122-667	3-Nov	Withdrawal
Lucky Day	Half & Half	Quart	122-668	11-Nov	Held

### 3. Target setting

Eliminate this series of complaints by reviewing the following:  
 1) Procedures in Raw Receiving, Processing, and packaging  
 2) CIP Practices  
 3) Reviewing Production history

### 4. Cause Analysis



### 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following

- Smell Upon Sampling
- Flavor After Heating-Receivers or Lab Techs
- Raw Tanks Released By Supervisor
- Lab Tech will release if Supervisor is not available

#### In Development

- SOP for Optimizing Raw Tank inventory
- Forensics Lab for quicker results in the future
- Better Training for those who can run Computer Reports
- Receivers testing Composition before Products are received
- Timely notification of Co-Pack Customers

#### Developed a Finished Product Flavoring SO

- Filler Operators on each Tank and Product
- Lab Techs on Samples taken
- Staff During daily outtings

#### Processing Developments

- Processing Record includes Raw Tank used for each batch
- 
- 
- 

#### Contacting Programmer

- Raw Tank Inventory Recording
- Raw Tank labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
1) Raw Flavoring SOP	Complete	12/1/2022
2) Finished Product Flavoring	Complete	12/1/2022
3) Contact Computer Programmer to update report	Complete	12/5/2022
4) Processing Records of Raw Tank	Complete	12/4/2022
5) Raw Tank Optimization	Complete	12/3/2022
6) Forensics Lab	Complete	12/5/2022
7) Report Training	Complete	12/3/2022
8) Receiving Composition	Complete	12/4/2022
9) Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### 7. Monitor Results and Process

#### The Result

No new complaints for off flavor from production dates after the withdrawal

#### The Process

Countermeasures	Status	Target Dat	Owner
1) Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2) Report Training	Complete	1/7/2023	Jesus
3) SOP for CO-pack	Complete	1/7/2023	Plant Manager

### 8. Standardize Successful Processes

Recal and Retrieval SDP on workbook below

[Withdrawal and Recall Procedures/Recall-Withdrawal Procedure at the Plant Level.pdf](#)

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**5. Develop and Evaluate Potential Countermeasures**

<b>Developed a Raw Milk Flavoring SOP</b>	<a href="#">Raw Milk Flavors - Receiving_XXX.docx</a>
For each Tanker Test the following	
	Smell Upon Sampling
	Flavor After Heating-Receivers or Lab Techs
	Raw Tanks Released By Supervisor
	Lab Tech will release if Supervisor is not available

<b>In Development</b>	
1	SOP for Optimizing Raw Tank inventory
2	Forensics Lab for quicker results in the future
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4	Receivers testing Composition before Products are received
5	Timely notification of Co-Pack Customers

<b>Developed a Finished Product Flavoring SOP</b>
Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

<b>Processing Developments</b>	
1	Processing Record includes Raw Tank used for each batch
2	
3	
4	

<b>Contacting Programmer</b>
Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

**DEVELOPING COUNTERMEASURES AND SOLUTIONS**

.....

Developing effective, feasible and permanent solutions is the key to process improvement.



### 1. Clarify the Problem

**Ultimate Goal:** Identify and Eliminate the Off Taste in various milk types on various production dates on the HTST Milk Lines

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### 2. Breakdown the problem

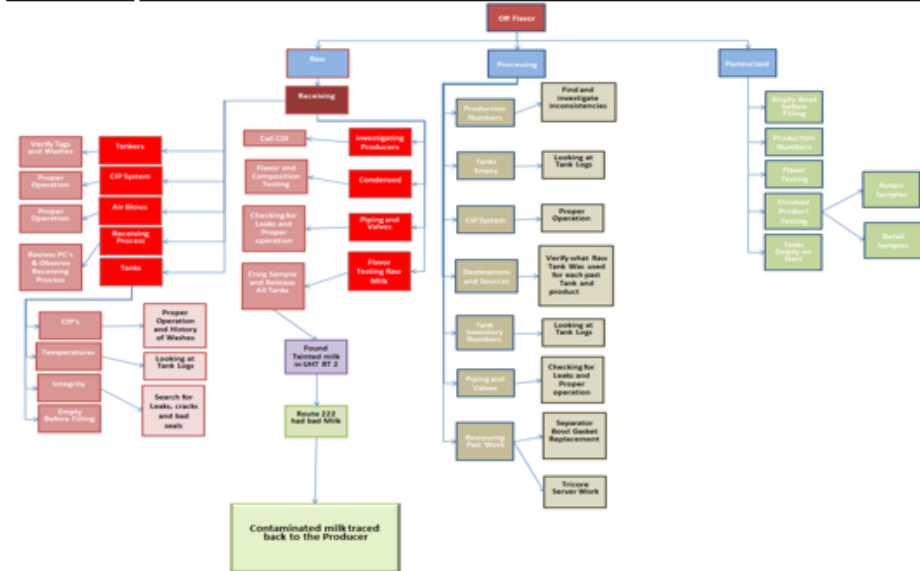
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Good Times	Vit D Whole Milk	Gallon	122-334	2-Nov	Withdrawal
Lucky Day	Vit D Whole Milk	Gallon	123-335	9-Nov	Withdrawal
Lucky Day	2% Reduced Fat	Gallon	123-337	3-Nov	Withdrawal
Good Times	Vit D Whole Milk	Gallon	122-334	9-Nov	Withdrawal
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Lucky Day	Fat Free	Half Gallon	122-667	3-Nov	Withdrawal
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### 3. Target setting

Eliminate this series of complaints by reviewing the following:  
 1) Procedures in Raw Receiving, Processing, and packaging  
 2) CIP Practices  
 3) Reviewing Production history

### 4. Cause Analysis



### 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following	
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Lab Techs on Samples taken
Staff During daily cuttings

#### Processing Developments

1	Processing Record includes Raw Tank used for each batch
2	
3	
4	

### Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
1 Raw Flavoring SOP	Complete	12/1/2022
2 Finished Product Flavoring	Complete	12/1/2022
3 Contact Computer Programmer to update report	Complete	12/5/2022
4 Processing Records of Raw Tank	Complete	12/4/2022
5 Raw Tank Optimization	Complete	12/3/2022
6 Forensics Lab	Complete	12/5/2022
7 Report Training	Complete	12/3/2022
8 Receiving Composition	Complete	12/4/2022
9 Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### 7. Monitor Results and Process

#### The Result

No new complaints for off flavor from production dates after the withdrawal

#### The Process

Countermeasures	Status	Target Dat	Owner
1 Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2 Report Training	Complete	1/7/2023	Jesus
3 SOP for CO-pack	Complete	1/7/2023	Planr Manager

### 8. Standardize Successful Processes

Recal and Retrieval SOP on workbook below

[Withdrawal and Recall Procedures/Recall/Withdrawal Procedure at the Plant Level.pdf](#)

# THE 6 STEPS TO DEVELOPING SOLUTIONS THROUGH

## DEVELOPING COUNTERMEASURES AND SOLUTIONS

Developing effective, feasible and permanent solutions is the key to process improvement.



	Countermeasures	Status	Target Date
1	Raw Flavoring SOP	Complete	12/1/2022
2	Finished Product Flavoring	Complete	12/1/2022
3	Contact Computer Programmer to update reports	Complete	12/5/2022
4	Processing Records of Raw Tank	Complete	12/4/2022
5	Raw Tank Optimization	Complete	12/3/2022
6	Forensics Lab	Complete	12/5/2022
7	Report Training	Complete	12/3/2022
8	Receiving Composition	Complete	12/4/2022
9	Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022



### 1. Clarify the Problem

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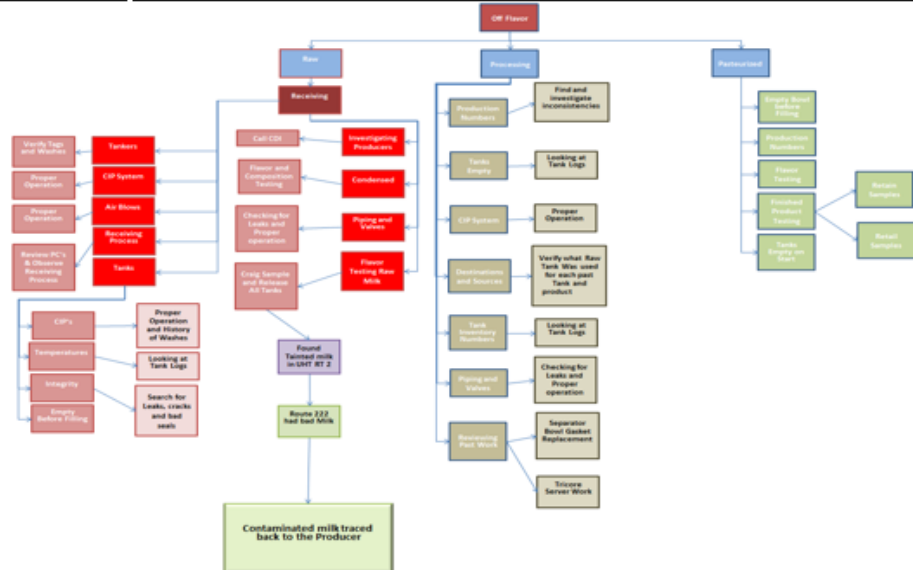
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### 3. Target setting

Eliminate this series of complaints by reviewing the following:  
 1) Procedures in Raw Receiving, Processing, and packaging  
 2) CIP Practices  
 3) Reviewing Production history

### 4. Cause Analysis



### 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following	
	Smell Upon Sampling
	Flavor After Heating-Receivers or Lab Techs
	Raw Tanks Released By Supervisor
	Lab Tech will release if Supervisor is not available

In Development	
1	SOP for Optimizing Raw Tank inventory
2	Forensics Lab for quicker results in the future
3	Better Training for those who can run Computer Reports
4	Receivers testing Composition before Products are received
5	Timely notification of Co-Pack Customers

### Developed a Finished Product Flavoring SO

Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

Processing Developments	
1	Processing Record includes Raw Tank used for each batch
2	
3	
4	

### Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
1) Raw Flavoring SOP	Complete	12/1/2022
2) Finished Product Flavoring	Complete	12/1/2022
3) Contact Computer Programmer to update report	Complete	12/5/2022
4) Processing Records of Raw Tank	Complete	12/4/2022
5) Raw Tank Optimization	Complete	12/3/2022
6) Forensics Lab	Complete	12/5/2022
7) Report Training	Complete	12/3/2022
8) Receiving Composition	Complete	12/4/2022
9) Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### 7. Monitor Results and Process

#### The Result

No new complaints for off flavor from production dates after the withdrawal

#### The Process

Countermeasures	Status	Target Dat	Owner
1) Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2) Report Training	Complete	1/7/2023	Jesus
3) SOP for CO-pack	Complete	1/7/2023	Plant Manager

### 8. Standardize Successful Processes

Recall and Retrieval SOP on workbook below

[Withdrawal and Recall ProceduresRecall-Withdrawal Procedure at the Plant Level.pdf](#)



# EFFECTIVE ACTION DESCRIPTION

## 1. Clarify the Problem

**Ultimate Goal:** Identify and Eliminate the Off Taste in various milk types on various production dates on the HTST Milk Lines

**Ideal Situation:** No Off Taste

**Current Situation:** Withdrawals of seven different milk type/codes. Seven involved withdrawing items from the shelves, one held as a precaution.

**Problem Statement:** ... What elements of receiving, processing, and pack aging are causing off taste in milk produced on various production days

## 2. Breakdown the problem

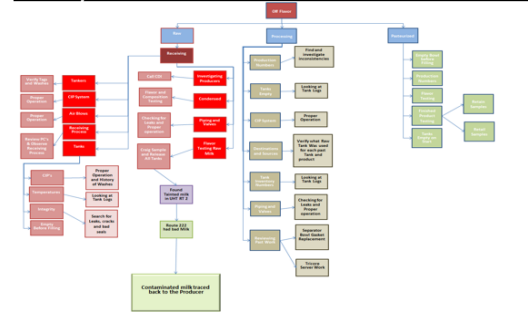
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Good Times	1% D Whole Milk	Gallon	122-334	2-Nov	Withdrawal
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Lucky Day	2% Reduced Fat	Gallon	122-337	3-Nov	Withdrawal
Good Times	1% D Whole Milk	Gallon	122-334	3-Nov	Withdrawal
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Lucky Day	Fat Free	Half Gallon	122-667	3-Nov	Withdrawal
Lucky Day	Half & Half	Quart	122-668	11-Nov	Held

## 3. Target setting

Eliminate this series of complaints by reviewing the following:  
 1) Procedures in Raw Receiving, Processing, and pack aging  
 2) CIP Practices  
 3) Receiving Production history

## 4. Cause Analysis



## 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following

Smell Upon Sampling	1) SOP for Optimizing Raw Tank Inventory
Flavor After Heating/Receivers or Lab Techs	2) Forensics Lab for quicker results in the future
Flaw Tanks Released By Supervisor	3) Better Training for those who can run Computer Reports
Lab Tech will release if Supervisor is not available	4) Receivers testing Composition before Products are received
	5) Timely notification of C/o-Pack Customers

## Developed a Finished Product Flavoring SO

Flavor Operators on each Tank and Product	
Lab Techs on Samples taken	
Staff During daily routines	

## Contacting Programmer

Raw Tank Inventory Recording	
Raw Tank labeled on Processing Log	

## 6. See Countermeasures through

Countermeasures	Status	Target Date
1) Raw Flavoring SOP	Complete	12/2/2022
2) Finished Product Flavoring	Complete	12/2/2022
3) Contact Computer Programmer to update report	Complete	12/2/2022
4) Processing Records of Raw Tank	Complete	12/4/2022
5) Raw Tank Optimization	Complete	12/3/2022
6) Forensics Lab	Complete	12/5/2022
7) Report Training	Complete	12/3/2022
8) Receiving Composition	Complete	12/4/2022
9) Internal Timely Notification SOP for CO-pack	Debbie, John, Plant Manager	12/2/2022

## 7. Monitor Results and Process

**The Result**  
 No new complaints for off flavor from production dates after the withdrawal

Countermeasures	Status	Target Date	Owner
1) Raw Tank Optimization	Complete	12/2/2023	Plant Manager
2) Report Training	Complete	1/7/2023	Jesus
3) Internal Timely Notification	Complete	1/7/2023	Plant Manager
3) SOP for CO-pack	Complete	1/7/2023	Plant Manager

## 8. Standardize Successful Processes

Recal and Retrieval SOP on workbook below  
[Withdrawal and Recall Processes Equal Withdrawal Procedure at the Plant Level.pdf](#)

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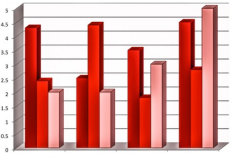
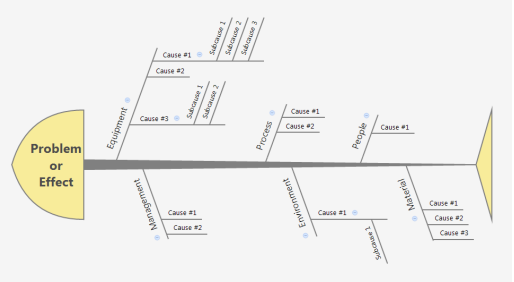
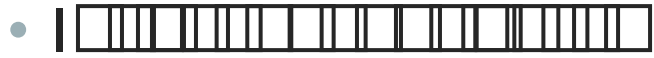
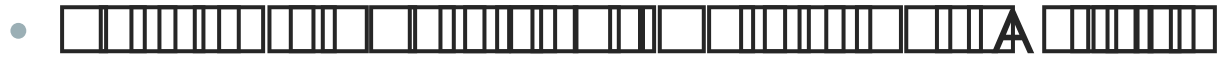
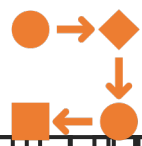
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### 1. Clarify the Problem

**Ultimate Goal:** Identify and Eliminate the Off Taste in various milk types on various production dates on the HTST Milk Lines

**Ideal Situation:** No Off Taste

**Current Situation:** Withdrawals of seven different milk type/codes. Seven involved withdrawing items from the shelves, one held as a precaution.

**Problem Statement:** What elements of receiving, processing, and packaging are causing off taste in milk produced on various production days

### 2. Breakdown the problem

The following are the products with suspected off flavor and have been held or withdrawn

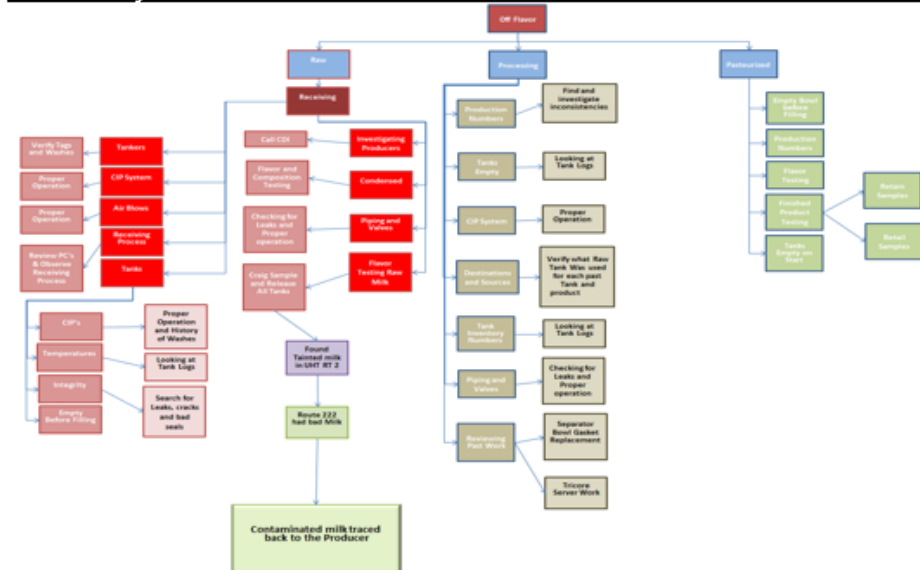
Brand	Product Type	Size	UPC	Code Date	Status
Good Times	1% Low-fat	Gallon	122-333	2-Nov	Withdrawal
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### 3. Target setting

Eliminate this series of complaints by reviewing the following:

- 1) Procedures in Raw Receiving, Processing, and packaging
- 2) CIP Practices
- 3) Reviewing Production history

### 4. Cause Analysis



### 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following	
	Smell Upon Sampling
	Flavor After Heating-Receivers or Lab Techs
	Raw Tanks Released By Supervisor
	Lab Tech will release if Supervisor is not available

### Developed a Finished Product Flavoring SOP

Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

### Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
1 Raw Flavoring SOP	Complete	12/1/2022
2 Finished Product Flavoring	Complete	12/1/2022
3 Contact Computer Programmer to update report	Complete	12/5/2022
4 Processing Records of Raw Tank	Complete	12/4/2022
5 Raw Tank Optimization	Complete	12/3/2022
6 Forensics Lab	Complete	12/5/2022
7 Report Training	Complete	12/3/2022
8 Receiving Composition	Complete	12/4/2022
9 Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### In Development

1	SOP for Optimizing Raw Tank inventory
2	Forensics Lab for quicker results in the future
3	Better Training for those who can run Computer Reports
4	Receivers testing Composition before Products are received
5	Timely notification of Co-Pack Customers

### Processing Developments

1	Processing Record includes Raw Tank used for each batch
2	
3	
4	

### 7. Monitor Results and Process

#### The Result

No new complaints for off flavor from production dates after the withdrawal

#### The Process

Countermeasures	Status	Target Date	Owner
1 Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2 Report Training	Complete	1/7/2023	Jesus
3 Internal Timely Notification SOP for CO-pack	Complete	1/7/2023	Plant Manager

### 8. Standardize Successful Processes

Recall and Retrieval SOP on workbook below  
[Withdrawal and Recall Procedures/Recall-Withdrawal Procedure at the Plant Level.pdf](#)

## 1. Clarify the Problem

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## 2. Breakdown the problem

The following are the products with suspected off flavor and have been held or withdrawn

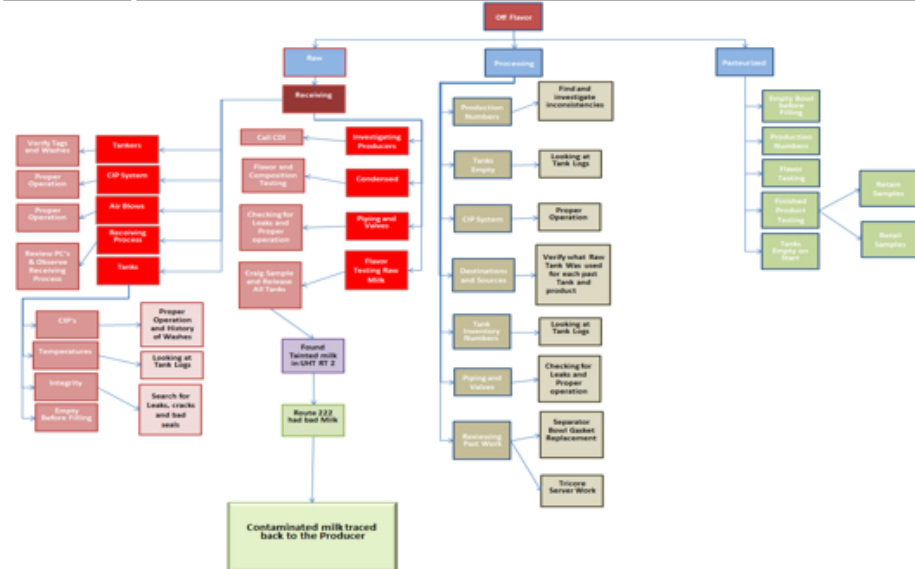
Brand	Product Type	Size	UPC	Code Date	Status
Good Times	1% Low-fat	Gallon	122-333	2-Nov	Withdrawal
Good Times	Vit D Whole Milk	Gallon	122-334	2-Nov	Withdrawal
Lucky Day	Vit D Whole Milk	Gallon	123-335	9-Nov	Withdrawal
Lucky Day	2% Reduced Fat	Gallon	123-337	3-Nov	Withdrawal
Good Times	Vit D Whole Milk	Gallon	122-334	9-Nov	Withdrawal
Good Times	Fat Free	Gallon	122-666	3-Nov	Withdrawal
Lucky Day	Fat Free	Half Gallon	122-667	3-Nov	Withdrawal
Lucky Day	Half & Half	Quart	122-668	11-Nov	Held

## 3. Target setting

Eliminate this series of complaints by reviewing the following:

- 1) Procedures in Raw Receiving, Processing, and packaging
- 2) CIP Practices
- 3) Reviewing Production history

## 4. Cause Analysis



## 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following	
	Smell Upon Sampling
	Flavor After Heating-Receivers or Lab Techs
	Raw Tanks Released By Supervisor
	Lab Tech will release if Supervisor is not available

In Development	
1	SOP for Optimizing Raw Tank inventory
2	Forensics Lab for quicker results in the future
3	Better Training for those who can run Computer Reports
4	Receivers testing Composition before Products are received
5	Timely notification of Co-Pack Customers

## Developed a Finished Product Flavoring SO

Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

## Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

## 6. See Countermeasures Through

Countermeasures	Status	Target Date
1) Raw Flavoring SOP	Complete	12/1/2022
2) Finished Product Flavoring	Complete	12/1/2022
3) Contact Computer Programmer to update report	Complete	12/5/2022
4) Processing Records of Raw Tank	Complete	12/4/2022
5) Raw Tank Optimization	Complete	12/3/2022
6) Forensics Lab	Complete	12/5/2022
7) Report Training	Complete	12/3/2022
8) Receiving Composition	Complete	12/4/2022
9) Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

## 7. Monitor Results and Process

### The Result

No new complaints for off flavor from production dates after the withdrawal

### The Process

Countermeasures	Status	Target Date	Owner
1) Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2) Report Training	Complete	1/7/2023	Jesus
3) SOP for CO-pack	Complete	1/7/2023	Plant Manager

## 8. Standardize Successful Processes

Recall and Retrieval SOP on workbook below

[Withdrawal and Recall Procedures\Recall-Withdrawal Procedure at the Plant Level.pdf](#)

# THE I: C A F HE O B E

1. Identify the current state of the organization  
 2. Define the future state  
 3. Develop a plan to bridge the gap  
 4. Implement the plan  
 5. Monitor and adjust the plan as needed

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## 1. Clarify the Problem

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## 2. Breakdown the problem

The following are the products with suspected off flavor and have been held or withdrawn

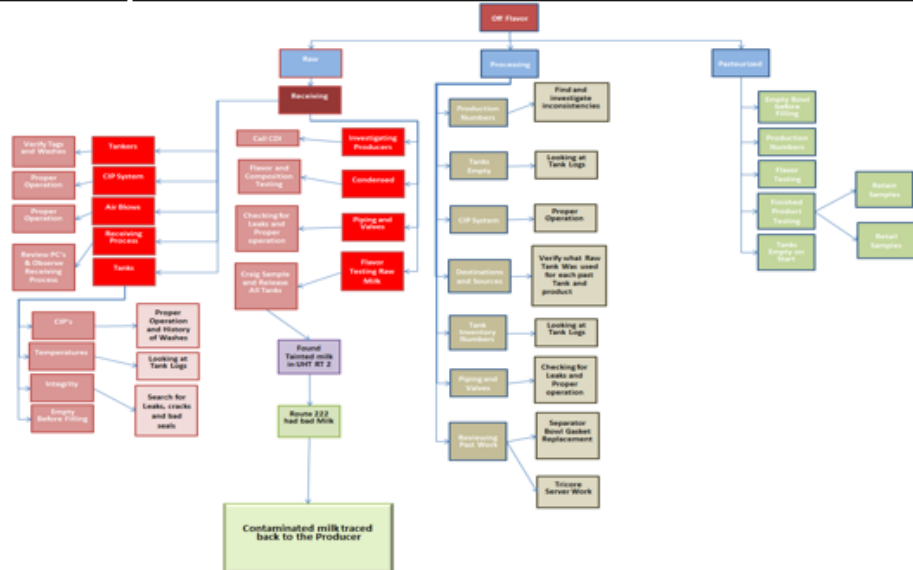
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Eliminate this series of complaints by reviewing the following:

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## Developed a Finished Product Flavoring SOP

Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

## Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

## 6. See Countermeasures Through

Countermeasures	Status	Target Date
1) Raw Flavoring SOP	Complete	12/1/2022
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## In Development

1) SOP for Optimizing Raw Tank inventory
2) Forensics Lab for quicker results in the future
3) Better Training for those who can run Computer Reports
4) Receivers testing Composition before Products are received
5) Timely notification of Co-Pack Customers

## Processing Developments

1) Processing Record includes Raw Tank used for each batch
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## 7. Monitor Results and Process

### The Result

No new complaints for off flavor from production dates after the withdrawal

### The Process

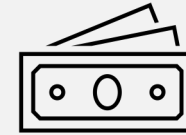
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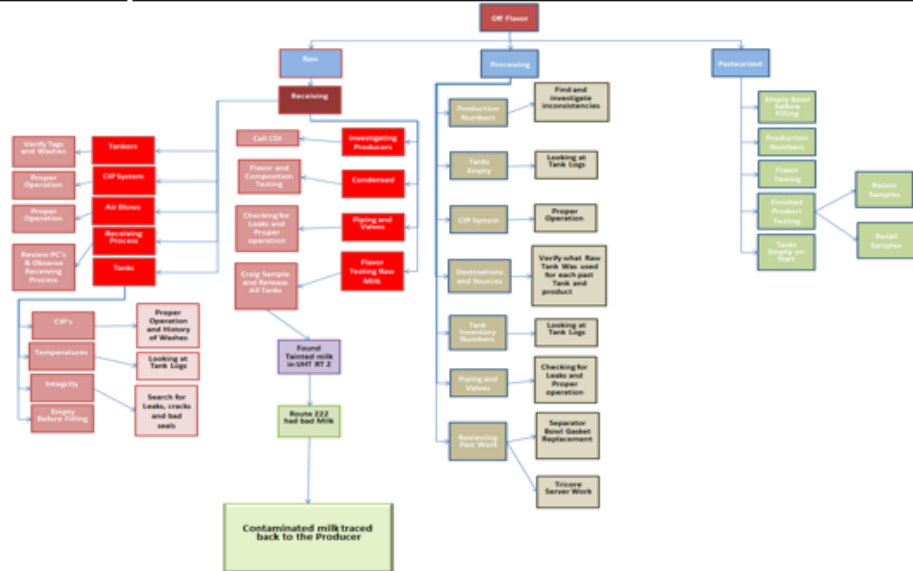
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### Developed a Finished Product Flavoring SO

Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

Processing Developments	
1	Processing Record includes Raw Tank used for each batch
2	
3	
4	

### Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
1 Raw Flavoring SOP	Complete	12/1/2022
2 Finished Product Flavoring	Complete	12/1/2022
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8 Receiving Composition	Complete	12/4/2022
9 Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### 7. Monitor Results and Process

#### The Result

No new complaints for off flavor from production dates after the withdrawal

#### The Process

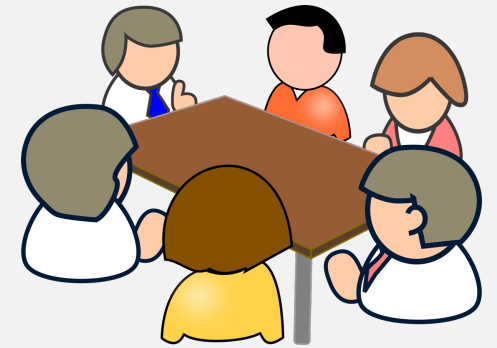
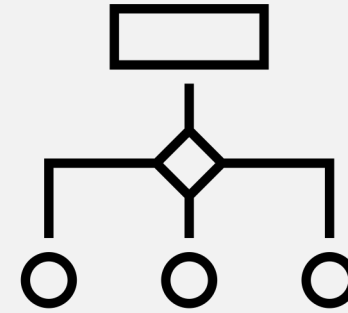
Countermeasures	Status	Target Dat	Owner
1 Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2 Report Training	Complete	1/7/2023	Jesus
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Recall and Retrieval SOP on workbook below

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E 3 A G E H G



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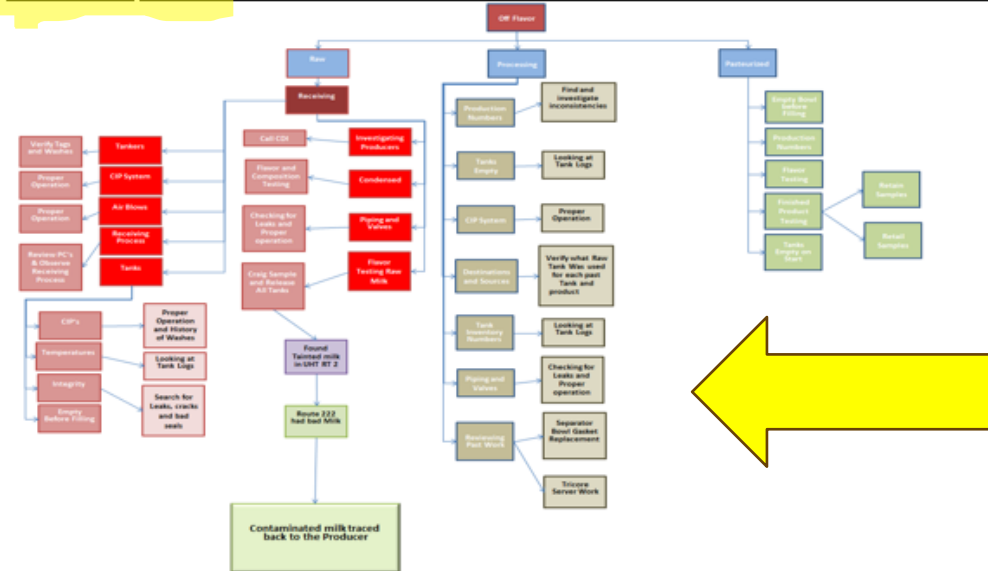
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### Contacting Programmer

Raw Tank Inventory Recording
Raw Tank Labeled on Processing Log

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Countermeasures	Status	Target Date
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9 Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### In Development

1 SOP for Optimizing Raw Tank inventory
2 Forensics Lab for quicker results in the future
3 Better Training for those who can run Computer Reports
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5 Timely notification of Co-Pack Customers

### Processing Developments

1 Processing Record includes Raw Tank used for each batch
2
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#### The Process

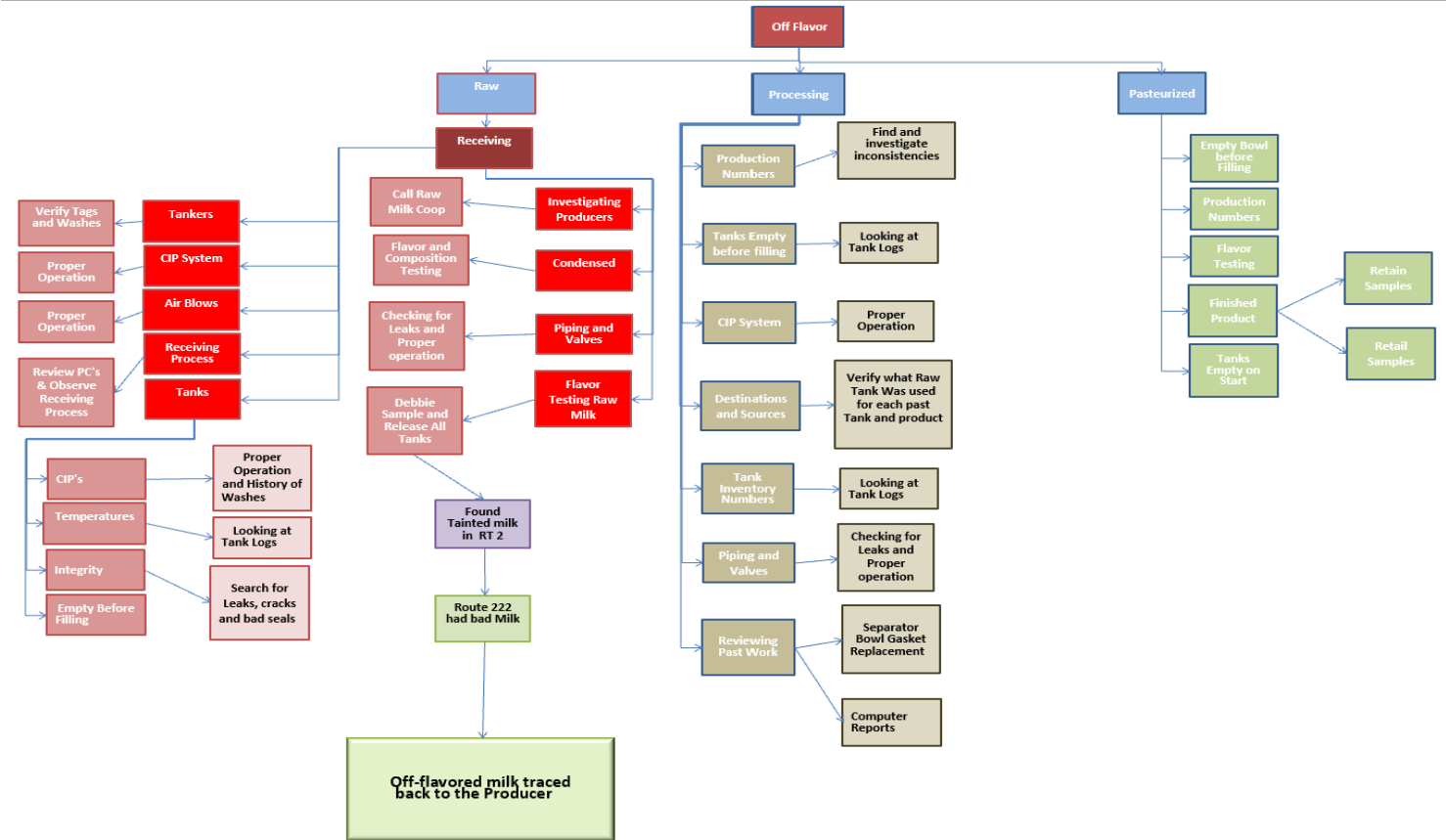
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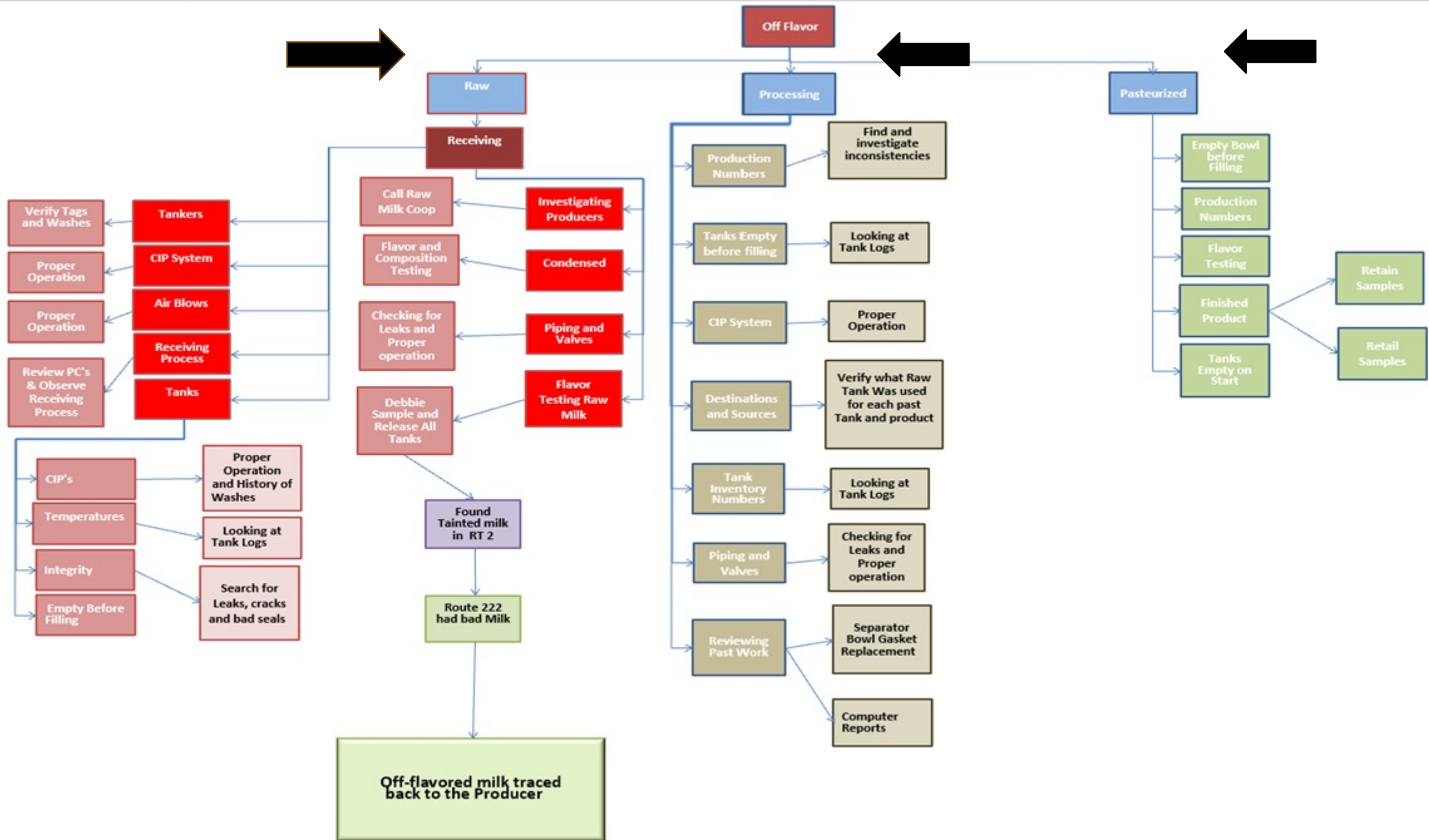
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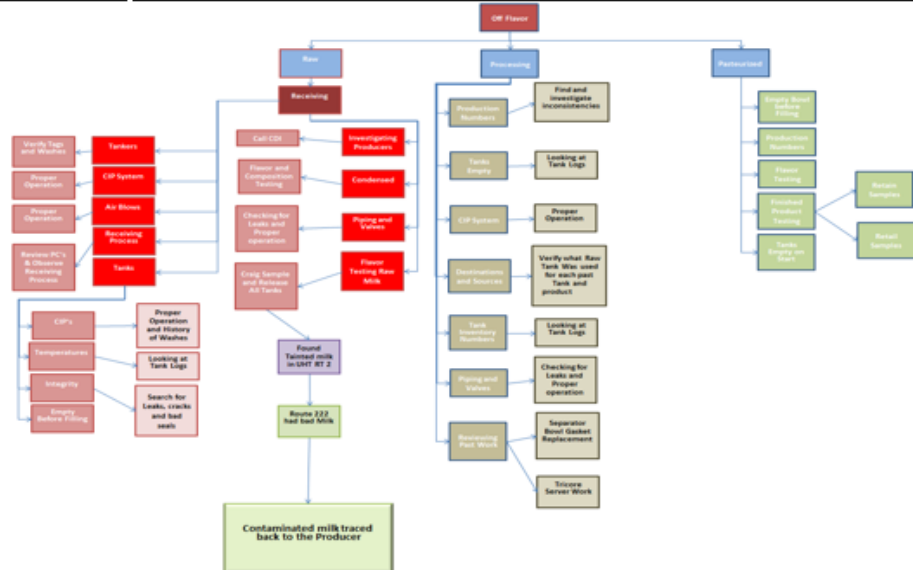
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#### Developed a Finished Product Flavoring SO

Filler Operators on each Tank and Product  
 Lab Techs on Samples taken  
 Staff During daily outtings

#### Processing Developments

- Processing Record includes Raw Tank used for each batch
- 
- 
- 

#### Contacting Programmer

Raw Tank Inventory Recording  
 Raw Tank labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
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Recal and Retrieval SDP on workbook below

[Withdrawal and Recall ProceduresRecall-Withdrawal Procedure at the Plant Level.pdf](#)

THE 5 DEFECTIONS  
 AND ERRORS  
 OF THE  
 COUNTRIES OF THE  
 WORLD

**5. Develop and Evaluate Potential Countermeasures**

<b>Developed a Raw Milk Flavoring SOP</b>	<a href="#">Raw Milk Flavors - Receiving_XXX.docx</a>
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2	
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<b>Contacting Programmer</b>
Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

**DEVELOPING COUNTERMEASURES AND SOLUTIONS**

---

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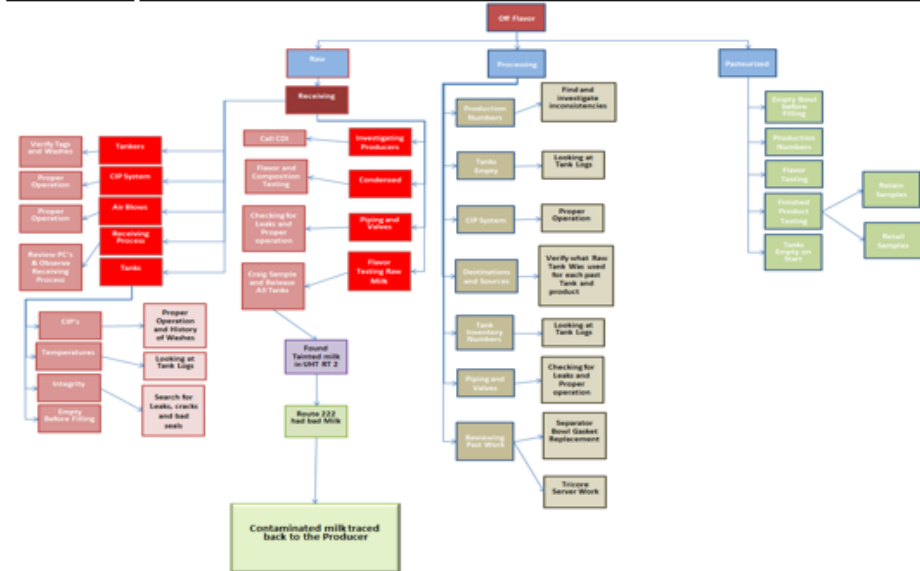
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# THE 6 STEPS TO DEVELOPING SOLUTIONS THROUGH

## DEVELOPING COUNTERMEASURES AND SOLUTIONS

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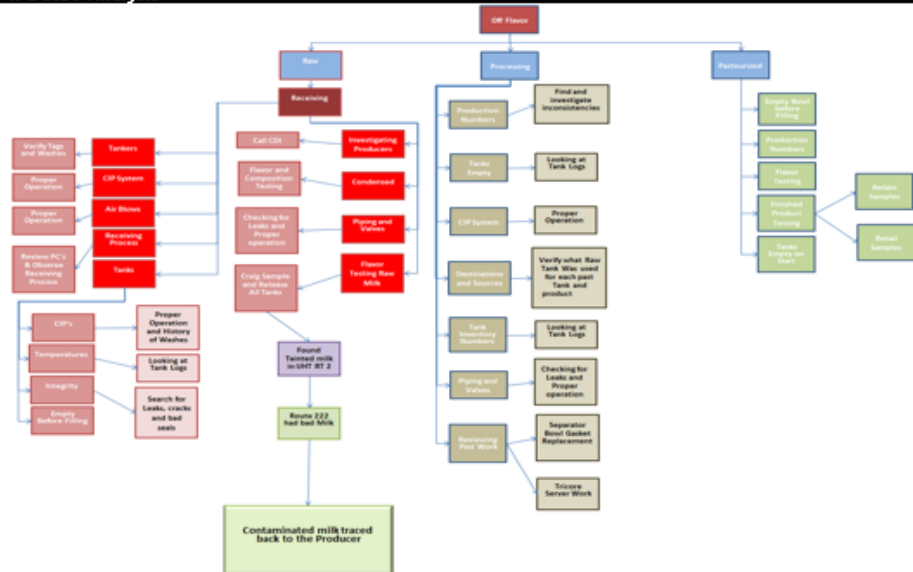
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Good Times	Fat Free	Gallon	122-666	3-Nov	Withdrawal
Lucky Day	Fat Free	Half Gallon	122-667	3-Nov	Withdrawal
Lucky Day	Half & Half	Quart	122-668	11-Nov	Held

### 3. Target setting

Eliminate this series of complaints by reviewing the following:  
 1) Procedures in Raw Receiving, Processing, and packaging  
 2) CIP Practices  
 3) Reviewing Production history

### 4. Cause Analysis



### 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following	
	Smell Upon Sampling
	Flavor After Heating-Receivers or Lab Techs
	Raw Tanks Released By Supervisor
	Lab Tech will release if Supervisor is not available

In Development	
1	SOP for Optimizing Raw Tank inventory
2	Forensics Lab for quicker results in the future
3	Better Training for those who can run Computer Reports
4	Receivers testing Composition before Products are received
5	Timely notification of Co-Pack Customers

### Developed a Finished Product Flavoring SO

Filler Operators on each Tank and Product
Lab Techs on Samples taken
Staff During daily cuttings

Processing Developments	
1	Processing Record includes Raw Tank used for each batch
2	
3	
4	

### Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

### 6. See Countermeasures Through

Countermeasures	Status	Target Date
1) Raw Flavoring SOP	Complete	12/1/2022
2) Finished Product Flavoring	Complete	12/1/2022
3) Contact Computer Programmer to update report	Complete	12/5/2022
4) Processing Records of Raw Tank	Complete	12/4/2022
5) Raw Tank Optimization	Complete	12/3/2022
6) Forensics Lab	Complete	12/5/2022
7) Report Training	Complete	12/3/2022
8) Receiving Composition	Complete	12/4/2022
9) Internal Timely Notification SOP for CO-pack	Debbie, Johnny, Plant Manager	12/6/2022

### 7. Monitor Results and Process

#### The Result

No new complaints for off flavor from production dates after the withdrawal

#### The Process

Countermeasures	Status	Target Dat	Owner
1) Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2) Report Training	Complete	1/7/2023	Jesus
3) SOP for CO-pack	Complete	1/7/2023	Plant Manager

### 8. Standardize Successful Processes

Recall and Retrieval SOP on workbook below  
[Withdrawal and Recall ProceduresRecall-Withdrawal Procedure at the Plant Level.pdf](#)

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The Process

	Countermeasures	Status	Target Date	Owner
1	Raw Tank Optimization	Complete	1/5/2023	Plant Manager
2	Report Training	Complete	1/7/2023	Jesus
3	Internal Timely Notification SOP for CO-pack	Complete	1/7/2023	Plant Manager

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# EFFECTIVE ACTION DESCRIPTION

## 1. Clarify the Problem

**Ultimate Goal:** Identify and Eliminate the Off Taste in various milk types on various production dates on the HTST Milk Lines

**Ideal Situation:** No Off Taste

**Current Situation:** Withdrawals of seven different milk type/codes. Seven involved withdrawing items from the shelves, one held as a precaution.

**Problem Statement:** ... What elements of receiving, processing, and pack aging are causing off taste in milk produced on various production days

## 2. Breakdown the problem

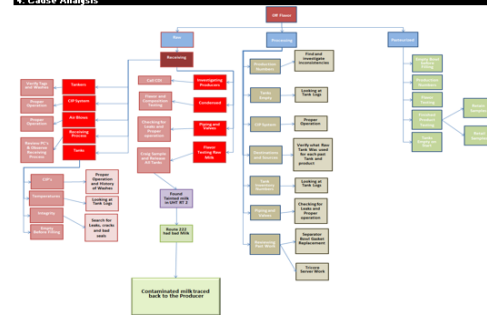
The following are the products with suspected off flavor and have been held or withdrawn

Brand	Product Type	Size	UPC	Code Date	Status
Good Times	1% Low-fat	Gallon	122-333	2-Nov	Withdrawal
Good Times	1% D Whole Milk	Gallon	122-334	2-Nov	Withdrawal
Lucky Day	1% D Whole Milk	Gallon	122-335	3-Nov	Withdrawal
Lucky Day	2% Reduced Fat	Gallon	122-337	3-Nov	Withdrawal
Good Times	1% D Whole Milk	Gallon	122-334	3-Nov	Withdrawal
Good Times	Fat Free	Gallon	122-666	3-Nov	Withdrawal
Lucky Day	Fat Free	Half Gallon	122-667	3-Nov	Withdrawal
Lucky Day	Half & Half	Quart	122-668	11-Nov	Held

## 3. Target setting

Eliminate this series of complaints by reviewing the following:  
 1) Procedures in Raw Receiving, Processing, and pack aging  
 2) CIP Practices  
 3) Receiving Production history

## 4. Cause Analysis



## 5. Develop and Evaluate Potential Countermeasures

For each Tanker Test the following

Smell Upon Sampling
Flavor After Heating/Receivers or Lab Techs
Flaw Tanks Released By Supervisor
Lab Tech will release if Supervisor is not available

**In Development**

1) SOP for Optimizing Raw Tank Inventory
2) Forensics Lab for quicker results in the future
3) Better Training for those who can run Computer Reports
4) Receivers testing Composition before Products are received
5) Timely notification of C/o-Pack Customers

## Developed a Finished Product Flavoring SO

Flavor Operators on each Tank and Product
Lab Techs on Samples taken
Staff Doing daily outlines

**Processing Developments**

1) Processing Record included Raw Tank used for each batch
2)
3)
4)

## Contacting Programmer

Raw Tank Inventory Recording
Raw Tank labeled on Processing Log

## 6. See Countermeasures through

Countermeasures	Status	Target Date
1) Raw Flavoring SOP	Complete	12/2/2022
2) Finished Product Flavoring	Complete	12/2/2022
3) Contact Computer Programmer to update report	Complete	12/2/2022
4) Processing Records of Raw Tank	Complete	12/4/2022
5) Raw Tank Optimization	Complete	12/3/2022
6) Forensics Lab	Complete	12/3/2022
7) Report Training	Complete	12/3/2022
8) Receiving Composition	Complete	12/4/2022
9) Internal Timely Notification SOP for C/O-pack	Debbie, Johns, Plant Manager	12/2/2022

## 7. Monitor Results and Process

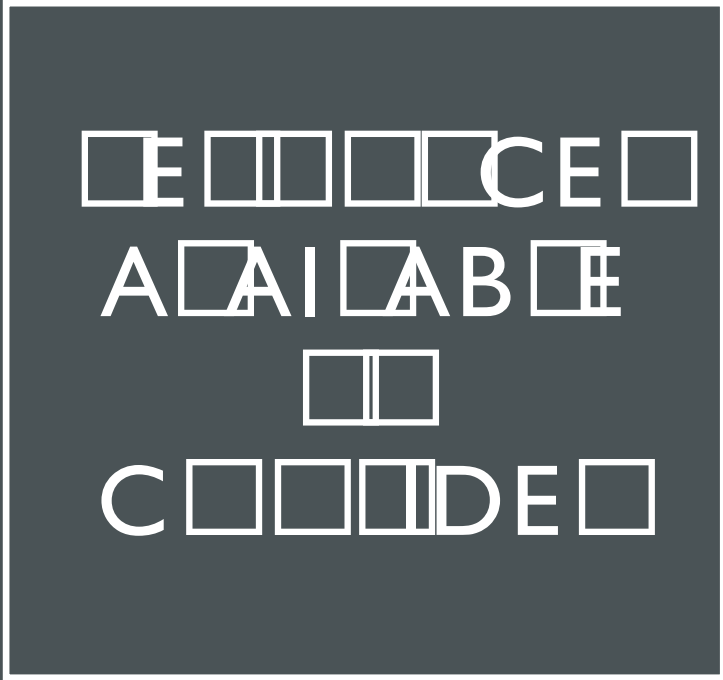
### The Result

No new complaints for off flavor from production dates after the withdrawal

Countermeasures	Status	Target Date	Owner
1) Raw Tank Optimization	Complete	12/2/2023	Plant Manager
2) Report Training	Complete	1/7/2023	Jesus
3) Internal Timely Notification	Complete	1/7/2023	Plant Manager
3) SOP for C/O-pack	Complete	1/7/2023	Plant Manager

## 8. Standardize Successful Processes

Recal and Retrieval SOP on workbook below  
[Withdrawal and Recall Processes Equal Withdrawal Procedure at the Plant Level.pdf](#)



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### Online training:

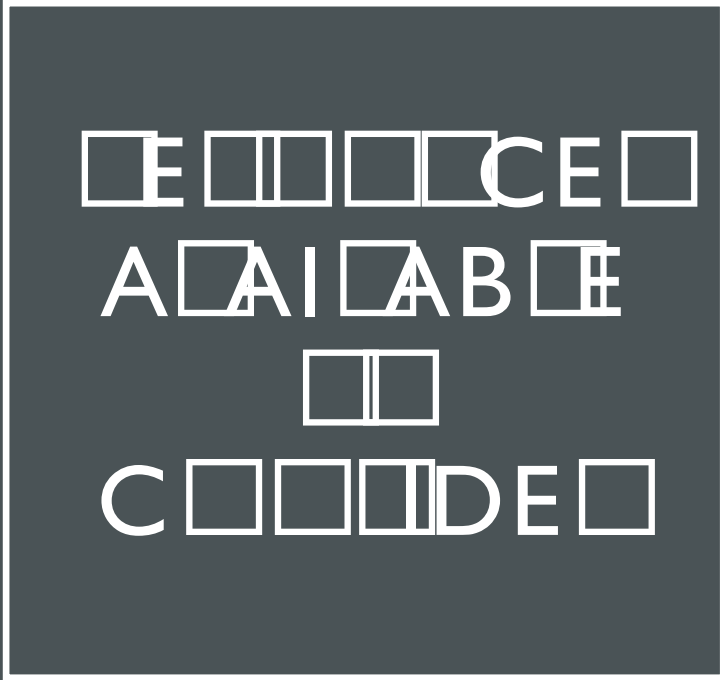
Gemba Academy: Online Lean & Six Sigma Training  
[www.gembaacademy.com](http://www.gembaacademy.com)

SME Lean Certification Program  
[www.sme.org](http://www.sme.org)

### Reading suggestions:

Hitchhiker's Guide to Lean  
Jamie Flinchbaugh, Andy Carlino

The Machine that Changed the World: The Story of  
Lean Production  
James Womak, Daniel Jones, and Daniel Roos



## Consulting Support:

QAD Redzone: A productivity software solution along with hands on coaching

[www.rzsoftware.com](http://www.rzsoftware.com)

FSO Institute: Manufacturing coaching support

[www.fsoinstitute.com](http://www.fsoinstitute.com)

Steve Schlegel 571-332-4594

Manufacturing Extension Partnership (MEP)

Government Supported Manufacturing training resources.

[www.nist.gov/map/lean-and-process-improvement](http://www.nist.gov/map/lean-and-process-improvement)

Incito Consulting Group – Lean Supply Chain Consulting

[www.incito.com](http://www.incito.com)