

Developing a Safety Culture at a CSU Campus

Is Behavior-Based Safety Your Ticket?



Jeffrey Chung, PhD CSHM CHFP
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“If we’re in compliance, we’re safe!”

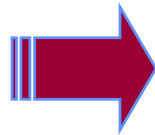
Satisfying compliance through documentation and regulatory activities will not ensure effective management, control and reduction of workplace injures/illnesses and associated costs!

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Need to Transform Campus EH&S Process

Transactional Management

- Compliance Priority
- Checklist-focus
- Islands of “Experts”
- Stimulus/Response
- “Gotcha” Mentality
- Prescriptive policies and procedures
- Heavy Documentation



Integrated Safety Process

- Interdisciplinary EH&S staff
- Focus EH&S efforts on supporting academic and business activities
- Integrated Customer Service
- Work/Research Planning
- Collaborative Problem Solving (Tailored Solutions)
- Performance Measures
- Benchmarking & Continuous Improvement

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Transforming the Safety Culture

*Sustaining
Safety
Success and
Continuous
Improvement*

“We Care” Safety Culture

Support workers to watch out for one another’s safety; observe safe and at-risk behaviors; provide timely peer feedback.

“Get Better” Safety Culture

Involve workers in the task of ensuring regulatory compliance through performance and actions; hold employees personally responsible and accountable for safety and establishing metrics/goals.

“Must Do” Safety Culture

Basic regulatory compliance and documentation system in place to ensure safety training programs, work conditions, procedures and processes comply with regulations.

Safety Success Climate Survey

Criteria	None → Much	
How much confidence, trust and credibility is there between managers, supervisors, EH&S and employees on safety and other EH&S issues?		✓
How much genuine interest do managers, supervisors and EH&S and employees themselves have in preventing accidents and injuries?		✓
How much understanding is there by managers, supervisors, EH&S and employees of the safety issues being faced each day?		✓
How much safety training and assistance is available and given daily? Have the courses been relevant and useful?		✓
How much mentoring is there to employees in how to analyze and solve problems (rather than just telling them what to do and not to do)?		✓
Is there a reasonable level of resources available/provided for employee safety?		✓
How much openness of communication exists between supervisors and employees, management and EH&S, et. al? How much active, ongoing solicitation is there for safety input from employees?		✓
How approachable is EH&S, managers and supervisors when safety issues or concerns arise?		✓
How much recognition do employees receive from management for working safely?		✓

Improving Safety Culture Requires Employee Involvement

Employees are the vital stimulus for sustaining organizational change and improvement . . .

“ It serves no purpose to talk about how organizations have to change. That’s wasted energy. Only individuals make the change.”

*Richard Gibson, Founder
Your Own Coach, Inc. and
Executive University*

One Strategy for Changing the Safety Culture. . .

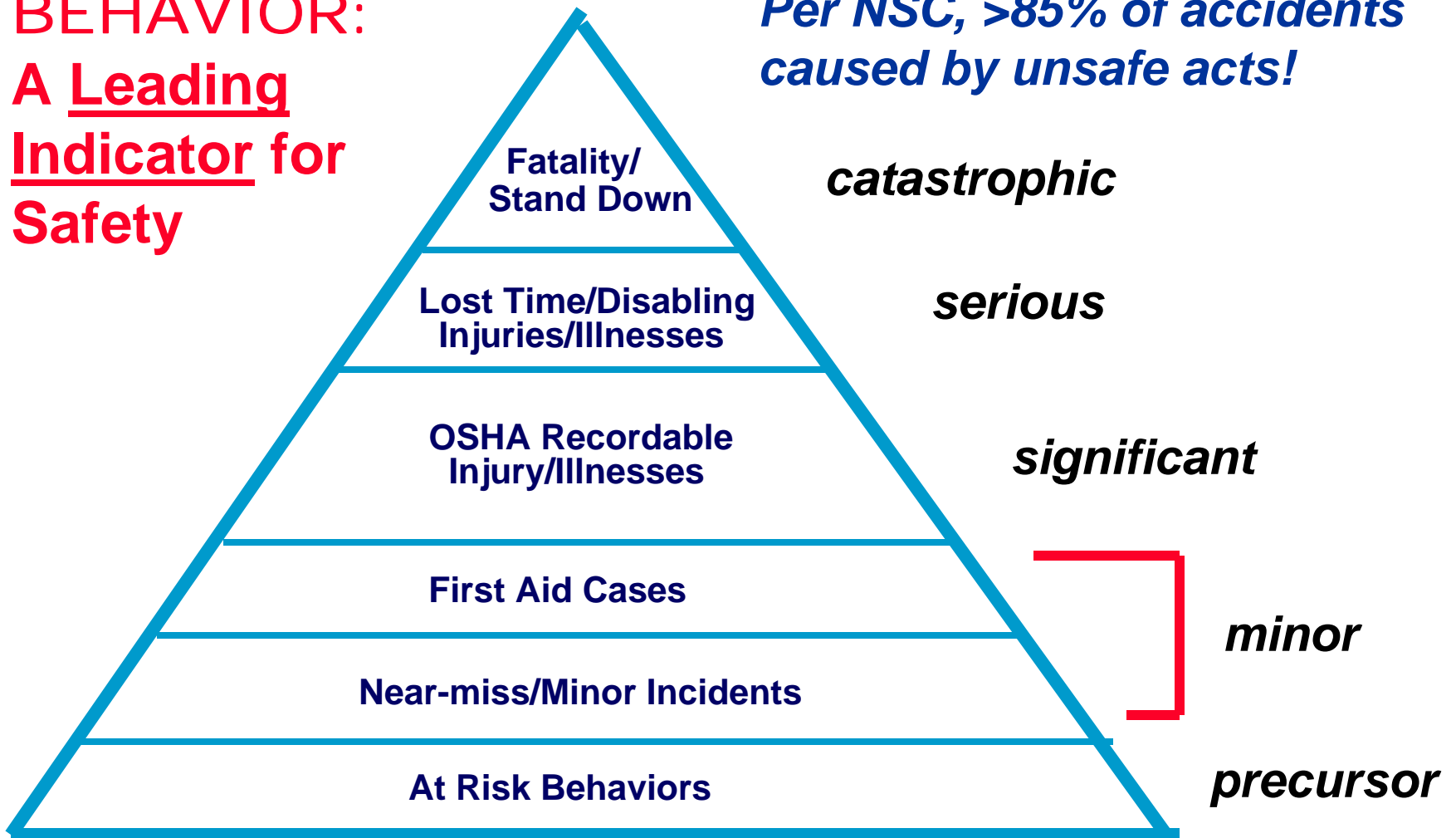
EMPLOYEE INVOLVEMENT IN ACCIDENT/INJURY REDUCTION AND PREVENTION:

**Implementing Behavior-Based Safety
to Change the Safety Culture**

Behaviors-to-Accidents Linkage

BEHAVIOR:
A Leading
Indicator for
Safety

*Per NSC, >85% of accidents
caused by unsafe acts!*

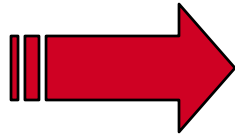


Behavior-Based Safety Process

***Employee
Involvement***

+

***Scientific
Method***



***Continuous
Improvement in
Safety Performance
and Productivity***

+

***Management
Commitment***

***Skilled and Technically
Knowledgeable Facilitator(s)***

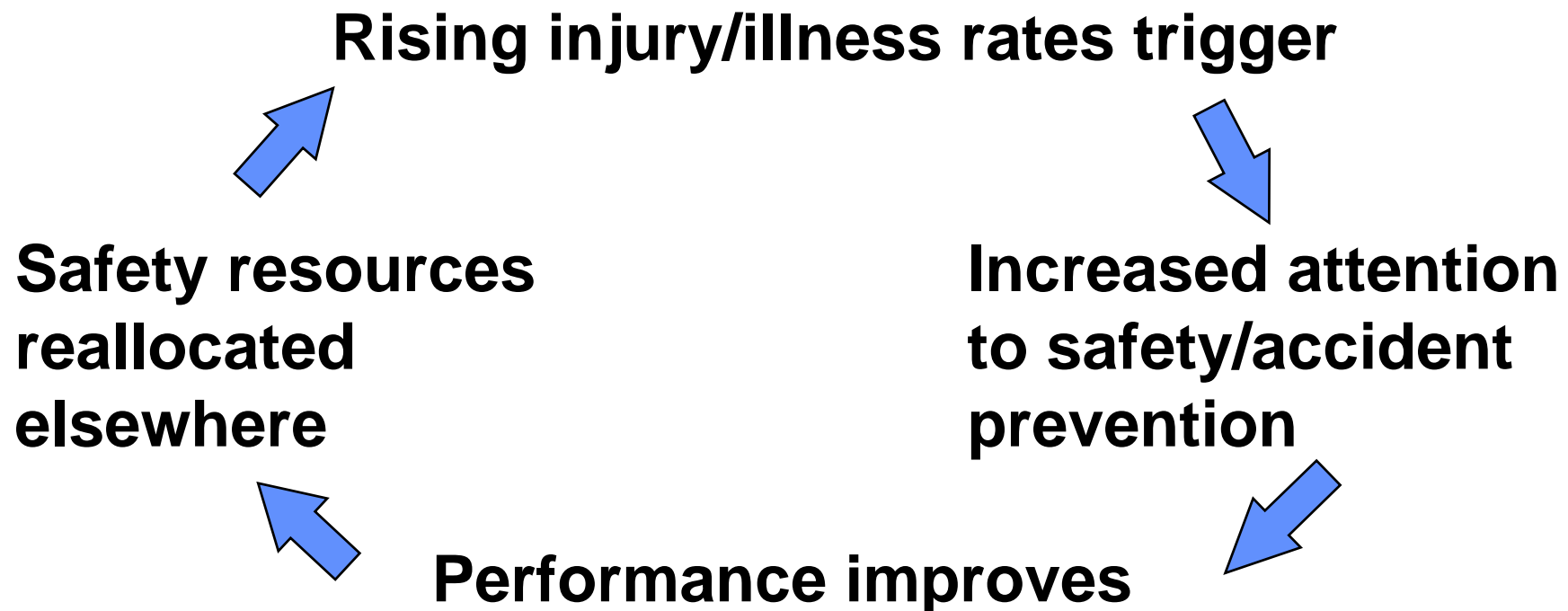
Behavior-Based Safety Goals

- **Reduce** injury frequency and severity rates.
- **Lower** WComp costs.
- **Decrease** downtime arising from workplace injuries, illnesses and mishaps.
- **Prevent** injuries to mission critical R&D and support operations personnel.
- **Establish** a sensible safety culture:
 - ✓ Watch out for and help each other work safely
 - ✓ Eliminate obstacles to safe performance
 - ✓ Develop respect for the individual
 - ✓ Make safety a way of life

Benefits of Behavior-Based Safety

Get out of traditional approach (*reactive rut*) to proactively managing the Accident Cycle:

(85% of accidents from unsafe practices!)



Additional Benefits of BBAP

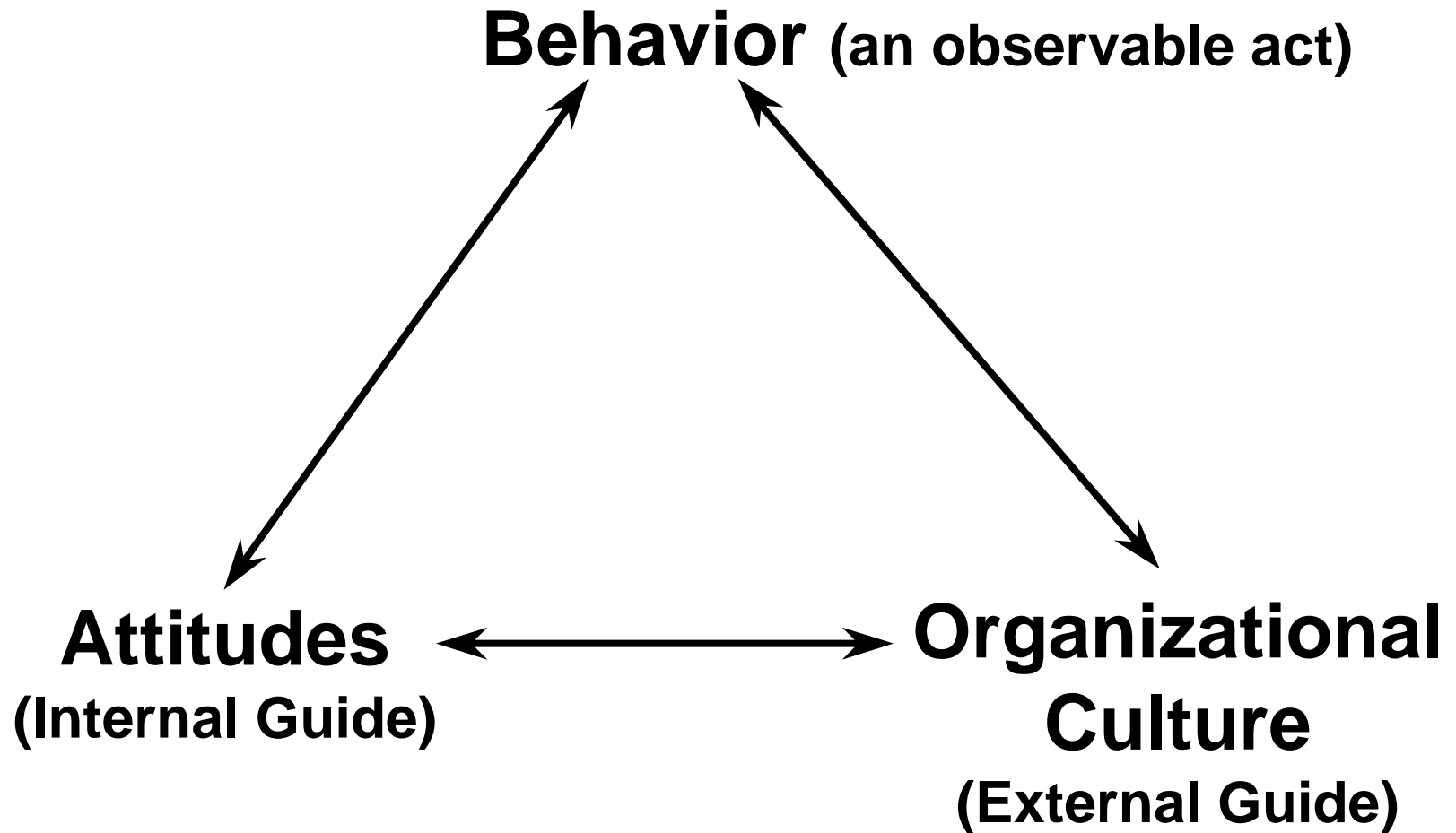
- **Assistant Secretary of Labor (OSHA):**

“Every dollar employers spend on safety and health programs is estimated to save them between \$4 and \$6 in WComp benefits, reduced employee turnover, and other related costs.”

- **Money saved creates competitive advantage:**

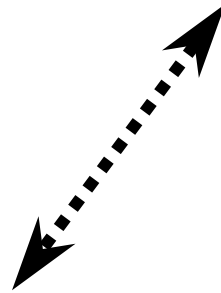
- Reinvest into campus infrastructure
- Further fund research and/or teaching initiatives
- Offer Safety Recognition Awards
- Subsidize Risk Management/EH&S program needs
- Fund other campus administration needs

What Influences Behavior?



What Influences Behavior?

BEHAVIORS

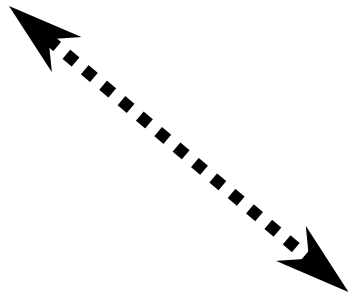


ATTITUDES

- Beliefs and Feelings
- Hard to Measure
- Attitudes Alone Aren't Enough to affect behavior

What Influences Behavior?

Behaviors



Organizational Culture

- Actions that are reinforced, encouraged or supported.
- Supervisor behaviors/feedback
- Management actions/reactions/policies
- Organizational climate, beliefs, policies, etc.

Behavioral Cycle

- Antecedent
 - Anything which precedes and triggers Behavior
- Behavior
 - An Observable Act
- Consequence
 - Anything which directly follows from behavior

Behavioral Cycle

**ANTECEDENTS INFLUENCE
BEHAVIOR ONLY TO THE
EXTENT THAT THEY PREDICT
CONSEQUENCES**

Behavioral Cycle

CONSEQUENCES

Control
(reinforce)

BEHAVIOR



Behavioral Cycle

- Antecedent
—Telephone Rings
- Behavior
—Answer Phone
- Consequence
—Talk to Caller



What Controls Behavior?

Behavioral Cycle

- Antecedent
 - Goggles don't fit
 - Goggles are in poor condition
- Behavior
 - Worker fails to wear goggles while grinding
- Consequence
 - Comfort
 - Better vision
 - Exposure to injury

Setting Up Your Program

Management and workers must understand and **fully commit and buy into long-term process.**

— **Knowledge of Behavior-based Safety**

- **Theory & Concepts**
- **Steps of Implementation**
- **Barriers to Implementation**
- **Resource Requirements**

— **Organizational Buy-In**

- **Willingness to Participate (employees)**
- **Allocation of Resources (management)**

Setting Up Your Program

- **Examine accident history for injury/illness trends.**
- **Identify and define critical at-risk employee behaviors; create observation checklist.**
- **Train participating employees in the Behavior-based Safety process -**
 - √ **Principles of Behavior-based Safety**
 - √ **Job observation techniques**
 - √ **Identification of at-risk behaviors**
 - √ **Coaching/feedback skills**

Setting Up Your Program

- Send employees out to conduct peer-to-peer observations; record behavioral data (at-risk and safe behaviors)
- Influence safe work practices of employees and supervisors to reduce risk of injury through:
 - » non-punitive coaching/positive feedback
 - » collaborative problem solving
- Track and report number safe vs. at-risk behaviors vs. accident rates; analyze trends for continuous improvement.

BBAP is long term process towards cultural change.

Behavior-Based Safety Will Not:

- **Relieve supervisors of their responsibility and accountability for employee safety**
- **Be sole accident prevention strategy (“all eggs In one basket” mentality)**
- **Save money during the initial years (can expect a ROI long-term)**
- **Be a waste of money**
- **Put “spies” in place for management**
- **Be the “Flavor-of-the-Month”**

My Berkeley Lab Initiative #1

Berkeley Lab Behavior-Based Accident Prevention (BBAP) Program

Facilities Division's W. O. W. Program (Workers Observing Workers)



A Process That Works!

W.O.W. Criteria/Guidelines

BBAP program championed by *all-employee* Steering Committee:

- **Comprised of Facilities Department crafts workers, office employees and technicians.**
- **No management personnel involved, but operates with management's full support.**
- **Full and formal endorsement from union.**
- **Account established to charge employee time when participating in BBAP activities.**

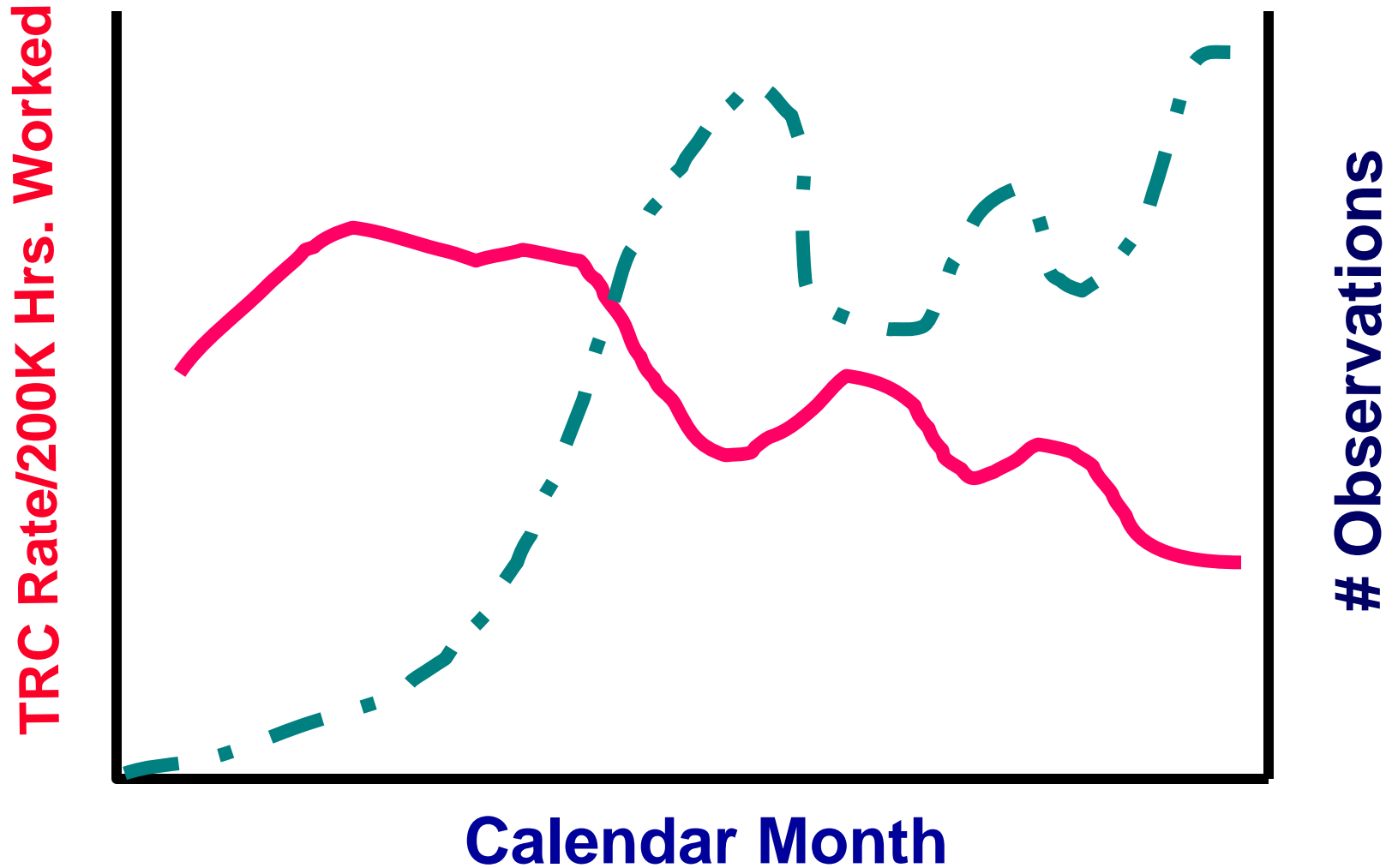
W.O.W. Roll-out Steps

- **Appoint a BBAP Steering Committee; rotating membership yields maximum participation.**
- **Analyze Facilities' employee accidents and determine root (at-risk behavioral) causes.**
- **Develop list of safe practices that can prevent recurrence of employee accidents.**
- **Obtain employee agreement to accept and practice list of safe behaviors.**
- **Train employees in performing safe behaviors.**

W.O.W. Roll-out Steps (cont'd.)

- **Develop coaching system; seek volunteer coaches and train them in observation and feedback skills.**
- **Conduct 1:1 anonymous observation sessions.**
- **Give positive feedback to employees:**
 - » **positive feedback for safe behavior**
 - » **factual (non-punitive) feedback for at-risk behaviors**
- **Record and collect observation data for continuous improvement.**

Measuring BBAP Results



My Berkeley Lab Initiative #2



Office Behavior-Based Accident Prevention (OBAP) Process

“Employee-Driven” Pilot Initiative for Improving
Office Safety and Workplace Ergonomics

Berkeley Lab Demographics

- **Workforce Profile:**
 - ❑ 3,300 (1,000 scientists and engineers)
 - ❑ 400 student employees
 - ❑ 200 temporary contract workers
 - ❑ Annually hosts 1,000+ guest/researchers
- **Median Age: 45.8 years (HRIS/PeopleSoft dBase)**
- **Number Computers Onsite:**
 - ❑ 12,000 (PCs/Macs and Laptops) [**~ 3:1 Ratio**]
 - ❑ 66 (mainframes/supercomputers/high-end servers)

Strong likelihood of an office-related ergonomics injury over time!

Why Focus on Office Ergo Behaviors?

Berkeley Lab Workplace Injury and Illness Patterns (2000- 2005 accident reports):

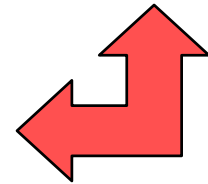
- 37% Repetitive Motion * (*70% computer*)
- 30% Strain and Sprain *
- 12% Lacerations
- 5% Bruise/Contusions
- 16% Others (slips, trips and falls, insect, respiratory, dermatitis, etc.)

** Ergonomically-related musculoskeletal disorders*

OBAP Complements Ergo Evals

- Ergonomic evaluations focus on interface between worker and his/her work environment
 - ❑ Workstation
 - ❑ Work flow/processes
 - ❑ Equipment and hardware
 - ❑ Biomechanics
 - ❑ Anthropometry
- OBAP focuses on employee's at-risk behaviors and unsafe ergonomic practices

- *One-time pass through*
- *Re-evaluation on "as needed" basis*



Observations occur at regular intervals (monthly) to provide timely and frequent feedback

OBAP Critical Behavior Checklist

A. BODY POSITION AT DESK

	Safe	At-Risk	N/A
A1 <u>Body Position at Desk – Legs and Feet</u>			
A1a – Feet flat on floor or on foot rest for support	_____	_____	_____
A1b – Adequate leg clearance under desk	_____	_____	_____
A1c – Space between seat pan edge/back of knees	_____	_____	_____
A1d – Calves flexed > 60 degrees	_____	_____	_____
A2 <u>Body Position at Desk – Back</u>			
A2a – Back erect and “S” curve maintained	_____	_____	_____
A2b – Lower back supported by lumbar support	_____	_____	_____
A2c – Knew & adjusted ergonomic chair features	_____	_____	_____
A3 <u>Body Position at Desk – Hands and Wrists</u>			
A3a – Wrists straight keying and/or mousing	_____	_____	_____
A3b – Minimal force keying or gripping mouse	_____	_____	_____
A3c – Use of wrist rest only when pausing	_____	_____	_____
A3d – Minimum hand/wrist deviation to mouse	_____	_____	_____
A3e – Shakes or massages hands/wrists for relief	_____	_____	_____

OBAP Critical Behavior Checklist

A. BODY POSITION AT DESK (cont'd).

A4 Body Position – Shoulders and Arms

Safe At-Risk N/A

A4a – Shoulders relaxed/arms close to body side

A4b – Elbows @ 90° & forearms parallel to floor

A4c – Safe reaching distance for office/PC equip.

A4d – Arms/elbows not resting against hard edge

A5 Body Position at Desk – Heads, Eyes and Neck

A5a – Head erect & eyes level at computer monitor

A5b – Phone headset cradled/supported by neck

A5c – Micro-breaks to rest eyes/stretch extremities

A5d – Head flexes < 30° forward to view monitor

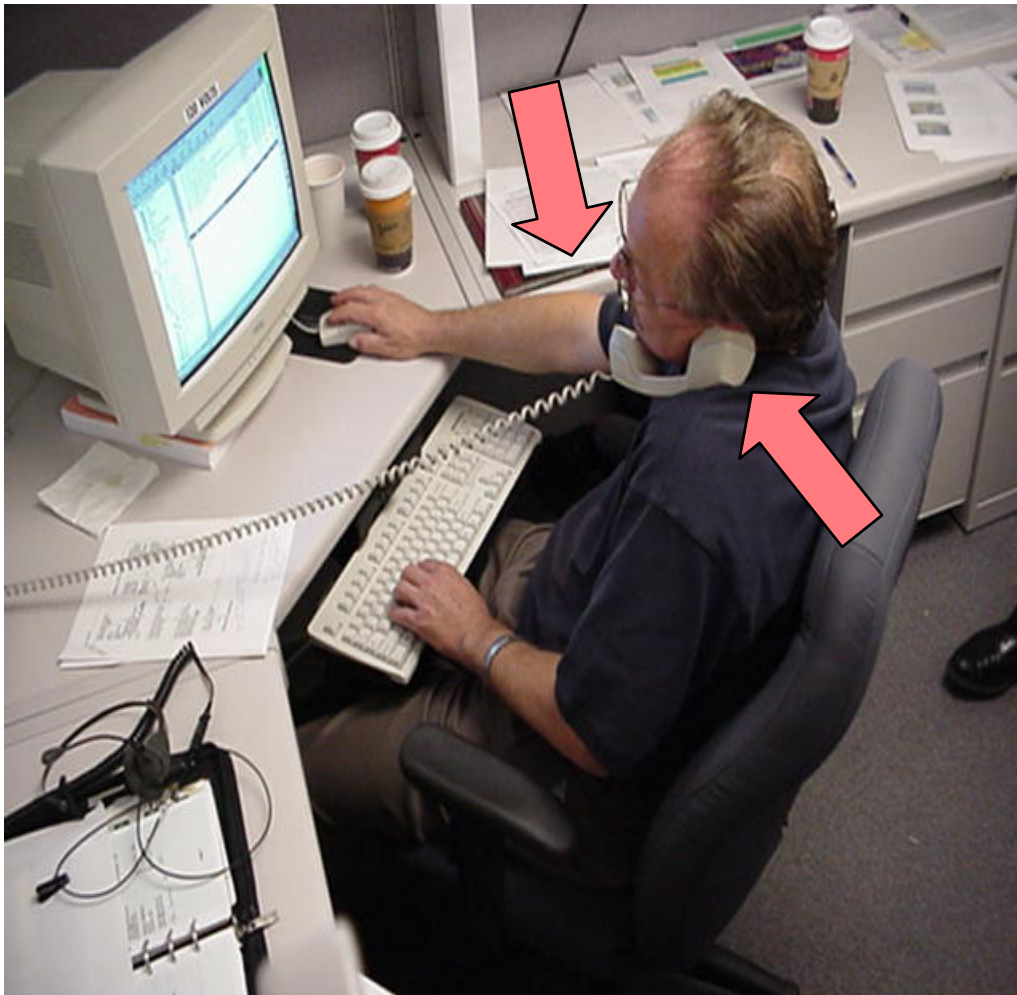
A5e – Head extends <30° back to view monitor

A5f – Document holder used to support & read

A5g – Adjust monitor to avoid glare

Critical Behavior Checklist

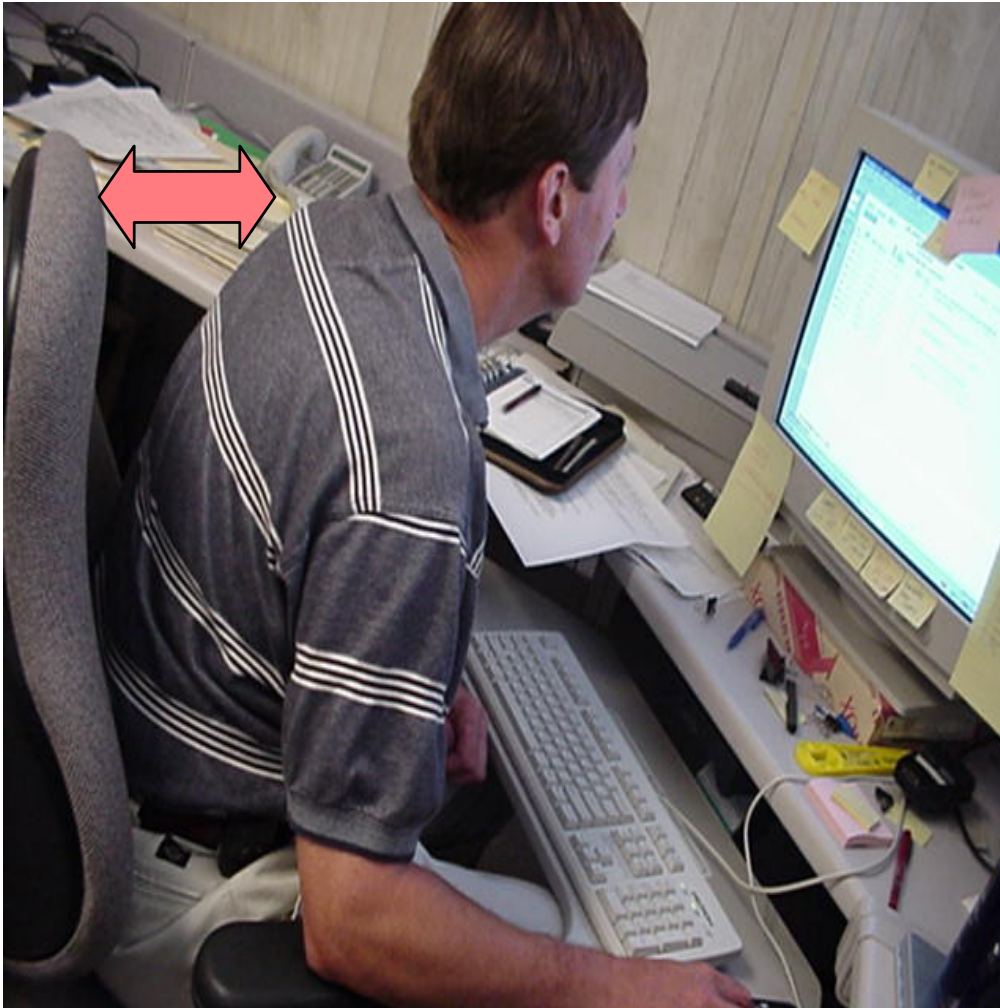
Leading Indicator: Telephone Handset not cradled by neck



- Static muscle loading along cervical area of neck and upper shoulder
- Awkward posture
- Contact stresses
- Hyper extended arm
- **Initial neck/shoulder discomfort to stiffness, soreness and pain; ulnar nerve compression**

Critical Behavior Checklist

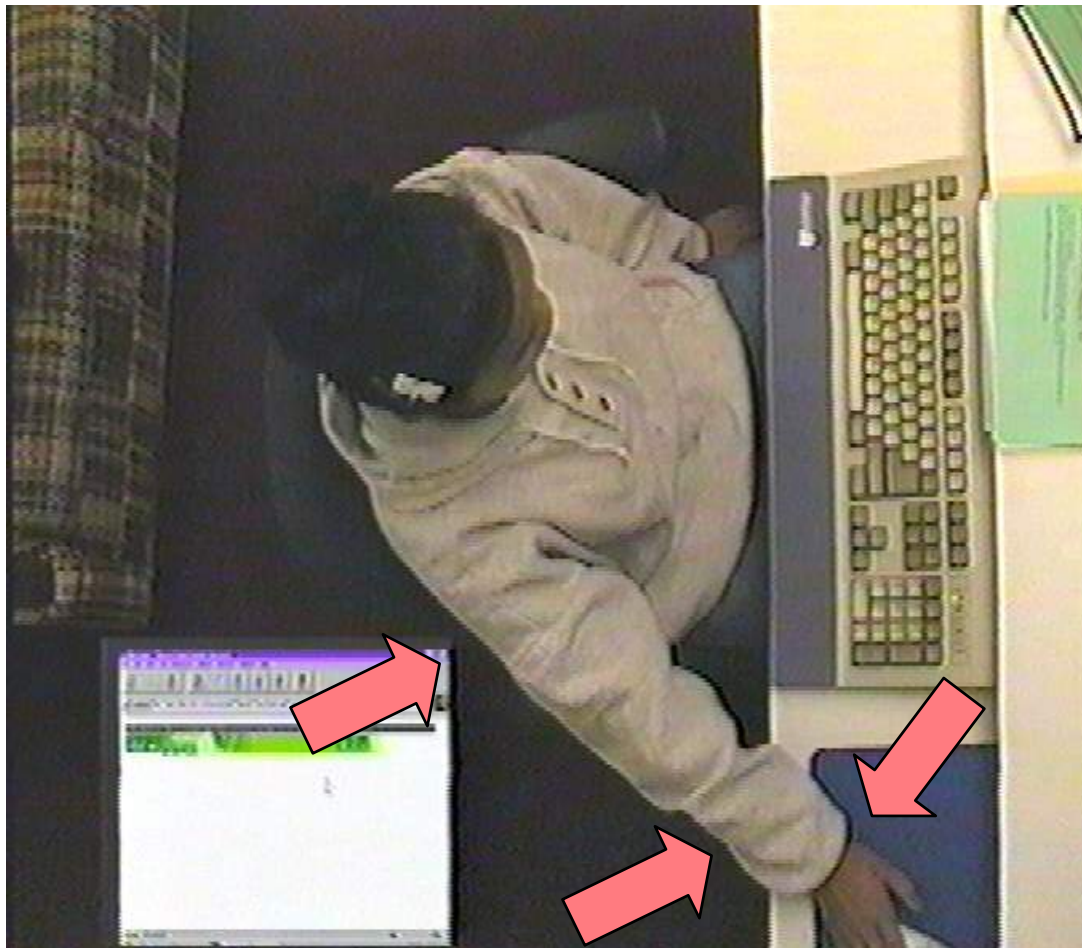
Leading Indicator: Sitting posture avoids low back strain.



- Poor posture - natural curvature of spine reduced.
- Increased vertebral disc pressure
- Lumbar support weak
- Forearm - ulnar nerve compression
- **Low back discomfort, stiffness, soreness and pain; cubital tunnel damage, etc.**

Critical Behavior Checklist

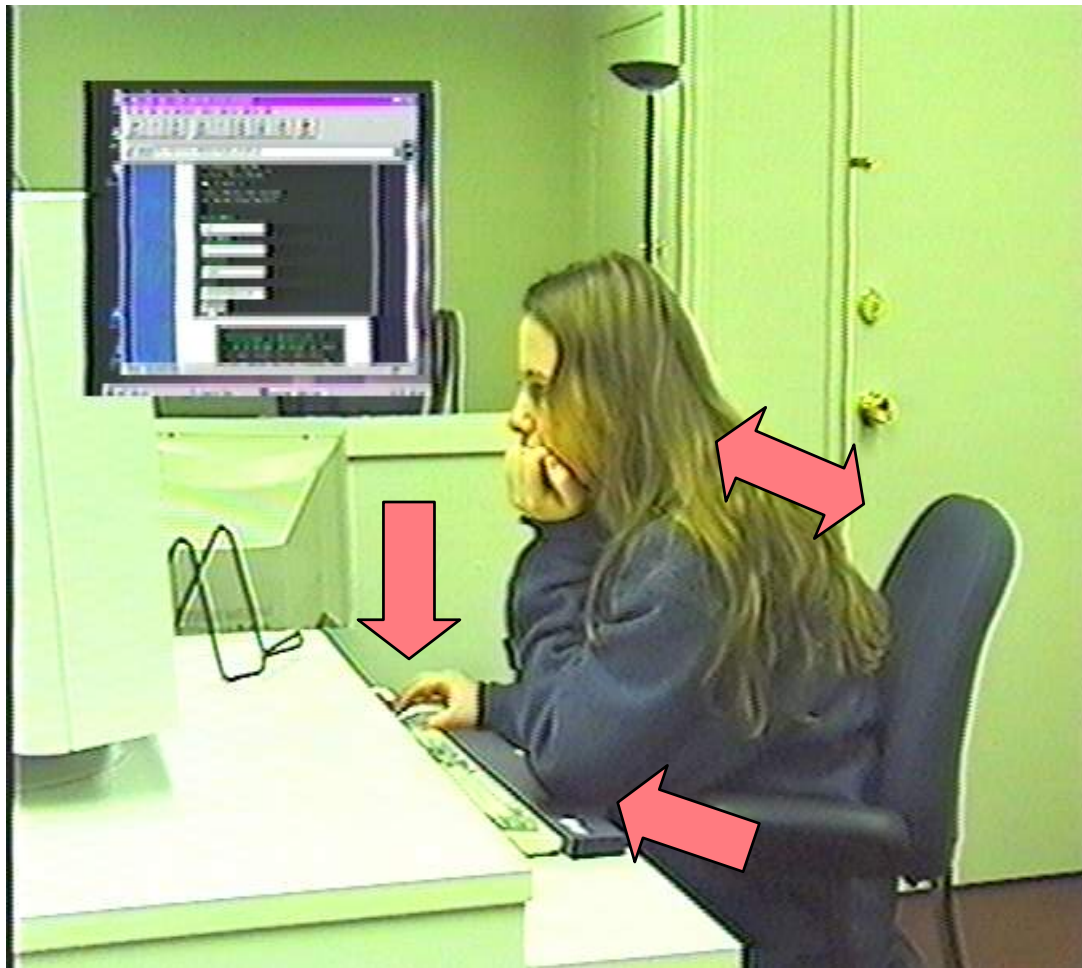
Leading Indicators: Sitting posture avoids low back strain; safe reaching distance; & minimal wrist deviation.



- ❑ Safe Behavior – Web browsing posture in relaxed (reclined) and supported whole body postures
- ❑ At-Risk Behaviors –
 - greater extension of the arm and shoulder to reach the mouse
 - increased probability of planting at the wrist
 - greater wrist deviations.

Critical Behavior Checklist

Leading Indicators: Sitting posture avoids low back strain; elbows at 90 degrees/forearms parallel to floor.



- Attempting to read text or study Web page content, person leans forward or to the side (of the non-mousing hand)
- Kept hand on the mouse even when not actively mousing.
- Static muscle loading: left arm flexed, wrist extended, cross-bite

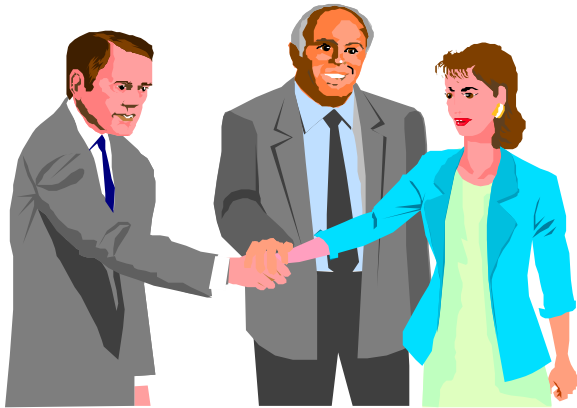
■ **Target Goal: Zero Observed At-Risk Behaviors**

■ **Declining Number of Observed At-Risk Behaviors**

■ **Increasing Number of Observed At-Risk Behaviors**

YEAR: 2006		JAN	FEB	MAR	APR	MAY
Number of Targeted Observations Per Month		32	32	32	54	54
Number of Actual Observations Performed		6	22	28	23	23
A1	Legs and Feet- At Risk					
A1a	Feet flat on floor or on footrest for support	67%	59%	46%	82%	30%
A1b	Adequate leg clearance under work surface	0%	5%	14%	0%	4%
A1c	Back of knees not pressed by front seat edge	0%	59%	21%	0%	0%
A1d	Knees not flexed/bent > 60° when seated	67%	68%	21%	0%	9%
A2	Back - At Risk					
A2a	Ergonomic chair used at computer	0%	0%	0%	22%	4%
A2b	Sitting posture doesn't cause low back strain	17%	59%	29%	0%	22%
A2c	Lumbar support provided by ergonomic chair	0%	55%	7%	0%	4%
A2d	Knows ergo chair's features and has adjusted	17%	59%	25%	0%	4%
A3	Hand and Wrist - At Risk					
A3a	Wrists straight when keying and/or mousing	33%	68%	32%	95%	13%
A3b	Minimal force used to keystroke or grip mouse	17%	9%	7%	13%	0%
A3c	Use of wrist rest when pausing	0%	73%	39%	4%	0%
A3d	Minimal wrist deviation when mousing	17%	59%	32%	9%	4%
A3e	Periodically stretches/massages hands/wrists	0%	68%	36%	26%	17%
A3f	Proper ergo computer accessories used (wrist/foot rests, doc.holder, riser)	0%	82%	46%	61%	13%
A4	Shoulders and Arms - At Risk					
A4a	Shoulders relaxed/arms close to body side	0%	55%	39%	17%	13%
A4b	Elbows at 90° and forearms parallel to floor	0%	59%	32%	9%	0%
A4c	Safe reaching distance for PC/office equipment	0%	64%	21%	0%	4%
A4d	Arms/elbows <u>not</u> resting against hard edge/surface	0%	59%	11%	22%	4%
A4e	Not pivoting on elbow/wrist when computing	0%	9%	21%	17%	0%
A5	Head, Eyes and Neck - At Risk					
A5a	Head erect & when viewing computer screen	50%	36%	21%	4%	9%
A5b	Telephone handset not cradled by neck	33%	77%	18%	30%	22%
A5c	Takes micro-breaks (rest eyes/stretching limbs)	17%	59%	36%	39%	22%
A5d	Head flexes < 30° downward at PC or desk	17%	59%	25%	9%	0%
A5e	Head extends < 30° back to view monitor	0%	59%	32%	4%	0%
A5f	Document holder used to support and read	50%	59%	57%	26%	13%
A5g	Monitor positioned to avoid glare	0%	5%	7%	0%	0%
A5h	Computer glasses worn for computer work	17%	9%	7%	9%	4%
A5i	Handles high volume phone use with headset	17%	14%	11%	35%	13%

BBAP Success Continuum



Safe Culture

Lower I/I & WComp Costs
Other \$/productivity gains

Coaching & Feedback

Field Observation
Non-confrontational

Employee Owned & Driven
Management Commitment
Worker preparation/knowledge

Build Relationship/Team
Establish Trust
Open Communication

(BBAP is caring about workers and wanting lasting safety performance improvement and work efficiency)

In Closing . . .

Behavior-based safety brings a human factors dimension to accident prevention:

- **Draws in worker empowerment and involvement.**
- **Improves safety performance through peer influence.**
- **Empowers employees to identify co-worker at-risk, behaviors, reinforces safe behavior through real-time peer feedback, corrects unsafe behavior over time.**
- **Builds efficiency in work processes and work practices.**
- **Safety is carried forward activities outside of work.**
- **Positive impact to the safety culture.**