



# Recognize a Problem

## 1 List Concerns

*to make them visible.*

- What problems do we have to solve?
- What choices do we need to make?
- What actions do we need to take?
- What bothers us?

## 2 Separate and Clarify

*to work on one concern at a time.*

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

## 3 Set Priority

*to choose which concern to work on first.*

- How serious is this concern?
- Which concern is most serious?
- When would resolution become difficult, expensive, impossible, or pointless?
- Which concern is most urgent?
- What happens if we do nothing?
- Which concerns is growing most?

## 4 Plan Next Steps

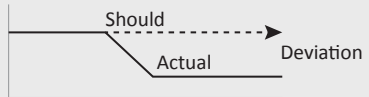
*to ensure effective and efficient use of process.*

- Do we have a deviation?
  - Is cause unknown?
  - Do we need to know cause?
  - Do we need to make a choice?
  - Do we have an action or plan to protect?
- If still unclear, separate and clarify further.

**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, and



Cause is unknown, and  
We need to know cause to take effective action.

**Fix:** Action to remove the cause.



# Find True Cause



## 1 Describe the Problem

### State the Problem

*to help stay on track.*

- What thing or group of things (object) has the problem?
- What problem (defect) does it have?

### Specify the Problem

*to get a full, accurate description of the problem.*

- (See the IS and IS NOT questions on the back.)

## 2 Develop Possible Causes

### from Knowledge and Experience, or...

### from Differences and Changes

*to create statements for testing against the facts.*

- What is different, odd, unusual, or distinctive about each IS compared to each IS NOT? What else...?
- What has changed in, on, around, or about each Difference? (Include the date and time of each Change.) What else...?
- How could these Differences and Changes have caused the problem?

## 3 Prove the True Cause

### Test Possible Causes

*to eliminate causes that do not make sense.*

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

### Identify the Most Probable Cause

*to pick the possible cause to verify first.*

- Which of the possible causes is the most believable?

### Verify the True Cause

*to avoid unnecessary fixes.*

To identify steps to take, use:

- Facts—How can we check the assumptions?
- Observation—How can we look at the cause?
- Research—How can we experiment to test this cause?
- Results—How can we try our fix to see if it works?

# Describe the Problem

## Specify the Problem



	IS	IS NOT
WHAT	<ul style="list-style-type: none"><li>• What <i>thing or group of things</i> is having the problem?</li><li>• What is wrong with it or them?</li></ul>	<ul style="list-style-type: none"><li>• What thing or group of things could be having the problem, but is not?</li><li>• What could be wrong with it or them, but is not?</li></ul>
WHERE	<ul style="list-style-type: none"><li>• Where, geographically, is the thing when the problem is noticed?</li><li>• Where is the problem located on the thing?</li></ul>	<ul style="list-style-type: none"><li>• Where could the thing be when the problem is noticed, but is not?</li><li>• Where could the problem be located on the thing, but is not?</li></ul>
WHEN	<ul style="list-style-type: none"><li>• When was the problem first noticed? (date, time)</li><li>• When has the problem been noticed since then? (date, time) Any pattern?</li><li>• When, in the history or life cycle of the thing, was the problem first noticed?</li></ul>	<ul style="list-style-type: none"><li>• When could the problem have been first noticed, but was not? (date, time)</li><li>• When could the problem have been noticed since then, but was not? (date, time)</li><li>• When, in the history or life cycle of the thing, could the problem have been first noticed, but was not?</li></ul>
EXTENT	<ul style="list-style-type: none"><li>• How many units of the thing have the problem?</li><li>• What is the size of a single defect?</li><li>• How many flaws or defects are on any one unit?</li><li>• What is the trend? (...in the object?) (...in the defect?)</li></ul>	<ul style="list-style-type: none"><li>• How many units of the thing could have the problem, but do not?</li><li>• What other size could a defect be, but is not?</li><li>• How many flaws or defects could be on any one unit, but are not?</li><li>• What could the trend be, but is not?</li></ul>



# Select a Fix



## 1 Consider Objectives

### State the Decision

*to keep decision makers on track.*

- What choice do we need to make?
- 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 have?
- What restrictions do we have? (Law, regulations, policy....)

### Classify Objectives into MUSTs or 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.

Identify the most important WANT objectives.

## 2 Consider Alternatives

### Develop Alternatives

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

- What choices do we have?
- How would we meet our most important objectives?

### Evaluate the Alternatives

*to compare performance of possible choices.*

How well does each alternative satisfy the objectives?

- Is this MUST satisfied by each alternative?
- How is this WANT satisfied by each alternative?
- Which alternative performs best against this WANT?

## 3 Consider Risks

### Identify Risks

*to understand the risk of choosing an alternative.*

- If we choose this alternative, what could go wrong?

### Make Decision

*to commit to a choice.*

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



# Avoid Future Problems



## 1 Identify Potential Problems

### State the Action

*to make what we will do clear and visible.*

- What do we need to do?
- What fix do we need to make?

### List Potential Problems

*to anticipate and prepare for future problems.*

- If we do this, what could go wrong?
- What problems could this fix cause?

## 2 Identify Likely Causes

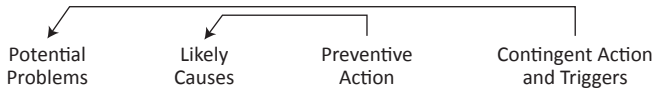
*to help prevent or reduce the threat.*

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

## 3 Take Preventive Action

*to reduce the chances of the likely cause occurring.*

- What can we do to prevent this likely cause from happening?
- How can we make this likely cause less likely?





# Avoid Future Problems



## 4 Plan Contingent Action and Set Triggers

### Plan Contingent Action and...

*to limit the damage if something does go wrong.*

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

### ...Set Triggers

*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?

