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## Behavior Based Safety (BBS)

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## What is Behavior Based Safety?

Behavior is “the manner of conducting oneself.”\*

Therefore, behaviors are observable acts.

Behavior Based Safety focuses on behaviors that  
promote safety.

\* Merriam-Webster dictionary






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## Behavior Based Safety is NOT:

- A fully-developed safety program.
  - It is a process designed to eliminate behaviors that put workers at risk and enhance existing safety protocols.
- A process used to enforce safety rules, nor to correct hazardous conditions.
  - Safety rule violations and hazardous workplace conditions must be corrected outside of the BBS process.
- A process for assigning blame or criticizing workers.






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## How does BBS differ from traditional safety?

### Traditional Safety...

- Is *reactive* – focuses on correcting problems only after they have occurred.
- Searches for “root cause” of accidents
  - Using incident/accident data from investigations
    - e.g. Incident and Severity rate: TRCR/DART
- Focuses on making the working environment less hazardous.
- Sometimes assigns blame to individuals.
  - Emphasis on negative reinforcement.




**How does BBS differ from traditional safety?**

**Behavior Based Safety...**

- Is proactive – discourages ‘at-risk’ behaviors.
- Focuses on observing worker behavior.
  - Common behaviors that place employees at risk are noted and adjustments are made.
  - Data come from behavioral observations.
- Has a holistic understanding of worker behavior.
  - Notes the environment in which behavior occurs, the behavior itself, and consequences of this behavior.

**Behavior Based Safety underlies and benefits Traditional Safety**

**Always Keep in Mind...**

BBS is focused on two concepts:

- **BEHAVIOR**
  - What is behavior?
  - What are the factors influencing “at-risk” behavior?
  - How can this behavior be discouraged?
- **RISK**
  - What is risk?
  - Why do people take risks?
  - What are the consequences of taking these risks?

**Remember: Behavior is “the manner of conducting oneself”**

Behaviors cannot be isolated from the environment in which they occur.

Therefore, if employees are expected to promote safe practices the working environment must encourage this behavior.






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## Implementing Behavior Based Safety






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### Prior to Implementation

Important to develop a BBS Committee and working structure that persists after implementation:

- Designs the BBS process.
- Develops the implementation strategy.
- Implements the BBS process.
- Steers the BBS process.
  - Assures observation and data quality through a Quality Assurance Plan.
  - Champions worker involvement and completion of observations.
  - Analyzes observation data to identify the causes of at-risk behaviors and develops recommendations.
  - Facilitates removal of barriers to workers being able to easily perform work safely.
  - Reports the results of data analysis.






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### Responsibilities of Managers & Supervisors

- Understand the process (receive training)
- Establish BBS as a part of the job
- Help identify and correct systems issues
- Remove barriers
- Support:
  - Time for:
    - Training
    - BBS Committee duties and meetings
    - Observations
- Encourage and provide positive reinforcement: workers, observers, BBS Committee members






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### 4 Steps of Implementation

The BBS implementation process consists of four steps we will discuss in further detail:

1. Establish Feasible Goals
2. Develop Observation Checklists
3. Take observations
4. Provide Feedback






## Step 1: Establish Feasible Goals

The overall purpose of BBS is to establish a culture of safety in the working environment. However, attainable goals need to exist in working toward this. Make goals **SMART**:

**S**pecific – **M**otivational – **A**ttainable – **R**elevant – **T**rackable

e.g. A goal of “zero-injuries” is **NOT** SMART, but a goal of 80% participation in appropriate safety training is SMART.

Goals should focus on outcomes, NOT behaviors.





## Step 1: Establish Feasible Goals

Employee participation in the goal-setting process is important, and must continue throughout the BBS process to ensure success. There are two broad reasons for this:

1. “Employee buy-in” – verbal and nonverbal support for change from those directly affected.
2. Interpersonal trust – trust among employees, and trust between employees and management.






## Step 2: Develop Observation Checklists

In looking for behaviors that encourage safe practice, there are several options:

- Review past accident/incident reports to identify behavior that could have prevented them.
  - Focus on those that could have prevented the largest number of accidents.
- Consult with employees and managers.
  - It is important for employees to take responsibility for their actions.
  - Beneficial for developing trust.
- Observe workers for a period of time.





## Step 2: Develop Observation Checklists

Remember in developing the list that positive reinforcement is better for employee participation (i.e. specify criteria for good performance).

**SCHARR** Sandia Hazard & Accident Reduction Program  
Division 2000 Behavior Based Safety—Electrical Lab Workers

Observer: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
No. Observed: \_\_\_\_\_ Why: \_\_\_\_\_ Org: \_\_\_\_\_

Behavior	Safe	Concern	What	Why
Eyes on Plate/Task (20%)				
Line of Fire (10%)				
Repetition (10%)				
Alignment (2%)				

Observer Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Employee Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_






### Step 3: Observing

There are several decisions to be made when selecting an observation method or methods:

- Who will observe?
  - Self-observation
  - Peer-to-peer
  - Top-down
  - Working groups
- Frequency of observations?
  - Daily, bi-weekly, monthly
- How will feedback be given?
  - Immediately
  - Within a week






### Observers Have...

Three main responsibilities:

- Gather data
  - Observation data (Safe/Concern)
  - Discussion data (What/Why)
- Give feedback
  - Positive reinforcement for safe behaviors
  - Provide coaching on concerns
- To remain objective/unbiased





### Step 3: Observing

As an example, Sandia's method of observation is:

- Peer-to-peer
- Anonymous (No Names/No Blame)
- Announced
- 5 minutes or less
- Provide feedback:
  - Positive reinforcement for safe behaviors
  - Coaching for behaviors of concern
- Identify obstacles
- Foster safety communication



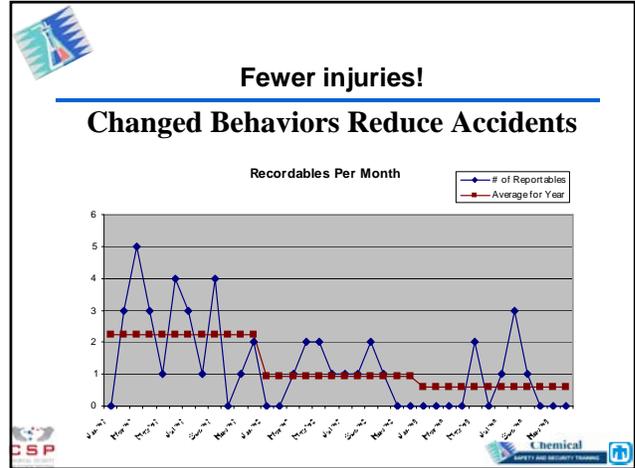
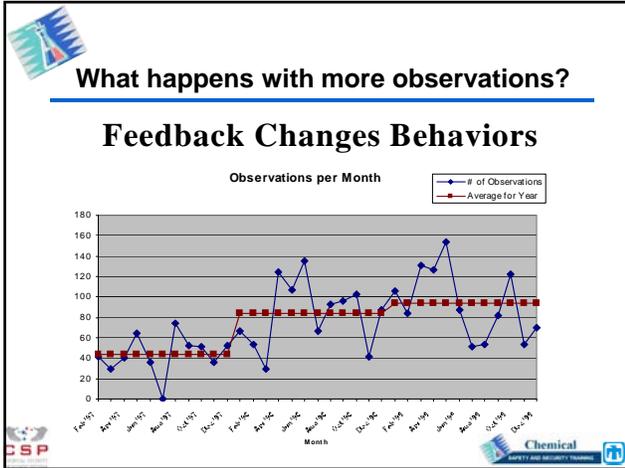


### An Observer's Job is **NOT**:



- Ambush or spy on workers
- "Catch" people doing activities unsafely
- Criticize worker performance
- "Safety cop" (risks vs. rules; right vs. wrong; safe vs. unsafe)
- Watch a whole task or job
- Force people to change
- Turn people in for discipline
- Identify conditions that don't directly impact critical behaviors



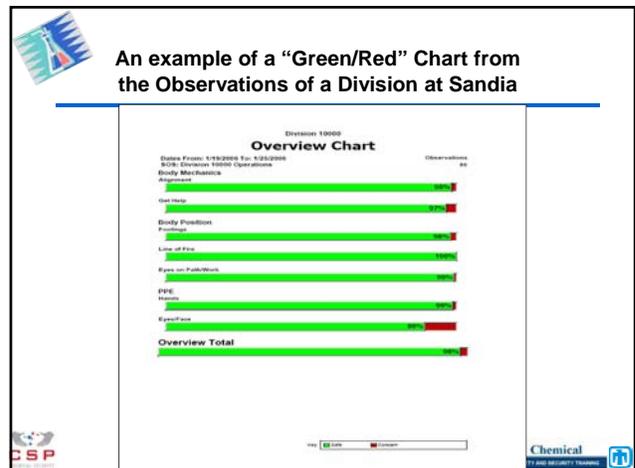
### Step 4: Providing Feedback

Providing feedback to workers in a timely manner is important. Using multiple methods has proven beneficial:

- Verbal - Immediate feedback during observations.
- Through reports written after observation data collected.
- Posting graphs/charts where all can see.
- Having celebrations for milestones or providing other incentives.

**NOTE: It is important that workers are allowed time to adjust their performance before being observed again.**

CSP  
Chemical  
SAFETY AND SECURITY TRAINING






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## Why Implement Behavior Based Safety?






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## The BBS Process Closes the Gap to “Nobody Gets Hurt”

- Focuses on the critical few precautions that would prevent the most injuries
- Prioritizes actions to remove barriers
- Generates actionable data
- Provides positive reinforcement of safe behaviors
- Engages workers and management:
  - Worker driven/Management supported






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## BBS is proven to reduce injuries

- At 850+ companies injuries were reduced by an average of:
  - 37% after 1 year
  - 66% after 2 years
  - 87% after 3 years
- Multisite Success – See case study of BP’s Fabrics and Fibers Business Unit (FFBU) included in your extra materials.






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## The Benefits Outweigh the Costs

- What is the Return on Investment for BBS?
  - Saves time, money, energy, and can improve morale among employees and between employees and managers.
  - Costs of accidents/incidents are both direct and indirect:
    - **Direct costs:** investigation, production downtime, medical expenses, damage to equipment or product, repairs, legal costs, fines, etc.
    - **Indirect costs:** employer/public liability, business interruption, training replacements, loss of goodwill/employee morale, negative public image.






## Why Implement Behavior Based Safety?

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**Remember:**

### The Iceberg Theory

**For every accident, there are many "near misses" that go unnoticed.**





## Sources

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- M. Dominic Cooper. "Behavioral Safety Interventions: A review of process design factors." *Safety Management*. Feb 2009.
- Thomas E. Boyce and Horacio R. Roman. "Institutionalizing behavior-based safety: Theories, concepts, and practical suggestions." *The Behavior Analyst Today*. Vol 3, No 1. April 2002.
- Jason DePasquale and E. Scott Geller. "Critical success factors for behavior-based safety: A study of twenty industry-wide applications." *Journal of Safety Research*. Vol 30, No 4. 1999.
- Beth Sulzer-Azaroff and John Austin. "Does BBS Work? Behavior-Based Safety & Injury Reduction: A Survey of the Evidence." *Professional Safety*. July 2000.
- E. Scott Geller. "How to Get More People Involved in Behavior-Based Safety: Selling an Effective Process." Cambridge Center for Behavioral Studies. Accessed 12/2010. <<http://www.behavior.org/resource.php?id=332>>.
- "Introduction to BBS." Cambridge Center for Behavioral Studies. Accessed 12/2010. <<http://www.behavior.org/resource.php?id=330>>.
- Byron Chandler and Thomas A. Huntebrinker. "Multisite Success with Systematic BBS." *Professional Safety*. June 2003.
- D. Cooper. "The return on investment of the B-BS process." *Giornale Italiano di Medicina del Lavoro ed Ergonomia*. Vol 32, No 1. 2010.
- M. D. Cooper Ph.D. "Towards a model of safety culture." *Safety Science*. Vol 36. 2000.