Take the Mystery out of Metrics

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Improve Your Safety Metrics Without Making Your Workplace Safer - 7 Tips
By Mike Strawbridge

Mike Strawbridge was trained as an Chemical Engineer at Tennessee Tech University. While there he also studied biology and physiology. So many people are concerned with lowering their TCIR number or simply meeting their safety goals that they loose sight of the issue of actually making the workplace safer. I have even seen this attitude expressed through some safety governing bodies in my years working with safety.

If you want to improve your safety numbers here are some tips:

1. Make employees scared to report accidents by making veiled threats like drug testing, punitive accident investigations, loss of privileges, long reporting forms etc.

2. Make employees scared to report injuries through peer pressure. Establish an incentive plan for the whole group so that the benefit will be lost if any one-person reports and injury.

3. Reduce the number of recordable injuries by working with your attending physician so that he does not write a prescription or otherwise trigger a recordable event.

4. Lower TCIR by inflating the number of hours worked. Since the hours worked is in the denominator, make this number as large as possible. Include all office staff, salespeople, interns, co ops, contractors, anyone who can have any connection with your group that are not likely to report an injury.

5. Include safety performance improvement to each supervisor's salary review. He will make sure that employees are discouraged from reporting injuries.

6. Assume every employee who reports an injury is faking and plans to sue the company. Treat each case consistently and the word will get around.

7. Spend hours reviewing the OSHA or corporate rules for what constitutes a recordable event. Get to know every loophole for how to avoid listing it on the chart. Document why you did not record them in case of an audit.

Source: To find ways to really make your workplace safer see: http://mikestrawbridge.com/workplace-safety-training.shtml

It's a waste of time and money to measure the degree of luck.

Understanding the big picture is critical to successfully managing a company's safety and health management system. Peter Drucker, a well-known management consultant said it this way, "The first duty of business is to survive and the guiding principle of business economics is not the maximization of profit, but the avoidance of loss."

The primary emphasis of the workshop is to introduce you to a process of developing and getting the greatest use out of safety metrics. We want to take the mystery out of the process.

To get the most out of this course, it's important that everyone freely share their knowledge and experience with the class, so please don't hesitate.

Goals

1. Gain a greater understanding of the two types of safety metrics
2. Be familiar the seven dimensions of metrics
3. Be able to discuss the key elements in the metrics development process

Form Teams

1. Introductions
2. Elect a group leader
3. Select a spokesperson
4. Recorders

Your first assignment

Just to get to know each other a little better, interview each member in your team to gather the following data:

1. Total years of experience performing safety duties _____
2. Total number of employees in all team member companies (local offices) _____
3. Total number of lost time injuries each company experienced during 2007 _____
4. Industries represented _____
    _____
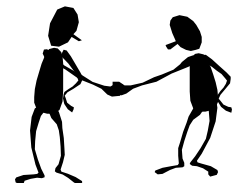
Please Note: This material, or any other material used to inform employers of compliance requirements of OSHA standards through simplification of the regulations should not be considered a substitute for any provisions of the OSHAct of 1970 or for any standards issued by OSHA. The information in workbook is intended for classroom use only.

The Basics?

Using metrics to achieve excellence in safety and health management can be a very powerful strategy. When you combine leading and lagging indicators, topics we will talk about shortly, you can better evaluate current system operations and also a prediction of future performance. To start, let's review some basic concepts related to safety metrics.

What are safety metrics?

A metric is a _____ measure to assess your _____.

What is the purpose of safety metrics?

_____

_____

Why are metrics important?

_____

_____

_____

What are the steps in developing safety metrics?

1. get together

2. understand the basics

3. determine what to measure

4. determine how to measure it

5. measure it

6. analyze it

7. reach conclusions

8. do something with them

1. Get together

For this class, review the background for Mystery Manufacturing and we'll use it for our case study for working with some of the metrics we'll develop.

The CEO calls you into his office and tells you he is very unhappy. Last year, he presented Mystery Manufacturing (MM) the "safest plant" award because they went a full year without a lost-time injury. However, in 2008, MM had eight lost-time injuries, and it was discovered that during a short "zero streak" in the summer there was at least one incident that went unreported.

Mystery's background

Mystery Manufacturing has been in business for about 15 years building components for and assembling high-end quality constant temperature humidifiers for sale to research and medical laboratories. MM has 146 employees and builds approximately 20 high tech temperature-controlled humidifiers daily. Cost per humidifier averages $6,000. Daily sales volume averages $109,000. Annual business volume is $27.3 million. Total annual employee work hours = 310,000

Salary and hourly wages:

5 management ($35/Hr)	10 Supervisors ($25/Hr)
10 fabricators ($15/Hr)	10 Admin Support
6 warehouse workers ($15/Hr)	5 maintenance workers ($20/Hr)
100 production workers ($15/Hr)	

Annual Costs.

Payroll - $4.83 M; Benefits - $2.3 M; Capital investment and facilities - $2.2 M; materials/supplies - $12.4 M; other - $2.7 M. Total: $26 million

Net annual profit $2.7 million (10%)

Experience Modification Rate $(\mathrm{MOD}) = 1.35$

SIC code is 3585. NAIC 3334 (Ventilation, Air-Conditioning and Industrial Refrigeration Manufacturing)

Annual workers' compensation premium:

Premium rates are $3.15 per $100 payroll. This year MM chose to pay an initial $40,000 and all claim costs plus an additional 20% to the insurance carrier for actual losses accrued during the year.

The Challenge

The CEO gives you two weeks to make a recommendation on how your organization will measure safety performance going forward.

Mystery Manufacturing Incident Log

2008 INCIDENT LOG

Incident #	Date	Position	Department	Nature	Body Part	Severity	Days Away	Days Restricted or Transfer	Descripton
801	6-Jan	Fab	Prod	Slip, Trip, Fall	Back	Serious	22	30	Slipped on ice in parking lot
802	8-Jan	Assembly	Fab	Strain/Sprain	Back	Minor	7	5	Twisting while repositioning unit
803	10-Jan	Operator	Prod	Fall to below	Foot	Minor	0	14	Fell down stairs carrying box
804	22-Jan	Supv	Maint	Burn	Hand	Serious	0	12	Picked up wrong end of soldering iron
805	8-Feb	Fab	Prod	Strain/Sprain	Shoulder	Minor	0	5	Lifting part to top shelf in storeroom
806	15-Feb	Driver	Shipping	Struck by	Head	Minor	0	0	Box fell on his head
807	23-Mar	Painter	Prod	Contact with	Eye	Serious	0	3	Sprayed in his eye
808	25-Mar	Assembly	Prod	Strain/Sprain	Back	Minor	0	7	Sprained lower back lifting sheet metal off floor
809	13-Apr	Office	Sales	Vehicle	Head	Serious	14	0	Struck by truck from behind while on trip
810	17-Apr	Cutter	Fab	Cut	Hand	Minor	3	2	Cut hand with shears while cutting metal
811	20-May	Supv	Maint	Struck Against	Head	Minor	0	0	Struck low hanging overhead beam
812	16-Jun	Puncher	Prod	Crush	Hand	Serious	2	22	Finger crushed by punch press
813	25-Jul	Cutter	Fab	Cut	Hand	Minor	0	0	First aid only
814	3-Aug	Cutter	Fab	Cut	Hand	Minor	0	0	First aid only
815	19-Aug	Helper	Prod	Fall to below	Knee	Minor	0	5	Twisted knee from fall off ladder
816	5-Sep	Driver	Warehouse	Struck by	Hand	Minor	0	0	Hit hand with hammer
817	6-Sep	Reception	Admin	Contact with	Eye	Minor	0	2	Copier toner blew into eye
818	12-Oct	Maint	Maint	Caught in	Hand	Serious	10	0	Hand pinched in conveyor roller
819	18-Oct	Office	Payroll	Strain/Sprain	Back	Serious	12	0	Strain lifting heavy
820	25-Oct	Assembly	Fab	Slip, Trip, Fall	Hand	Minor	0	4	Tripped over cord and injured hand during
821	2-Nov	Tester	Quality	Electrical Shock	Hand	Minor	0	0	First aid only
822	5-Nov	Helper	Prod	Strain/Sprain	Wrist	Minor	0	4	Twisted wrist while handling parts
823	12-Nov	Shipper	Shipping	Strain/Sprain	Back	Minor	0	12	Strained upper back moving boxed units
824	1-Dec	Millwright	Maint	Struck by	Leg	Minor	0	0	Stabbed leg with screwdriver
825	5-Dec	Boxer	Fab	Strain/Sprain	Back	Minor	0	7	Twisting while boxing units
826	7-Dec	Driver	Shipping	Jump to below	Foot	Serious	22	0	Broke while jumping from truck

Assume: direct costs for all injuries = $285,000; indirect costs = $313,000

Group activity: What are (or should be the basic elements (programs and activities) of Mystery Manufacturing's safety management system? (list at least10)

1. _____

6. _____

2. _____

7. _____

3. _____

8. _____

4. _____

9. _____

5. _____

10. _____

Others

_____   _____

_____   _____

_____   _____

The Safety Management System

All systems have structure, inputs, processes and outputs

We know Syssie the cow as structure, but what are her inputs, processes, outputs?

Structure

_____ _____

_____ _____

_____ _____

Inputs _____

Processes _____

Outputs _____

Inputs - Design

_____ _____

_____ _____

_____ _____

_____ _____

What's the impact on the safety management system when it lacks quality inputs?

_____ in _____out*!*

Processes - Activities

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Outputs - Effects

_____

_____

_____

_____

_____

Feedback

Where do we look to evaluate how well the safety management system is working?

_____

What are the most immediate and observable outputs of a safety management system? _____

Metrics generally fall into two categories:

1. Lagging metrics that focus on consequences
2. Leading metrics that focus on prevention

Lagging (or downstream) metrics

- They measure _____ after the fact
- They measure what a _____ can do
- They are _____ variables
- You generally do not have the ability to directly _____ them
- They are not effective in _____ the future
- They largely reflect the degree to which you have been _____
- You need a large sample or they won't be _____
- It's illogical to count what you _____ want

_____

_____

Leading Indicators (or upstream) metrics

- They measure _____ before the fact
- They focus on what is happening _____
- They are _____ variables
- You do have the ability to directly _____ them
- They are more effective in _____ the future
- They largely reflect the degree to which you have been _____

_____

_____

Don't measure what a dead man can do

How good are your metrics?

When you have completed determining what you want to measure, you should step back for a sanity check. Ask yourself:

- Do the metrics make sense?
- How do they compare with your existing metrics?
- Do they reinforce the desired behavior?
- Will the change in behavior last?

That which gets _____, gets _____!

The questions you need to ask:

1. Will this metric drive the desired behavior?
2. What type of behavior might this metric drive?
3. Will it help you move your business to where it needs to be in the months and years ahead?

What behaviors or activities do trailing metrics drive?

_____

_____

What kind of behaviors or activities will leading metrics drive?

_____

_____

Your employees will take action to achieve what management, by the measurements used, tells them what is important.

The change in behaviors or activities may take longer than you anticipated, may surprise you it may be very shortsighted and not at all what you had intended.

"Thought-Based" Safety Basics: Why we do what we do

Antecedents - According to Thomas Krause, antecedents are preexisting sensory or intellectual input that trigger behaviors and influence decision-making.

- Tell us what to do to receive a consequence
- Can be tangible/concrete or intangible/abstract
- Only as powerful as the consequences that support them

Cognition - According to E. Scott Geller, our "mental speech". The conscious process of knowing or being aware of thoughts or perceptions, including understanding and reasoning.

- Our thoughts, beliefs, and resulting judgments and attitudes
- We take information gathered from antecedents and interpret it
- Influence the decisions we make and triggers behaviors
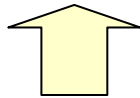
Before the fact | After the fact
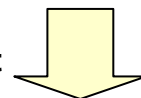
Behaviors - According to E. Scott Geller, behavior refers to acts or actions by individuals that can be *observed* by others. In other words, behavior is what a person does or says, as opposed to what he or she thinks, feels, or believes.

- A dead man can't do it
- Must be observable, measurable
- Any time, any where, any body

Consequence - According to Aubrey Daniels, a consequence is simply what happens to the performer as a result of the behavior.   A consequence can be:

- Positive or negative. Does the consequence help or hurt from the performer's point of view?
- Immediate or future. When will the consequence occur?
- Certain or uncertain. What's the probability that the performer will experience the consequence?

Why did you come to training today?

- Antecedent - how did you find out? _____
- Cognition - what did you think about it? _____
- Behavior - you attended the training! Are you a hafta-be or a wanna-be?
- Consequences - what's in if for you? _____

The Seven Dimensions of Measurement

Understanding what to measure requires measurement along seven levels or dimensions describing those factors that have the most impact on safety to those that have the least. The first four dimensions will provide information to develop leading metrics. The final three dimensions provides information from which to develop trailing indicators.
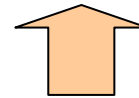
Before the fact

1. Safety Culture and Climate

"Culture" refers to the unwritten _____, _____, _____, _____ that guide behavior within the culture.

Blue collar definition: "The way things are around here."

"Climate" refers to the level of _____ and _____ placed on safety by the company's leadership.

Who has the most influence over corporate safety cultures?

_____

_____

Why are most corporate cultures "fear driven"?

_____

_____

Group exercise: List three leading metrics that will indicate the status of your safety culture and climate. State why it is important to use each metric.
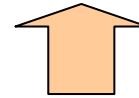
1. _____   Why? _____

_____

3. _____   Why? _____

_____
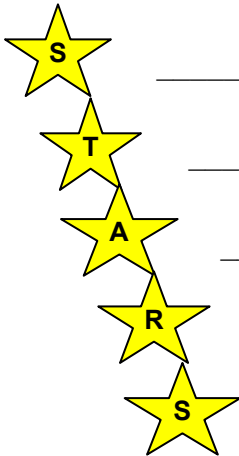
3. _____   Why? _____

_____

2. Safety Leadership

Before the fact

What does this statement mean?

"Leadership must own safety, not management"

_____

_____

Is leadership assigned or conferred?

_____

_____

Five Stars of Safety Leadership

S _____

T _____

A _____

R _____

S _____

Group exercise: List three leading metrics that will indicate the status of your safety leadership. State why it is important to use each metric.
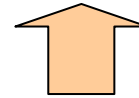
1. _____   Why? _____

_____

3. _____   Why? _____

_____

3. _____   Why? _____

_____

3. Safety Management System

Before the fact

Audit, analyze and evaluate various programs to see if they are present and how well they are written. Examples include the "6P" components:

1. **P**eople   2. **P**olicies   3. **P**rograms   4. **P**lans   5. **P**rocesses   6. **P**rocedures

The challenge is to analyze and evaluate the degree to which each element is effectively contributing to the system

1. Management Commitment
2. All-Way Communication
3. Labor & Management Accountability
4. Labor & Management Involvement
5. Education and Training

6. Hazard Identification & Control
7. Accident Investigation and Analysis
8. Program Evaluation
9. Continuous Improvement

Group exercise: List four metrics the would effectively measure an activity in any one of the element areas in the list above. State the reason you believe each metric is important.

1. _____   Why? _____

_____

3. _____   Why? _____

_____

3. _____   Why? _____

_____

4. _____   Why? _____

_____

Management Commitment

ORS 654.010 Employers to furnish safe place of employment. Every employer shall…

- furnish employment and a place of employment which are safe and healthful for employees therein, and shall furnish and use such devices and safeguards, and

- adopt and use such practices, means, methods, operations and processes as are reasonably necessary to render such employment and place of employment safe and healthful, and

- do every other thing reasonably necessary to protect the life, safety and health of such employees.

It takes a little "TMC"

Top **M**anagement **C**ommitment is defined by how much **T**ime, **M**oney, and **C**oncern the employer gives to safety. The degree to which managers demonstrate TMC indicates their understanding of the benefits derived from an effective safety management system.

What motivates management to make a commitment to safety?

Employers are motivated to make a commitment to safety to fulfill social, fiscal, and legal obligations. The obligation considered most important influences the level of management commitment.

To fulfill the social obligation

- We must save lives
- Do whatever it takes

This is the most effective strategy!

To fulfill the fiscal obligation

- We must save money
- Do what we have to

This is a better strategy

"Employers who "get it" understand that their responsibility for safety and health in the workplace is not only a moral and statutory obligation, but also good business. And that's why they are ready to go above and beyond the minimum requirements of the law in order to take even further strides in making their workplaces as safe as they can be." - Michael Wood, Administrator, OR-OSHA

How will the employer use metrics in each imperative?

_____

_____

_____

To fulfill the legal obligation

- We must stay out of trouble
- Do only what we have to

This is the least effective strategy

How can you tell which obligation is driving decisions about safety?

_____

Leadership

- Trustworthiness and care are the very foundations of a company's growth.

- Managers must be a trustworthy partner in every respect. This means that customers, shareholders, employees and other stakeholders experience that the company keeps its promises.

Are you a Tough - Caring Leader?

- You're tough (insist on safety) because you care about your employees.
- Your approach is that of a "servant leader:" You support and serve those whom you lead.
- Relationships are horizontal: Every employee is important and has inherent value.
- You view employees as internal customers. You are the supplier.
- You're interested in developing "self-leaders."
- You exhibit high trust and give the credit to the "team."
- You're confident and exhibit high self-esteem.

Are you a Tough - Controlling Leader?

- You're tough (insist on safety) to keep yourself out of trouble with the boss.
- You're approach is to control and to be served. It's all about you.
- Relationships are vertical: Superior-subordinate, value is not inherent, but depends on position and performance. (see graphic for example)
- You're concerned more about your own success than that of your "subordinates."
- You lack trust and take all the credit for any team success.
- You lack confidence and are fearful. That's why you must control everything.

Accountability

It's important that the employer fulfill legal obligations to the law and every employee. The "condition" of effective workplace safety accountability will exist if (1) appropriate behaviors are (2) objectively evaluated and (3) result in effective consequences.

$$\text{Effective Accountability} = \text{Appropriate Behavior} + \text{Objective Evaluation} \dashrightarrow \text{Effective Consequences}$$

ORS 654.022 Duty to comply with safety and health orders, decisions and rules.

Every employer, owner, employee and other person shall

- obey and **comply** with every requirement of every order, decision, direction, standard, rule or regulation …

- do everything necessary or proper in order to **secure compliance** with and observance of every such order, decision, direction, standard, rule or regulation.

OAR 437-001-0760 Rules for all Workplaces

(1) Employers' Responsibilities.

(a) The employer shall see that workers are properly **instructed** and **supervised** in the safe
operation of any machinery, tools, equipment, process, or practice which they are authorized to use or apply.

(b) The employer shall take all reasonable means to **require** employees to…

What are key program elements and activities might be measured to measure the effectiveness of the accountability program?

_____

_____

Employee Involvement

"If you build it, they will come"

How may we apply this principle to improving employee involvement?

_____

_____

Geigle's 15 Secrets of Effective Recognition

1. Recognize as **soon** as you can after the behavior occurs.

   • The longer you wait to recognize, the less effective it will be, and the "bigger" the reward must be to achieve the same effect.

2. Be **spontaneous!** You don't need to plan how to recognize someone necessarily. Unplanned recognition is more likely heart-driven then policy-driven.

3. Praise should be **subtle.** Recognition need not be public or "loud."

   • Recognition in private has been shown to be generally more effective than public recognition.

   • Motives are less likely questioned when recognition is not conducted as a public spectacle.

   • Safety committees: Maximize opportunities for line employees, supervisors, and managers to recognize and be recognized. Stay in the background.

4. Employees must be **sure** they will be recognized. If you promise them something, follow through with the promise.

5. Keep it **simple**. A simple "attaboy" or "attagirl" may be all that is required to be effective. The best recognition may not require tangible rewards like money. Keep it simple - make it fun!

6. Be **specific**. Pinpoint each individual's specific achievement.

   • Emphasize the positive impact the individual's performance has had on the organization.

   • Use the "dead-man's test" (If a dead person can do it, don't recognize it.)

7. Be **sincere** when recognizing. The more heart-driven the recognition, the more likely it will affect the heart. Isn't that what recognition is all about? Genuine heart-felt recognition is usually much more effective than policy-driven recognition.

8. Develop **_standards_** of achievement for recognition.

    • Recognize for achieving specific behavioral and performance criteria rather than being first, best, highest, fastest, most improved.

    • Be careful recognition is based on fact, not just feeling. Use a point system if you can.

    • Don't make the program a game. Don't establish recognition schemes that reward for being lucky. Recognize employees for what they earn, not what they win.

    • Recognize behaviors over which employees have control.

9. Recognition should be **_super_**.

    • The significance of any recognition is determined by the person who receives the recognition, not the person giving the recognition.

    • It's not the object that means anything: It's the meaning we give the object!

10. Let employees choose from a **_selection_** of tangible rewards. Involve employees at every phase of program development. Don't make the mistake of thinking one item works for everyone. It won't.

11. Be **_spirited_** when you recognize. Don't be afraid to show how happy you are about the performance of your employee.

12. You're motivated to recognize for **_selfless_** reasons. The purpose of the recognition is to highlight the great performance of your employee. It's not to show anyone how wonderful you are.

    • Recognition that's motivated by selfish reasons will be perceived as disingenuous.

    • It's all about the employee, not you.

13. It's more effective to **_single_** out individuals and recognize their personal achievement. If you recognize a group try to mention each individual's contribution.

14. Keep your recognition program **_stable_**. Don't change the rules of the game too often. People need to know that the reward and recognition they're working towards won't disappear before they're awarded.

15. Be **_sensitive_** to the wishes of the person you're recognizing. You don't want to recognize a person in a way that they may not want or appreciate.

    • One lady promptly quit her job as a safety committee chairperson after being recognized for her great work over the previous year. When asked why she quit the position, she said, "I never want to be recognized in front of people like that again!"

Education and Training

Two Types Formal of Safety Education

1. Safety Instruction

All employees receive general safety education through work experience, and when they attend orientations, safety meetings, etc. It's important to understand that although all safety training is education, not all safety education is considered training.

- Conveys information: who, what, where, when, and why.
- Knowledge and skills are not measured at the end of training.
- Measurement focuses on student's reaction to the training.
- Document instruction with attendance rosters.
- Examples: New employee orientation, safety meetings
- Methods: Classroom, email, newsletter, internet, videos

2. Safety Training

Most workplace accidents are the result of unsafe behaviors. To make sure employees behave, they not only need to know why using safe procedures and practices is important, they need know how to actually perform those procedures and practices.

- Shows how to do something.
- Knowledge and skills are measured immediately after training in the learning environment.
- Measurement tools include oral/written exams and skill demonstrations
- Safety training is far more common than instruction
- Remember, technical training should taught as a "hands-on-how-to"
- Examples: LOTO, PPE, equipment repair
- Methods: Classroom, OJT

Evaluating Inadequate Safety Performance:
Ask Five Important Questions

Describe the Safety Performance Discrepancy *(The Gap)*

Training Decision Tree

Are training or non-training interventions the solution to poor safety performance in the workplace?

Is There a deficiency in knowledge, ability or skill?

No

If the employee knows how to accomplish the task, and has the skill to do so, training is not the solution. A non-training solution may be required.

If the employee is physically and mentally capable, yet lacks the knowledge or skill to accomplish the task, training is the most likely solution to the discrepancy.

Yes

Has the employee been trained?

Is the task accomplished often?

Training Options

Yes

Yes

No

No

Conduct Formal safety training

Conduct practice

Provide feedback

Non-training Options

Are Resources adequate? *Yes* **Is Supervision adequate?** *Yes* **Is Enforcement Adequate?** *Yes* **Is Support?** *Yes* **Consider Discipline**

No *No* *No* *No*

Improve Resources | **Improve Supervision** | **Improve Accountability** | **Improve Support**

If you answered "Yes" to all five questions, the system probably didn't fail. It's possible the employee chose to perform inadequately within a supportive safety culture.

Adapted from: Robert F. Mager and Peter Pipe, Analyzing Performance Problems, CEP Press

Hazard Identification and Control

The Safety Inspection – Identifies conditions

The safety inspection is an important activity that helps supervisors discover hazardous conditions in the workplace. The more qualified people involved in the safety inspection, the better. When accomplished regularly by trained supervisors, employees and safety committees, inspections can go far to make sure hazardous conditions are identified and corrected before they cause an injury or illness. However, there is one major weakness inherent in the inspection process: it doesn't identify the causes of most accidents!

Why doesn't the safety inspection identify the causes of most accidents?

_____

_____

Observation – Identifies behaviors

Supervisors can overcome the weaknesses of the walkaround inspection by regularly observing employee performance. Informal observation provides an effective method to identify and correct hazardous conditions and unsafe behaviors before they result in an accident.

- Informal observation is conducted continually by employees and supervisors.

- Formal observation processes can be developed as an analysis tool to assist safety staff in determining safety related trends. A safety committee observation process and Job hazard analysis are forms of formal observation.

Why is daily observation more effective in reducing accidents?

_____

_____

Job Hazard Analysis (JHA)

A Job Hazard Analysis, also called a job safety analysis, is an organized approach that involves the worker and supervisor observing a task, breaking it down into steps, analyzing each step for safety and operational needs, and providing recommendations for procedures that will meet those needs. Effective use of JHAs will do the following:

- Provide a clear picture of what the employee must do to stay safe
- Help recognize needed changes in the equipment or procedures
- Provide a way to increase employee involvement.

SAMPLE JOB HAZARD ANALYSIS WORKSHEET

Job Description: <u>Loading an empty trailer with pallets of product</u>.

Basic Job Step	Hazards Present	Safe Job Procedure
1.Ensure that trailer is correctly spotted.	1. Worker could be caught between backing trailer and dock Worker could fall from the dock.	1. Stay clear of the doorway while the trailer is being backed onto the dock. Keep others away from the area. Remove awareness chain or bar from the front of the dock door once the trailer is properly spotted.
2. Chock wheels; place jacks under trailer nose. .	2. Worker could fall on stairs going to dock well. Head could be struck against trailer. Worker could slip on ice or snow.	2. If the truck driver has not chocked the wheels, go down tile ramp/stairs to the dock well and chock the wheels. Use caution when walking on snow or ice. Hold onto hand rails; use ice-melt chemical if needed. When placing the chock, avoid bumping the head on the underside of the trailer. Place jacks under the nose of the trailer. If the dock is equipped with an automatic trailer restraint, push the button to activate the device.

Why is it smart business for the supervisor to conduct a JHA with his or her workers?

_____

_____

Sample JHA from: Job Hazard Analysis, by George Swartz, CSP, Government Institutes Pub.

Incident Investigation and Analysis

What is the purpose of a proactive incident/accident analysis?

Although the rule above uses the term, "investigation," it may be important for you to promote the idea that this process is an "analysis," not an investigation. In an effective incident/accident analysis, the analyst will determine what happened to primarily uncover the root causes (system failures) contributing to hazardous conditions and unsafe behaviors.

For the process to work, discipline should considered and occur only after it can be demonstrated (proven) that root causes did not somehow contribute to the hazardous conditions and/or unsafe behaviors that directly caused the incident/accident. There are so many variables (thousands) inherent in any safety management system, it's safe to assume the system somehow contributed to an incident or accident.

What is the primary purpose of investigation process: Fault-finding or Fact-finding?

Fault-finding. If you're conducting accident investigations primarily to determine:

- what happened
- if the employer violated safety rules

The primary reason to conduct the investigation is to fix the _____

Fact-finding. Accident investigation is far more helpful when the employer performs an accident analysis primarily to determine:

- what happened
- if safety management system design or performance factors contributed to the conditions/behaviors that directly caused the accident.

The primary reason to conduct the analysis is to fix the _____

What should be the basic assumption when conducting the accident investigation?

The _____ has failed.

Program Evaluation & Improvement

OAR 437, Div 1, Rule 765 (6) (d) Hazard assessment and control.

The safety committee shall assist the employer in evaluating the employer's accident and illness prevention program, and shall make written recommendations to improve the program where applicable...

How does "evaluation" difference from mere "analysis"?

_____

_____

Improvement using the PDCA Cycle

Plan - Carefully plan the process

- <u>Identify</u> - "Is it present?" Yes/No. Inspect the workplace. Audit the system.
- <u>Analyze</u> - "What does the policy, plan, procedure look like?" Use outside experts.
- <u>Evaluate</u> - Rate effectiveness. "Is it effective?" Judgment call.
- <u>Problem Solve</u> - Come up with some ways to solve program weaknesses.
- <u>Recommend</u> - Submit your ideas. Be sure to state the benefits.

Do - Carry out the change

- Use a small-scale test to implement the improvement.
- Educate and train those responsible for the implementation.

Check - Analyze and evaluate the effects

- Measure the results of the improvement by analyzing the data collected. Study to see if the process was improved.

Act - Adopt, Abandon, or Revise

- If the result was a clear improvement, make the change permanent. Standardize and document all actions.

- If the result was not an improvement, determine what needs to be done to improve: Go back to the plan quadrant and start over.

Shewhart Cycle

Act   Plan

Check   Do
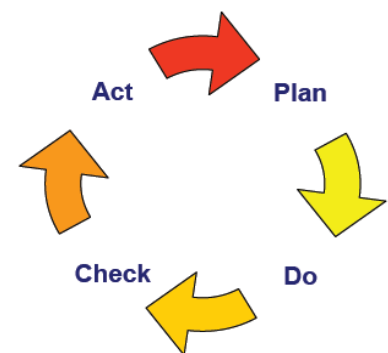
4. Perceptions, beliefs, attitudes, judgments
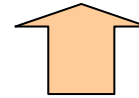
Before the fact

In this dimension we shift gears to get inside the mind of each employee. You want to find out the current "state of being" within the employee. This state of being is influenced by culture, climate, leadership and the safety management system.

What are some things that a new employees might hear and see that would cause them to have positive perceptions about Mystery Manufacturing's attitude toward safety?

_____

_____

What are some things that might cause the employee to change his or her mind about Mystery Manufacturing's attitude toward safety after the first six months of employment?

_____

_____

Group exercise: List three metrics that you could use to effectively measure employee perceptions about safety. State the reason you believe each metric is important.

1. _____   Why? _____

_____

3. _____   Why? _____

_____

3. _____   Why? _____

_____

5. Behaviors and Activities

After the fact
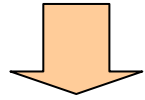
- Behaviors and activities represent the most immediate observable effects of the quality of a safety management system.
- Observe both employee and manager behaviors and activities.
- Unsafe behaviors will expose employees to danger zones.
- Consistent appropriate behavior and adherence to safety and health rules, indicate effectiveness.

Why should we focus so much energy on measuring behaviors and activities?

_____

_____

Group exercise: List five metrics that you could use to effectively measure employee safety behaviors and activities. State the reason you believe each metric is important.

1. _____   Why? _____
_____

3. _____   Why? _____
_____

3. _____   Why? _____
_____

4. _____   Why? _____
_____

5. _____   Why? _____
_____

> The culture we are trying to create is one where we focus on where the next accident is going to happen, what is happening to the culture and safety climate, and how the organization is evolving. This level of activity requires tools that dig deeper than end results. - Don Groover, CIH, CSP, Attributes of an Injury-Free Culture

6. Conditions

After the fact
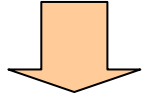
After behaviors, workplace conditions are the most direct effects indicating how well a safety management system is working and designed. After all, conditions are the cause of behaviors!

We don't usually think of a person as a hazardous "condition," what how can that happen?

_____

_____

Group exercise: List four metrics that you could use to effectively measure conditions in the workplace. State the reason you believe each metric is important.

1. _____   Why? _____

_____

3. _____   Why? _____

_____

3. _____   Why? _____

_____

4. _____   Why? _____

_____

> The culture we are trying to create is one where we focus on where the next accident is going to happen, what is happening to the culture and safety climate, and how the organization is evolving. This level of activity requires tools that dig deeper than end results. - Don Groover, CIH, CSP, Attributes of an Injury-Free Culture

7. Results
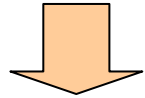
After the fact

Statistics are important, but they're lagging (after the fact) indicators and may be quite abstract. They tell you something about the indirect effects of the safety management system, but they don't tell you why.

Analyze accident rates and costs. Look for trends. Determine experience modification (MOD) rates, etc. Results trending in the desired direction indicate effectiveness. Remember, though, be sure not to focus primarily on results.

- Non-injury Incidents
- Injury accidents
- Claims
- Costs

What is the big problem here?

Is you don't know why... you can't _____ it*!*

Impact of Metrics on ROI
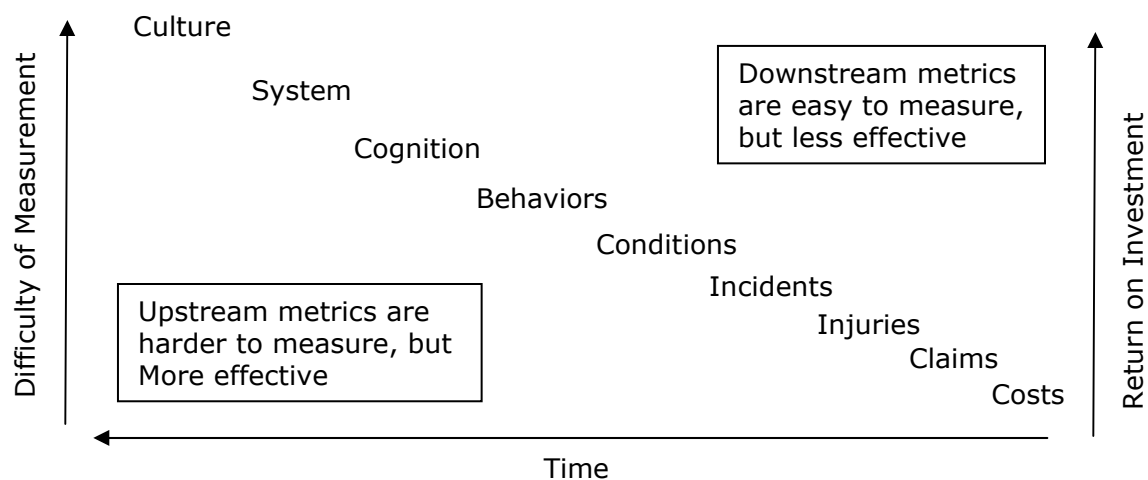
Difficulty of Measurement

Culture

System

Cognition

Downstream metrics
are easy to measure,
but less effective

Behaviors

Conditions

Incidents

Upstream metrics are
harder to measure, but
More effective

Injuries

Claims

Costs

Return on Investment

Time

The culture we are trying to create is one where we focus on where the next accident is going to happen, what is happening to the culture and safety climate, and how the organization is evolving. This level of activity requires tools that dig deeper than end results. - Don Groover, CIH, CSP, Attributes of an Injury-Free Culture

Lost Time Case Rate

The Lost Time Case Rate (LTC) is a similar calculation, only it uses the number of incidents that contained lost work days. The calculation is made by multiplying the number of incidents that were lost time cases by 200,000 and then dividing that by the employee labor hours.

$$\text{LTC Rate} = \frac{\text{Number of Lost Time Cases}}{\text{Number of employee labor hours Worked}} \times 200{,}000$$

Using the previous command example, assume that one of the two recordable cases had lost work days associated with the incident. The calculations would look like this:

What is the Lost Time Case Rate for Mystery Manufacturing?

LTC = ---------------------------- **x 200,000 =** _____

OSHA DART Rate

The DART rate is relatively new to industry. This rate is calculated by adding up the number of <u>incidents</u> that had one or more lost days, one or more Restricted Days or that resulted in an employee transferring to a different job within the command, and multiplying that number by 200,000, then dividing that number by the number of employee labor hours at the company.

$$\text{TCIR} = \frac{\text{Total Number of OSHA Recordable Incidents}}{\text{Number of employee labor hours worked}} \times 200{,}000$$

What is the DART Rate for Mystery Manufacturing?

DART Rate = ---------------------------- **x 200,000 =** _____

What is now known is that for every 100 employees, _____ employees have been involved in a recordable injury or illness.

Lost Work Day Rate (LWD)

The Lost Work Day rate is primarily used only by larger companies. This does not preclude a small business from using this calculation in their performance system, however. The LWD rate is calculated by multiplying the total number of lost work days for the year by 200,000, then dividing that number by the number of employee labor hours at the command.

$$\text{LWD Rate} = \frac{\text{Total Number of Lost Days}}{\text{Number of Employee Labor Hours Worked}} \times 200{,}000$$

What is the Lost Time Case Rate for Mystery Manufacturing?

LWD Rate = ---------------------------- **x 200,000 =** _____

Severity Rate (SR)

The severity rate is a calculation that gives a company an average of the number of lost days per recordable incident. Please note, that very few companies use the severity rate as a calculation, as it only provides an average. The calculation is made by dividing the total number of lost work days by the total number of recordable incidents.

$$\text{Severity Rate} = \frac{\text{Total number lost work days}}{\text{Total number of recordable incidents}}$$

Why is the Severity Rate so variable from year to year?

_____

_____

What can we do to influence the severity rate?

_____

_____

In spite of all the literature and articles proclaiming the insanity of using injury statistics to measure safety performance companies are still using these negative and trailing measures. These measures do not evaluate what safety is; rather they more precisely describe what safety isn't, i.e., the aftermath of unsafe performance or an interaction of an unsafe condition.

Robert Ryan, President, Safety Metrics Inc.

What's is Mystery Manufacturing's return on investment?

Return on Investment

$$\text{Percent ROI} = \frac{\text{Total Estimated Accident Costs*}}{\text{Total Investment**}}$$

$$\text{ROI} = \frac{\$\ \rule{3cm}{0.4pt}}{\$\ \rule{3cm}{0.4pt}} \text{X 100} = \rule{2cm}{0.4pt} \ \%$$

How long will it take to get their money back from the investment?

Payback Period

$$\text{Payback Period} = \frac{\text{Total Investment}}{\text{Total Estimated Accident Costs}}$$

$$\text{Payback Period} = \frac{\$\ \rule{3cm}{0.4pt}}{\$\ \rule{3cm}{0.4pt}} = \rule{2cm}{0.4pt} \text{Years}$$

How much product will Mystery Manufacturing have to sell to pay for the accident costs?

Business volume required to cover cost

$$\text{Volume} = \frac{\text{Total Estimated Accident Costs}}{\text{Profit Margin*}}$$

$$\text{Business Volume} = \frac{\$\ \rule{2cm}{0.4pt}}{.10} = \$\ \rule{2cm}{0.4pt}$$

*MM's profit margin is 10% or .10
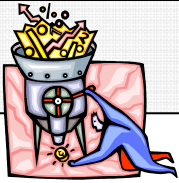
Providing useful information about the nature of incidents and accidents in the workplace is the "bread and butter" of the safety staff. Quantifying data helps decision-makers get a better objective picture of the current status of the safety management system in terms of results or outputs. That same information may be quite useful in building a strong recommendation for change.

$$\text{Lost Time Case Rate} = \frac{(\text{Lost time accidents}) \times 200{,}000}{\text{Employee hours worked}}$$

$$\text{OSHA DART Rate} = \frac{(\text{Days away, restricted duty, or transfer}) \times 200{,}000}{\text{Employee hours worked}}$$

$$\text{Industrial Injury Rate} = \frac{(\#\ \text{Lost time injuries}) \times 1{,}000{,}000}{\text{Employee hours worked}}$$

$$\text{Disabling injury/illness Rate} = \frac{(\#\ \text{Disabling injuries}) \times 200{,}000}{\text{Employee hours worked}}$$

$$\text{Medical only frequency Rate} = \frac{(\#\ \text{Medical only injuries}) \times 200{,}000}{\text{Employee hours worked}}$$

$$\text{First aid/minor injury Rate} = \frac{(\#\ \text{First aid/minor injuries}) \times 200{,}000}{\text{Employee hours worked}}$$

$$\text{Property damage frequency Rate} = \frac{(\#\ \text{Property damage incidents}) \times 200{,}000}{\text{Employee hours worked}}$$

$$\text{Incident frequency Rate} = \frac{(\#\ \text{Incidents}) \times 200{,}000}{\text{Employee hours worked}}$$

$$\text{Near-miss frequency Rate} = \frac{(\#\ \text{Near-misses}) \times 200{,}000}{\text{Employee hours worked}}$$

$$\text{Incident Severity Rate} = \frac{(\#\ \text{Total days lost}) \times 200{,}000}{\text{Employee hours worked}}$$

Source: *Safety, Health, and Environmental Management,* Germain, Arnold, Rowan, Roane, p.37

4. Determine how to measure it

What you need are metrics that are Specific, Measurable, Actionable, Relevant, and Timely or **SMART** objectives.

1. **Specific -** your metrics are specific and targeted to the area you are measuring.

2. **Measurable -** you can collect data that is accurate and complete. You can count or score leading indicators

3. **Actionable** - metrics are easy-to-understand, and it is clear when you chart your performance over time which direction is "good" and which direction is "bad", so that you know when to take action.

4. **Relevant -** don't measure things that are not important. A common downfall is to measure everything, which produces many meaningless measures.

5. **Timely -** you can get the data when you need it.

What tools do you use for measuring…

Culture and Climate _____

_____

Leadership _____

_____

Programs _____

_____

Cognition _____

_____

Behaviors _____

_____

Conditions _____

_____

Results _____

_____

Employee Perception Survey

Answer the questions below. Enter total score. Make comments as needed.

0 = Never (0%)   **3** = Sometimes (50%)   **7** = Always (100%).

When is the safety recognition program explained?

0 1 3 5 7   Orientation - immediately upon hiring.

0 1 3 5 7   Specific – when initially assigned to a department.

0 1 3 5 7   Follow-up - annually, as needed.

What are you recognized for?

0 1 3 5 7   Complying with safety rules.

0 1 3 5 7   Reporting injuries immediately.

0 1 3 5 7   Reporting hazards.

0 1 3 5 7   Making safety suggestions.

0 1 3 5 7   Being involved in the safety committee.

0 1 3 5 7   For not having an accident.

Who recognizes you?

0 1 3 5 7   My supervisor

0 1 3 5 7   Other employees

0 1 3 5 7   The safety director

0 1 3 5 7   The safety committee

When are you recognized?

0 1 3 5 7   Often

0 1 3 5 7   Occasionally

0 1 3 5 7   Never

Group Size	Sample Size
25	100%
50	90%
75	85%
100	80%
200	70%
500	45%
1,000	28%
2,000	16%
5,000	7%
10,000	4%

"I've said it before and I'll say it again – You can't begin to change until you know where you are. The Perception Survey is an excellent tool for this purpose." - Dan Petersen, Techniques of Safety Management.

To analyze programs, conduct audits

Program Element – Hazard Identification and Control

_____ An annual baseline hazard assessment has been conducted.

_____ Effective management controls are in place, as needed.

_____ Safety and health rules are written and clearly communicated.

_____ Employees are adequately trained on all safe work practices.

_____ Personal protective equipment is effectively used as needed.

_____ Effective preventive and corrective maintenance is performed.

_____ Emergency equipment is well maintained.

_____ Engineered hazard controls are well maintained.

_____ Supervisors, managers and the safety committee conduct inspections.

_____ The organization is prepared for emergency situations.

_____ The organization has an effective plan for providing competent emergency medical care to employees and others present on the site.

_____ An early-return-to-work program is in place at the facility.

Safety Committee - Hazard assessment and control.

_____ Is the safety committee assisting in evaluating the employer's safety and health program?

_____ Are established procedures that identify safety and health hazards in place?

_____ Are workplace inspections by the safety committee conducted at least quarterly?

_____ Does the safety committee use the results of the inspection to make recommendations?

_____ Does the inspection team include employer and employee representatives?

_____ Does the inspection report locate and identity of the hazards and make recommendations?

"If we manage the details the results will take care of themselves." Dan Petersen

Yes No NA   **FLAMMABLE & COMBUSTIBLE MATERIALS CHECKLIST**

__ __ __   1. Are combustible debris and waste materials stored in covered metal receptacles and removed from the work environment?

__ __ __   2. Are proper storage methods used to minimize the risk of fire and spontaneous combustion?

__ __ __   3. Are approved containers and tanks used for the storage and handling of flammable and combustible liquids?

__ __ __   4. Are all connections on drums and combustible liquid piping tight?

__ __ __   5. Are all flammable liquids kept in closed containers when not in use?

__ __ __   6. Are bulk drums of flammable liquids grounded and bonded to containers during dispensing?

__ __ __   7. Do storage rooms for flammable and combustible liquids have explosion-proof lights?

__ __ __   8. Do storage rooms for flammable and combustible liquids have mechanical or gravity ventilation?

__ __ __   9. Are safe practices followed when liquid petroleum gas is stored, handled, and used?

__ __ __   10. Are all solvent wastes and flammable liquids kept in fire resistant, covered containers until they are removed from the work site?

__ __ __   11. Are all extinguishers fully charged and in their designated places?

__ __ __   12. Are extinguishers free from obstructions or blockage?

__ __ __   13. Are "NO SMOKING" signs posted and enforced in areas where flammable or combustible materials are stored/used?

__ __ __   14. Are all spills of flammable or combustible liquids cleaned up promptly?

Yes No NA   **GENERAL WORK ENVIRONMENT CHECKLIST**

__ __ __   1. Are all work sites clean and orderly?

__ __ __   2. Are work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant?

__ __ __   3. Are all spilled materials or liquids cleaned up immediately?

__ __ __   4. Is combustible debris and waste stored safely and removed from the work site promptly?

__ __ __   5. Are covered metal waste cans used for oily and paint-soaked waste?

__ __ __   6. Are the minimum number of toilets and washing facilities provided?

__ __ __   7. Are all toilets and washing facilities clean and sanitary?

| Section 3.0 Training Program Administration and Management	
Rating (circle one)	**Criteria**
0 1 3 5	1. Safety training is integrated into an overall safety, health and environmental management system. Comments: _____ _____
0 1 3 5	2. The training program addresses responsibility and accountability for the training program. Comments: _____ _____
0 1 3 5	3. The training program identifies and allocates resources available to the trainer and trainee. Comments: _____ _____
0 1 3 5	4. The training program includes an effective course design process. Comments: _____ _____
0 1 3 5	5. The training program includes an effective course development process. Comments: _____ _____
0 1 3 5	6. The training program describes effective course presentation using appropriate techniques. Comments: _____ _____

Graphs and Charts

Pareto Charts

The Pareto principle suggests that most effects come from relatively few causes. In quantitative terms: 80% of the problems come from 20% of the causes (machines, raw materials, operators etc.); 80% of the wealth is owned by 20% of the people etc. Therefore effort aimed at the right 20% can solve 80% of the problems. Double (back to back) Pareto charts can be used to compare 'before and after' situations. In safety, can be used to identify types of accidents, injuries and illnesses, causes of hazardous conditions and unsafe practices, etc.

Frequency of Injuries - 2006-2008 - Portland Plant
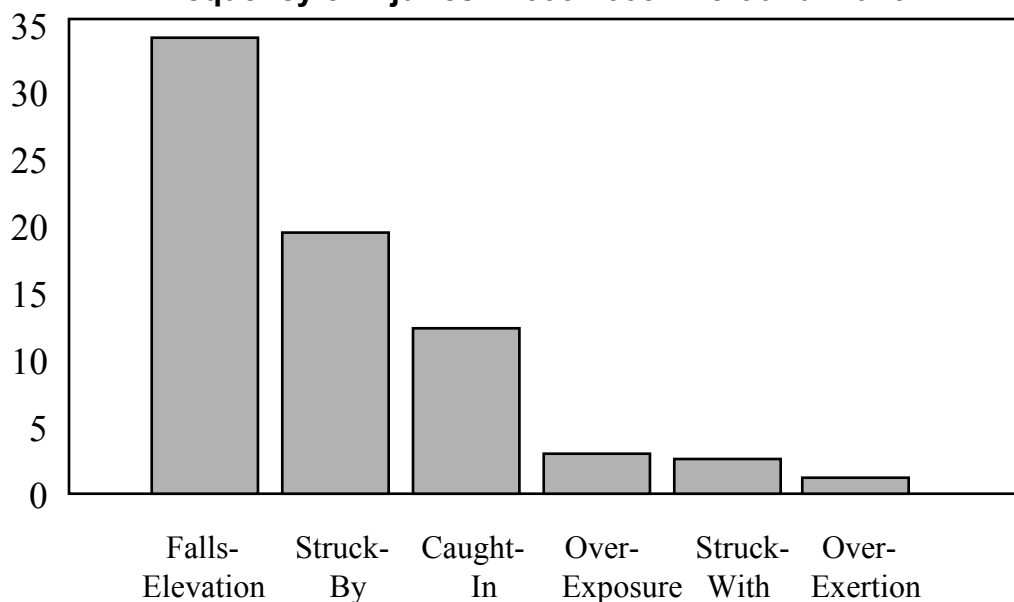
**Falls From Elevation - Working Surface Type**
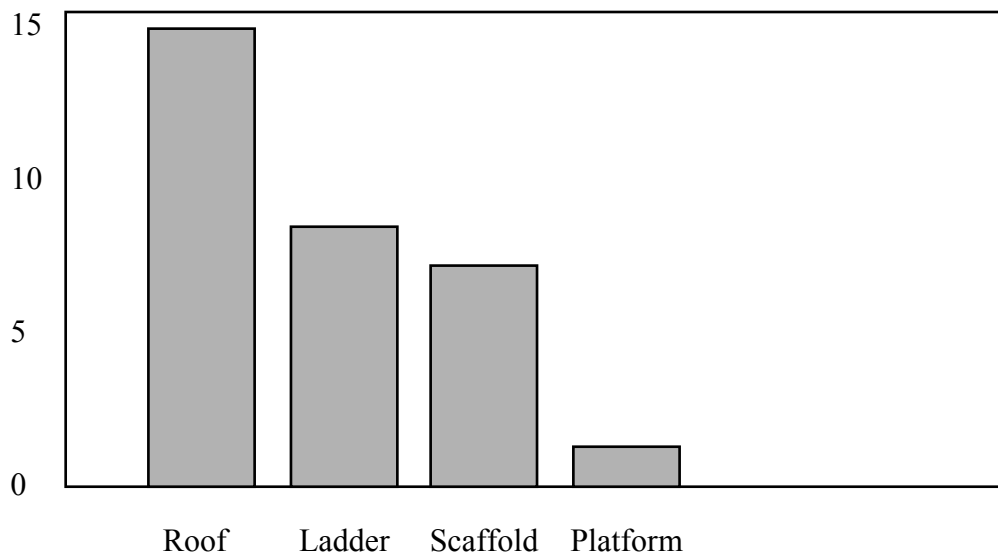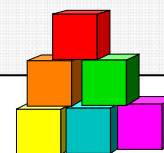
Control Charts

Control charts are a method of Statistical Process Control, SPC. (Control system for production processes). They enable the control of distribution of variation rather than attempting to control each individual variation. Upper and lower control and tolerance limits are calculated for a process and sampled measures are regularly plotted about a central line between the two sets of limits. The plotted line corresponds to the stability/trend of the process. Action can be taken based on trend rather than on individual variation. This prevents over-correction/compensation for random variation, which would lead to many rejects. (The Tools of Quality; Quality Progress, Aug 1990; P D Shainin.)

The probability of a rate or frequency exceeding the upper control limit by chance is very small, and must be attributed to a special cause.

The goal is to increase stability and lower the Upper Control Limit.

Lost Time Injuries per 100,000 Work hours - 2008
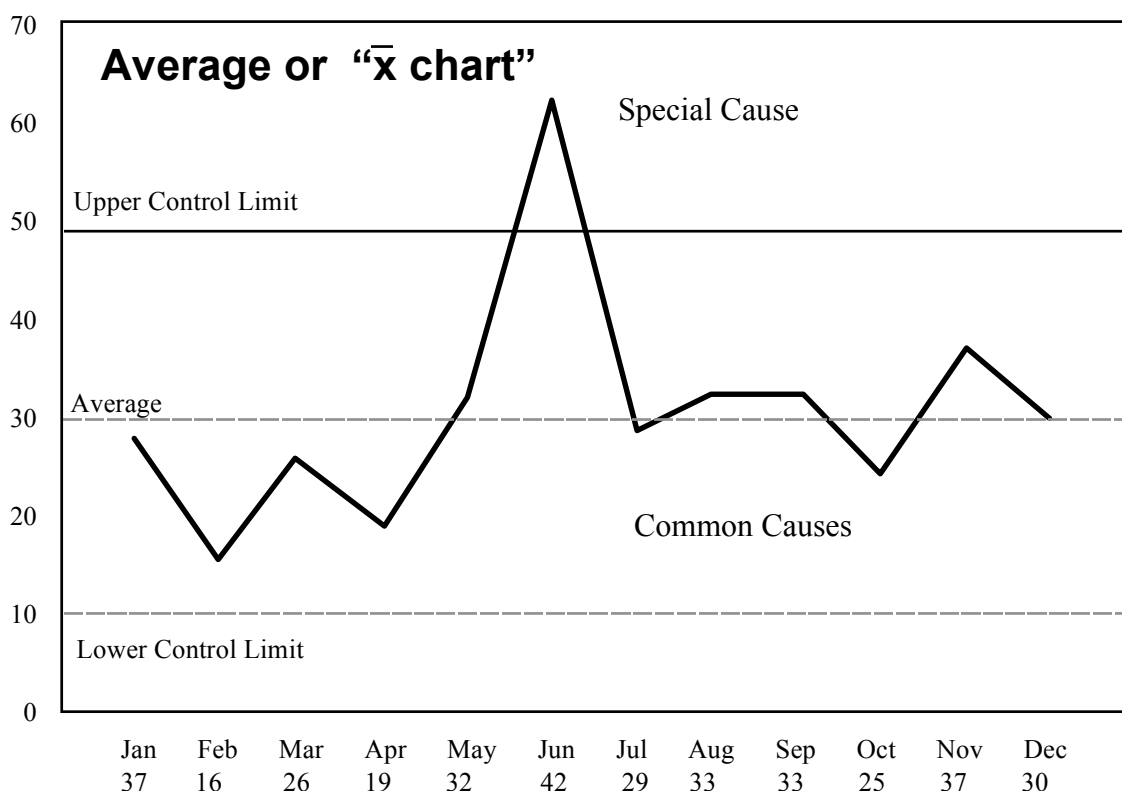
Histogram

A Histogram is a graphic summary of variation in a set of data. It enables us to see patterns that are difficult to see in a simple table of numbers. Can be analyzed to draw conclusions about the data set.

A histogram is a graph in which the continuous variable is clustered into categories and the value of each cluster is plotted to give a series of bars as above. The above example reveals the skewed distribution of a set of product measurements that remain nevertheless within specified limits. Without using some form of graphic this kind of problem can be difficult to analyze, recognize or identify. (The Tools of Quality; Quality Progress, Sept 1990; The Juran Institute.)

Unsafe work observations - by Department - 3rd Qtr '08
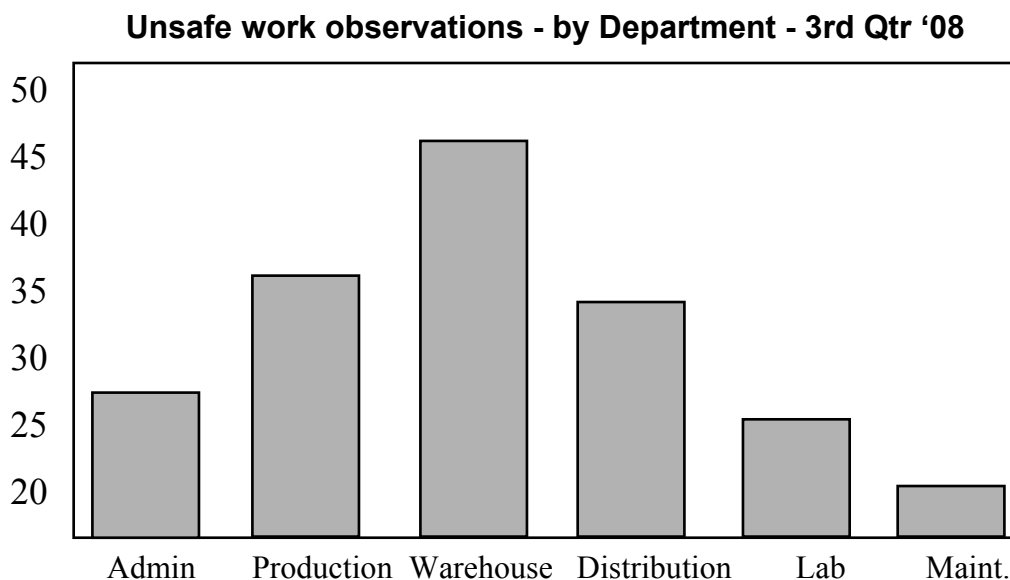

Check Sheets

A Check Sheet is a data recording form that has been designed to readily interpret results from the form itself. It needs to be designed for the specific data it is to gather. Used for the collection of quantitative or qualitative repetitive data. Adaptable to different data gathering situations. Minimal interpretation of results required. Easy and quick to use. No control for various forms of bias - exclusion, interaction, perception, operational, non-response, estimation. (The Tools of Quality; Quality Progress, Oct. 1990; The Juran Institute.)

Check Lists

A Checklist contains items that are important or relevant to a specific issue or situation. Checklists are used under operational conditions to ensure that all important steps or actions have been taken. Their primary purpose is for guiding operations, not for collecting data. Generally used to check that all aspects of a situation have been taken into account before action or decision making. Simple, effective. (The Tools of Quality; Quality Progress, Oct. 1990; The Juran Institute.)

Cause and Effect Diagram

The cause-and-effect diagram is a method for analyzing process dispersion. The diagram's purpose is to relate causes and effects. Three basic types: Dispersion analysis, Process classification and Cause enumeration. Effect = problem to be resolved, opportunity to be grasped, result to be achieved. Excellent for capturing team brainstorming output and for filling in from the 'wide picture'. Helps organize and relate factors, providing a sequential view. Deals with time direction but not quantity. Can become very complex. Can be difficult to identify or demonstrate interrelationships. (Sarazen, JS., The Tools of Quality; Quality Progress, July 1990.)
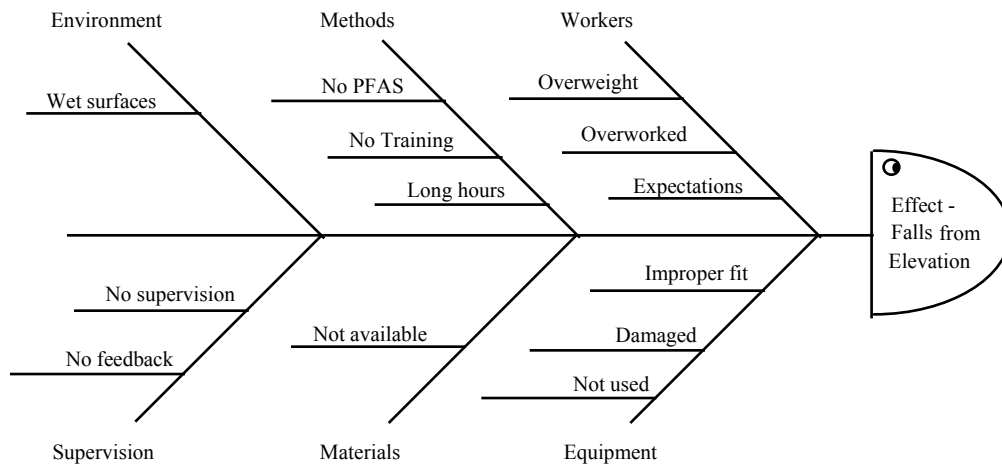
Run Chart

Simplest of all the statistical tools. Helps to determine trends. Data through seven periods of analysis need to be gathered to establish valid trends.
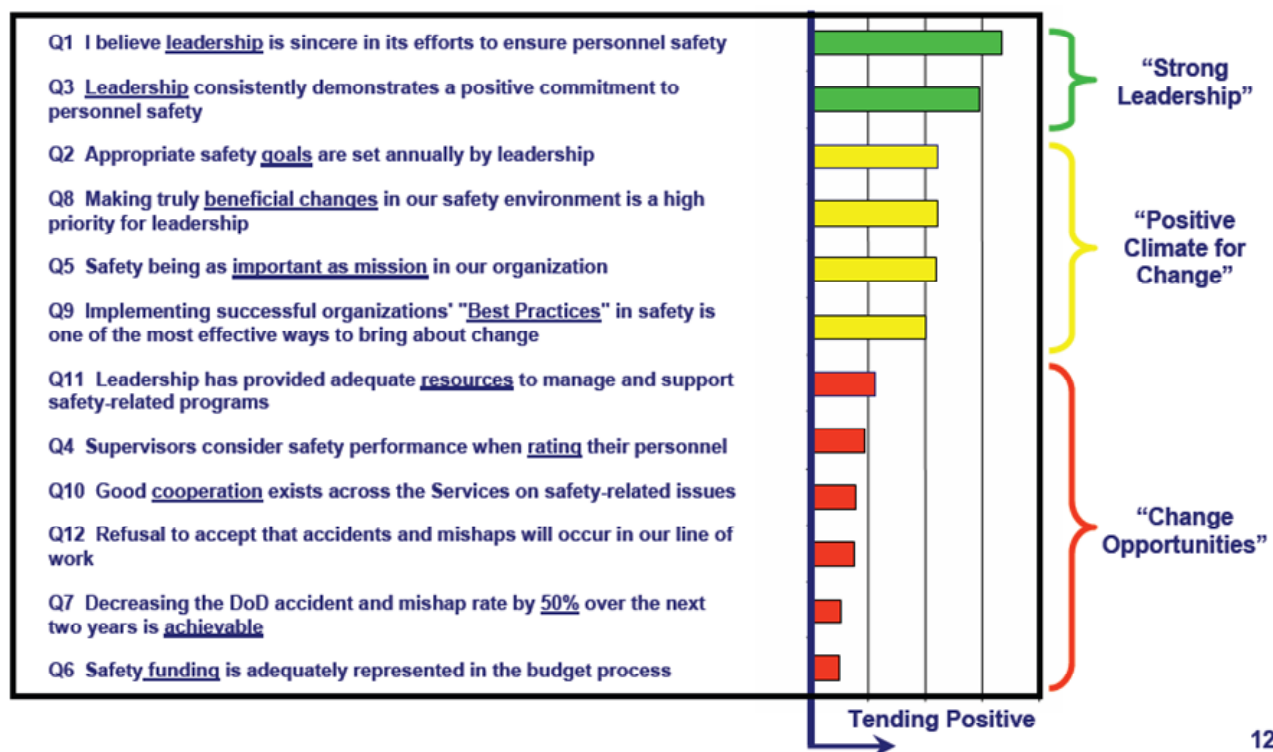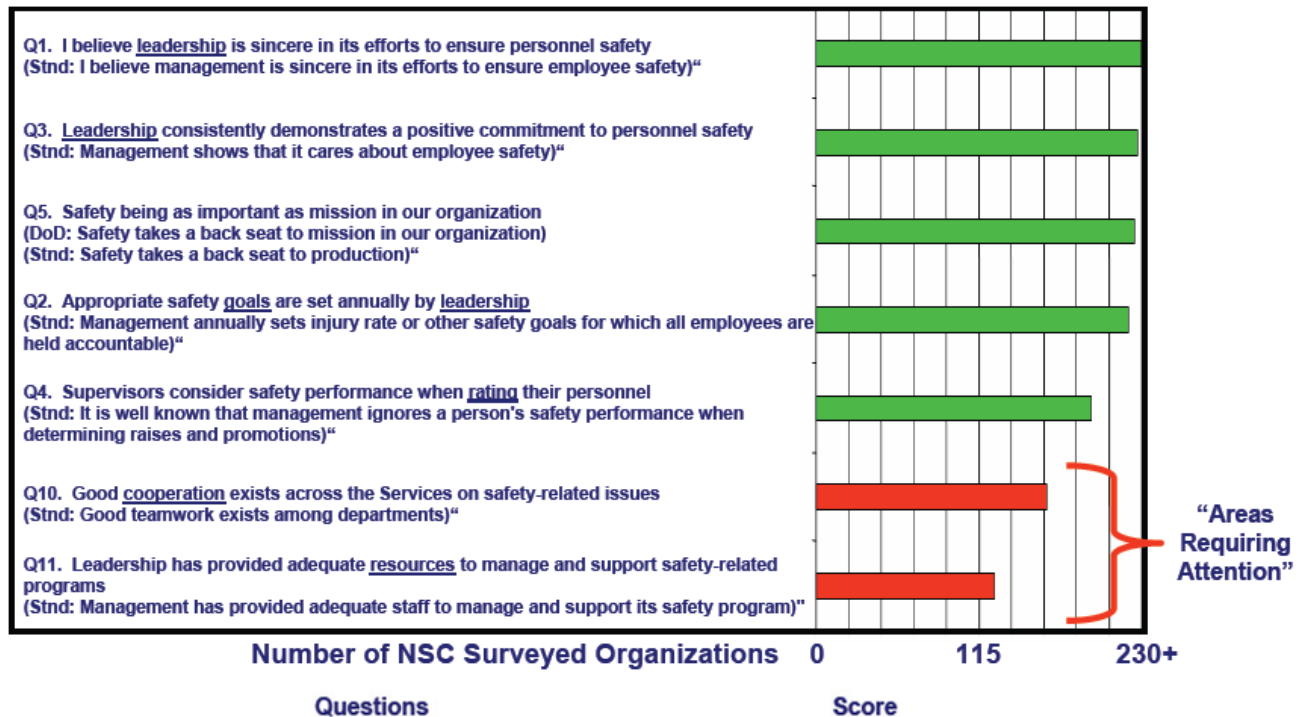

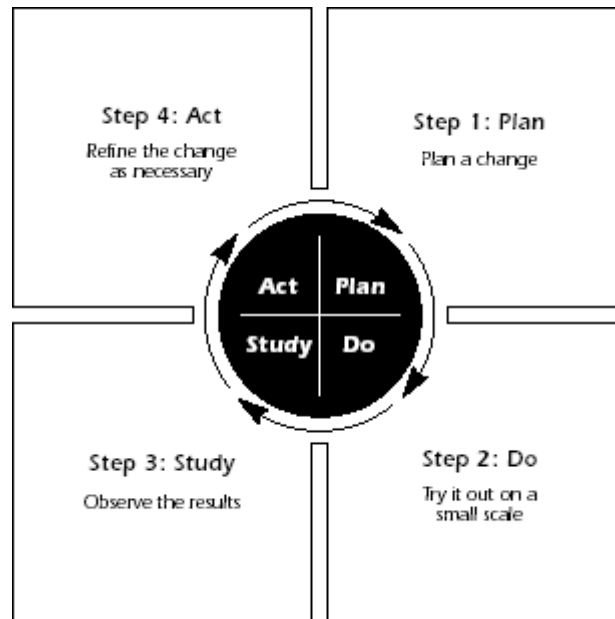Form 801, First Report of Injury, Submissions - 1995
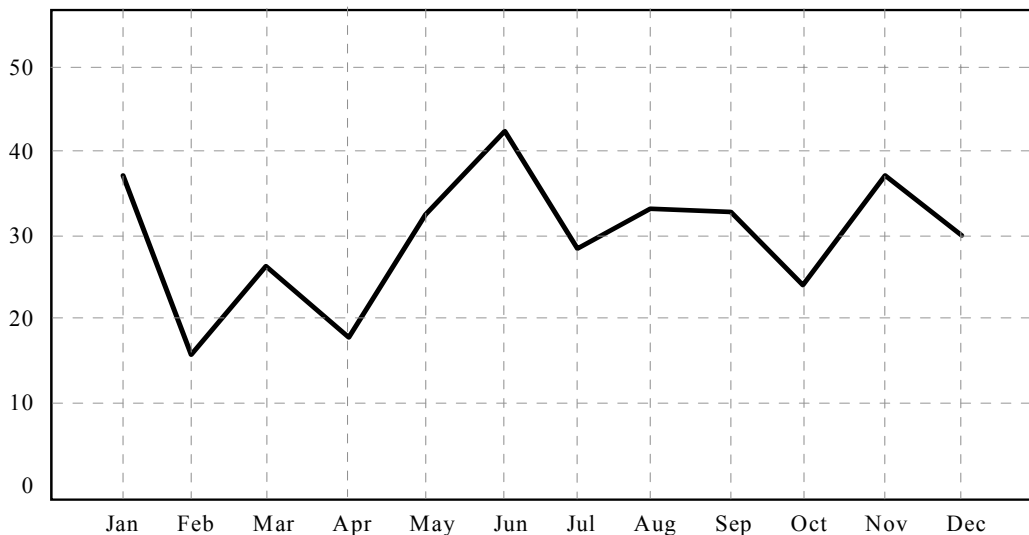
Once you have gathered and analyzed the data, it's time to report findings. It's important to report the data objectively and accurately.   Here are some examples of charts and graphs summarizing the data.

8. Do something with them

Now that you have reported the findings. It's time to problem solve to develop solutions to the problems you have identified. There are many techniques you can use to problem solve, but bottom line, it's best to use continuous improvement strategies. The best know and most widely used process is called the Shewhart or Deming Cycle:

Step 4: Act
Refine the change as necessary

Step 1: Plan
Plan a change

Step 3: Study
Observe the results

Step 2: Do
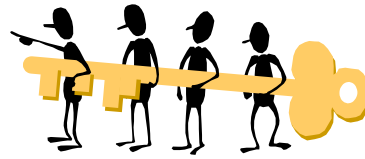Try it out on a small scale

Take one of the leading indicators you listed earlier and discuss strategies to move that metric in the desired direction.   Be prepared to report to the class.

Metric

_____

Strategy

_____
_____
_____

Key Paradigms of
Continuous Safety Improvement

CSI is a management approach that:	**Key Elements:**
■ Focuses on meeting or beating customer expectations for process and product safety.	• **Customer focus**
■ Rigorous use of facts and analysis in everyday safety decisions.	• **Facts and analysis**
■ Benchmarking against "World-Class" safety performance.	• **Benchmarking**
■ Effective teamwork across the organization.	• **Cross Function Teamwork**
■ Recognition for outstanding safety performance.	• **Recognition**
■ Information that helps people and systems continuously improve.	• **Information and measurement**
■ A culture that fosters continuous improvement in workplace safety.	• **Continuous improvement**
■ Focuses on effective hazard identification, correction, and accident prevention efforts.	• **Identification, correction, prevention**

Force Field Analysis

Supporting Forces   Restraining Forces

CHANGE
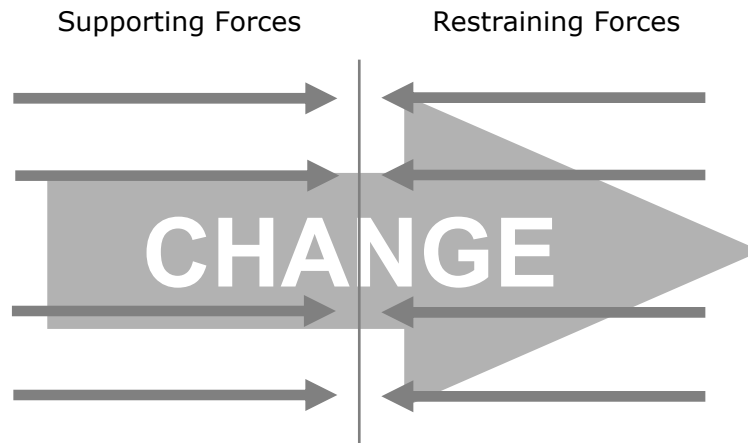
State the Problem: _____ *The safety committee lacks credibility.* _____

Supporting Forces	**Restraining Forces**
Those forces that support, or at least do not hinder or resist movement toward the desired situation. Those champions who agree with our goals.	Those forces working against movement towards the desired situation. Persons who do not support the goals.
Example:	*Example.*
* Support from human resources department.	** The accounting department has not budgeted funds for safety committee training.*
* Union supports a strong safety committee.	** Supervisors are reluctant to give safety committee representatives more time to fulfill safety responsibilities.*
* Safety director is a strong advocate.	** Management does not consider safety a critical issue even though the company's MOD Rate has recently risen to 1.25.*

Long Term Strategies

Describe strategies to increase the influence of supporting forces, and decrease or neutralize the influence of negative forces . ***Examples:***

1. Develop a long-term communications plan with the assistance of the safety director.
2. Educate management on the impact an effective safety committee can have on reducing the MOD Rate.

Short Term Actions:

List specific actions that supports the solution strategies. ***Examples.***

1. Obtain figures from OR-OSHA or insurer on costs associated with injuries and illnesses..
2. Display safety committee accomplishments on bulletin board using distinctive interesting format.

Benchmarking

Finding and copying the best practices of other companies.

Five types:

1. **Internal** - Company looks within own departments.

2. **Competitive** - Comparing company key competitive characteristics of a product or service with those of your competitors.

3. **Shadow** - Closely watching changes to key characteristics of a competitor's product or service so that the company can make similar changes.

4. **Industrial** - Company compares own outcomes and practices with industrial standards and best practices.

5. **World-Class** - Comparing best practices common across industries.

Steps:

1. Assess internal and external customer needs and wants.

2. Identify key needs and wants.

3. Develop operational definitions for critical indicators.

4. Determine the baseline for company's process.

5. Identify best in class.

6. Gather data about the best in class process.

7. Analyze and develop findings.

8. Develop strategies to adopt best practices.
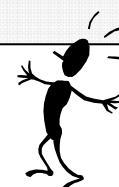
Brainstorming

There are six basic and unalterable rules to the group process of brainstorming that set it apart from other problem-solving procedures. They are:

1. **Define the issue.** Make sure everyone is clear on the problem you are going to brainstorm.

2. **Critical non-judgment**. Defer judgment on any idea that is expressed.

 This even includes encouraging comments to others or qualifying phrases attached to your own suggestions.

3. **Organized chaos**. The session should be as freewheeling as possible, with each person voicing whatever ideas come to mind - no holds barred. Ideas may be expressed in rapid, machine-gun, fashion. Don't limit the creativity.

4. **Similar originality**. Participants are encouraged to hitchhike or piggyback on the ideas of others. When one person's suggestion sparks an idea by another, it should be instantly expressed. Lots of "ah-ha's"

5. **Quantity, not quality.** The more ideas the better. The goal of brainstorming is to get as many ideas as possible. Evaluation and elimination can be accomplished later.

6. **Brief summary statements**. Don't go into great detailed explanations of your idea. You want the recorder to be able to have time to write down all ideas as team members think of them.

The Japanese have a saying: "Every defect is a treasure", meaning that errors and failures are opportunities for improvement. Errors or problems can help identify more fundamental or systemic root causes and ways to improve the system.

Yet, fear of identifying problems or needed changes can kill safety improvement programs! Also, some may feel that the idea of making improvements is an admission that the current way of doing things is flawed or that those responsible are poor performers.

Improved performance cannot occur unless workers feel comfortable that they can speak truthfully and are confident that their suggestions will be taken seriously. Managers and workforce members must assume that everyone in the company is interested in doing his or her best!

Mind Mapping

Mind mapping is merely drawing circles and lines to help you quickly think about and categorize ideas, problems, concepts, subjects, and just about anything else. Mind mapping is successful because it takes advantage of the brain's natural ability to categorize ideas in a rapid, but rather unorganized manner. Using this technique, you'll be able to take any topic, project, or problem and quickly determine related categories, processes, or procedures. Once the mind map is complete, it is merely a matter of reorganizing the information into the more common "outline" format.

Useful for:

- Developing steps in a procedure
- Creating a vision/mission statement
- Listing safety problems
- Uncovering reasons for, or causes of, a specific safety problem
- Listing possible solutions to a safety problem

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