Root Cause Analysis for Retail Food Safety

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1

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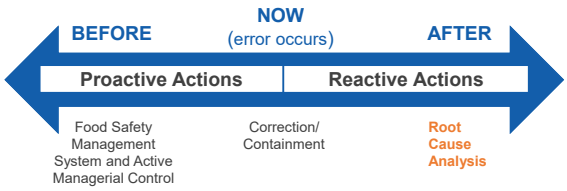
2

Course Contents

- Root Cause Analysis Components
- **Step 1:** Define the Food Safety Problem
- **Step 2:** Understand the Process (Food Flow)
- **Step 3:** Identify Possible Causes (Develop Hypothesis)
- **Step 4:** Collect Data
- **Step 5:** Analyze the Data
- The Rest of the Problem-Solving Process (Steps 6 – 10)
- Organizational Factors Affecting RCA Success

3

Problem-Solving Terminology



4

Variation in the Food Safety System at Retail

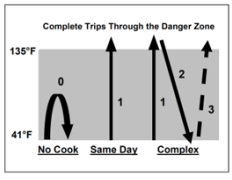
P P E E F

People
Process
Economics
Equipment
Food

5

Food Safety Probability Errors

Routine Simple Task	Routine Task Requiring Care	Complex Task
1–5 in 1000	1–5 in 100	1–9 in 10



Extracted/edited from:
- D.J. Smith, "Reliability and Maintainability and Risk," 2005
- B Kirwan, "A Guide to Practical Human Reliability Assessment," 1994

6

Components of Risk

Likelihood

- Frequency in the past
- Probability in the future

Impact

- Illness/Injury
- Regulatory
- Cost
- Operations

7

The DO IT^2 Problem Solving Model

FIND IT* Diagnostic Phase

1. Define the Problem
2. Understand the Process
3. Identify Possible Causes
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FIX IT* Solution Phase

6. Identify Possible Solutions
7. Select Solution(s) to be Implemented
8. Implement the Solution(s)
9. Evaluate the Effect(s)
10. Institutionalize the Change

* IT means root cause of the problem!

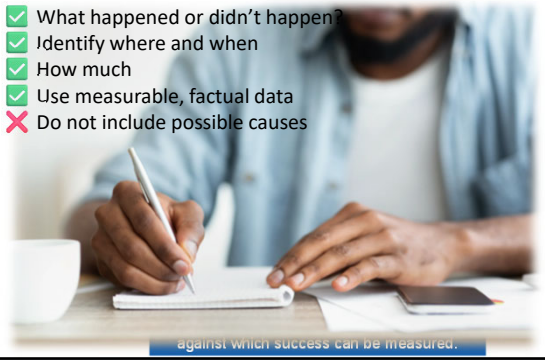
8

Step 1: Define the Food Safety Problem

9

The Problem Statement

- ✅ What happened or didn't happen?
- ✅ Identify where and when
- ✅ How much
- ✅ Use measurable, factual data
- ❌ Do not include possible causes



against which success can be measured.

10

Poor Problem Statements

- **Rice is stored above 41°F.**
- **The chicken salad is out of temperature.**

11

Problem Statements

✅ What happened or didn't happen?
✅ Identify where and when
✅ How much
✅ Use measurable, factual data
❌ Do not include possible causes

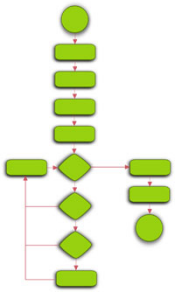
- At 10:00am, two 12" deep pans of rice cooked the night before were observed in the reach-in cooler at 50°F.
- In the salad prep cooler, the temperature of chicken salad in the serving pan on the top of the unit was at 51°F during the inspection at 1:35pm.

12

Step 2: Understand the Process (Food Flow)

13

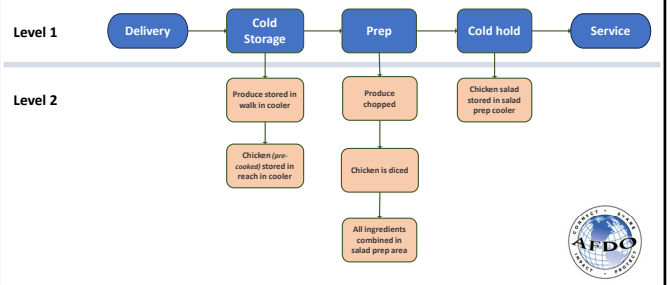
The Importance of Flowcharts



- All problems are a result of a *process* that is part of a *system*
- The process is part of a larger system, interacting with other processes & systems

14

CHICKEN SALAD



15

Step 3: Identify Possible Cause(s) (Develop Hypothesis)

16

Methods for Identifying Contributing Factors

17

5 Whys/Hows

The new cooler was delivered late. → **Problem Statement**

WHY? Because the shipment left the warehouse five days later than scheduled.

WHY? Because the product was not ready for packaging on time.

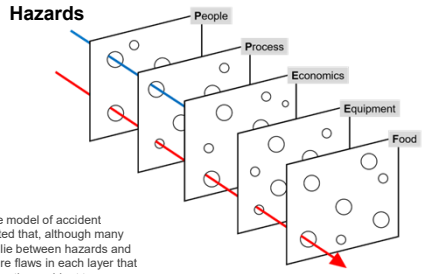
WHY? Because the manufacturing process was delayed.

WHY? Because a critical calibration machine broke down.

WHY? Because it had not been serviced according to the maintenance schedule.

18

Barrier Analysis: Swiss Cheese Model



The Swiss cheese model of accident Causation illustrated that, although many layers of defense lie between hazards and accidents, there are flaws in each layer that if aligned, can allow the accident to occur.

19

Food Flow: What contributing factors could occur at each step?

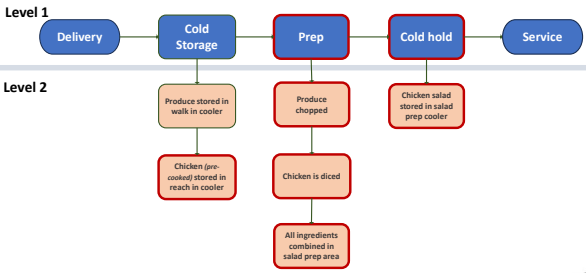
Problem Statement

In the salad prep cooler at 1:35pm, the temperature of chicken salad in the hotel pan was at 51°F.

Delivery	Cold Storage	Prep	Cold Hold	Service
Sources of salad ingredients	Ingredients stored in refrigeration	Employee A prepares salad	Employee B places salad in prep cooler	Salad portioned and plated for service
Low	Medium	High	High	Low

20

CHANGE ANALYSIS



21

Focusing on Most Likely Causes

- There are usually **many** possible causes for any problem.
- Reduce the data that must be collected.
- Quicker or more efficient results.

22

STEP 4: Collect Data

Data Collection Plan

- Interviewing
- Observation
- Records
- Facility Layout
- Sampling

Collect data to confirm or to eliminate one or more causes.

23

The DO IT^2 Problem Solving Model

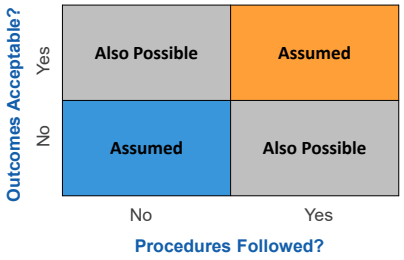
FIND IT®
Diagnostic Phase

1. Define the Problem
2. Understand the Process
3. Identify Possible Causes
4. Collect Data

5.Analyze the Data

24

Watch Out for Assumptions



25

Processes for Data Analysis

Should have been

≠

What did happen

26

Drilling Down to Root Cause

System Failure — What failed?

Physical Level Cause How? — How did it fail?

System Level Cause Why? — Why did it fail?

Variations:
- People
- Process
- Economics
- Equipment
- Food

27

Cognitive Biases/Errors

- Recency Effect
- Anchoring Effect
- Availability Error
- Hindsight Bias
- Confirmation Bias

28

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29

Step 6: Identify Possible Solution(s)

- Creative Thinking
- Mistake Proofing
- Basics of Biology, Chemistry, Physics, and Behavioral Science
- Benchmarking
- Risk Control Plan

30

Risk Control Plan: Definition

A risk control plan is a **mutually agreed** upon **written** plan by the food establishment management and the regulatory authority for **long term control** of risk factor(s)/hazard(s) that includes **monitoring, and verification**.

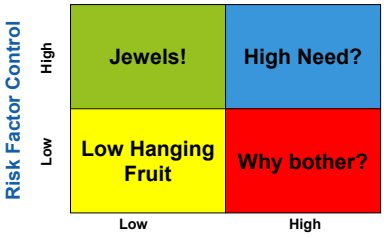
31

Step 7 – Select Solution(s) to Implement

Considerations | **Methods** | **Performance Measures**

32

A 2x2 Analysis



33

Steps 8-10

Implement the Solution
Execute chosen solutions with clear steps outlined in a detailed action plan.

Evaluate the Effects
Monitor results and provide feedback to ensure solutions are effective and sustainable.

Institutionalize the Change
Integrate changes into training and standard procedures for long-term sustainability.

34

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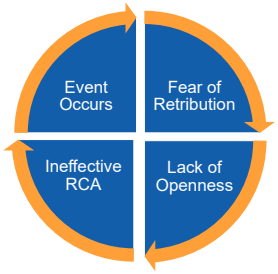
35

Food Safety Culture Issues

- Open to honest dialogue
- Challenges as learning opportunities
- Punishing people should not be the norm



36

Review Session Objectives

- Overview of a Root Cause Analysis process
- Outline a model for more deeply analyzing problem situations.
- Expand the range of tools available for analysis of problem situations.

37

38

Thank you!

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39