

## Definitions

### Concern

A feeling that we need to do something....

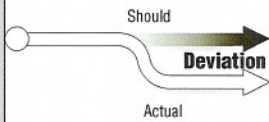
### Problem

We have a problem when:

- There is a deviation between what should be happening and the actual situation.
- Cause is unknown.
- We need to know cause to take effective action.

### Fix

Action to remove the cause.



## Situation Appraisal (Recognize a Problem)

### Identify Concerns

List Threats and Opportunities to make them visible.

- What deviations do we have?
- What choices do we face?
- What do we have to do?
- What bothers us about...?

### Separate and Clarify Concerns

to allow further analysis and resolution.

- What do we mean by...?
- What specific thing...?
- How do we know...?
- Say more about...?

### Consider Current Impact, Future Impact, Time Frame

to know where to use resources for the greatest gain.

- What is the current impact on people, safety, cost, customers, productivity, reputation, etc.?
- What evidence is there that the seriousness will change?
- When would resolution become difficult, expensive, or impossible?

### Determine Analysis Needed

to ensure effective and efficient use of analysis.

- Do we have a deviation?
- Is cause unknown?
- Do we need to know cause?
- Do we face a choice?
- Do we have an action or plan to protect?

If still unclear, separate and clarify further.

### Determine Help Needed

to ensure appropriate involvement and commitment.

- What needs to be done?
- When does it need to be done?
- Who should be involved for...
  - Approval? Training?
  - Information? Creativity?
  - Commitment? Implementation?

## Decision Analysis (Select a Fix)

### Clarify Purpose

State the Decision

to keep decision makers on track.

- What do we need to decide?
- What are we trying to do? (Include choice word, result, and key modifiers.)

### Develop Objectives

to help evaluate alternatives fairly.

- What results do we want?
- What resources should we use or save (people, equipment, money, time, space...)?
- What law, regulation, or policy restrictions do we have?

### Classify Objectives into MUSTs and WANTS

to be clear about what is mandatory and what is desired.

- Is this objective:
    - Mandatory (required)?
    - Measurable (set limit)?
    - Realistic (can the limit be met)?
- Yes to all three equals a MUST. All others are WANTS.

### Weigh the WANTS

To show how much each WANT will influence the choice.

- What is the relative importance of each WANT?

### Evaluate Alternatives

Generate Alternatives

to expand the number of choices and increase the chances of picking a winner.

- What choices do we have?

### Screen Alternatives through the MUSTs

to eliminate choices that do not meet minimum requirements.

- Which alternatives don't satisfy the MUST limit(s)?

### Compare Alternatives against the WANTS

to determine which alternatives create the most benefit.

- Which alternative(s) best satisfies the objectives?

### Assess Risks

Identify Adverse Consequences

to understand the risk of choosing an alternative.

- If we choose this alternative, what could go wrong?
- What disadvantages are associated with this alternative?
- Is any information vague or uncertain?

### Make Decision

Make the Best Balanced Choice to commit to a choice.

- Are we willing to accept the risk(s) to gain the benefit of this choice?

## Problem Analysis (Find True Cause)

### Describe the Problem

### State the Problem

to help stay on track.

- What object (or group of objects) has the deviation?
- What deviation does it have?
- What do we see, feel, hear, taste, or smell that tells us there is a deviation?

### Specify the Problem

to increase understanding of the deviation.

- Ask questions in four areas:
- WHAT—Identity
  - WHERE—Location
  - WHEN—Timing
  - EXTENT—Size

	IS	IS NOT
<b>WHAT</b>	What specific object(s) has the deviation?  What is the specific deviation?	What similar object(s) could reasonably have the deviation, but does not?  What other deviations could reasonably be observed, but are not?
<b>WHERE</b>	Where is the object when the deviation is observed (geographically)?  Where is the deviation on the object?	Where else could the object be when the deviation is observed, but is not?  Where else could the deviation be located on the object, but is not?
<b>WHEN</b>	When was the deviation first observed? (in clock and calendar time)?  When since that time has the deviation been observed? Any pattern?  When, in the object's history or life cycle, was the deviation first observed?	When else could the deviation have been observed first, but was not?  When since that time could the deviation have been observed, but was not?  When else, in the object's history or life cycle, could the deviation have been observed first, but was not?
<b>EXTENT</b>	How many objects have the deviation?  What is the size of a single deviation?  How many deviations are on each object?  What is the trend? (...in the object?) (...in the number of occurrences of the deviation?) (...in the size of the deviation?)	How many objects could have the deviation, but do not?  What other size could the deviation be, but is not?  How many deviations could there be on each object, but are not?  What could be the trend, but is not? (...in the object?) (...in the number of occurrences of the deviation?) (...in the size of the deviation?)

### Identify Possible Causes

Use Knowledge and Experience, or... from Distinctions and Changes to create statements you can test against the facts.

- What could cause this deviation?
- What would experts say?
- What was your initial hunch?

### Evaluate Possible Causes

Test Possible Causes to get rid of causes that do not make sense.

- If \_\_\_ is the cause of \_\_\_, how does it explain both the IS and the IS NOT?

### Determine the Most Probable Cause

to pick the possible cause to verify first.

- Which of the possible causes makes the most sense?

### Confirm True Cause

Verify Assumptions, Observe, Experiment, or Try a Fix and Monitor

- to avoid wasting resources.
- Ways to verify:
- Facts—Check assumptions
  - Observe—Go look
  - Research—Experiment
  - Results—Try a Fix and Monitor

## Potential Problem Analysis (Avoid Future Problems)

### Identify Potential Problems

State the Action

to focus on protecting a specific task.

- What do we need to do?
- What else...?

### List Potential Problems

to anticipate and prepare for future problems.

- When we do this, what could go wrong?
- What problems could this action cause?

### Identify Likely Causes

to help prevent or reduce the threat.

- What could cause this potential problem?
- What else could cause...?

### Take Preventive Action

to reduce the probability that a future problem will occur.

- What can we do to prevent this likely cause from happening?
- What can we do to reduce the chances of this likely cause happening?
- How can we keep this likely cause from creating the potential problem?

### Plan Contingent Action and Set Triggers

Prepare Actions to Reduce Likely Effects

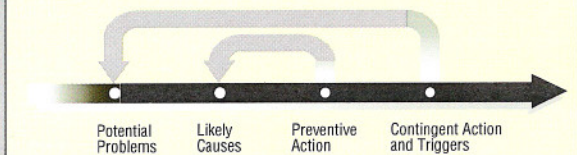
to limit the damage if something does go wrong.

- What will we do if this happens?
- What will minimize the effects if this happens?

### Set Triggers for Contingent Actions

to start the contingent action at the proper time.

- How will we know the potential problem has occurred?
- What will cause the contingent action to start?



## Think Beyond the Fix

### Extend the Cause

- What other damage could this cause create?
- Where else could the cause create problems?
- What caused the cause?

### Extend the Fix

- What identical things need the same fix?
- What problems could this fix cause?