

***CONSTRUCTION OWNERS
ASSOCIATION OF ALBERTA (COAA)

BEST PRACTICE FOR

BEHAVIOUR BASED SAFETY***

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INTRODUCTION

The COAA Safety Committee recognizes that behaviours are a key component of the safety equation and that Behaviour Based Safety programs have been shown to increase awareness of safety expectations, to contribute towards continuous improvement in safety performance and to lead to achieving the desired safety goals and targets.

The Mandate for the Behaviour Based Safety Best Practice Committee was as follows:

Under the direction of the COAA, collaboratively develop a Best Practice that provides Guidance to those organizations seeking out a path to implementing a Behaviour Based Safety Program.

The committee's focus was to develop a framework, implementation guide, tools and references associated with the Behaviour Based Safety concept.

Note: This Best Practice does not in any way supercede any applicable Codes, Acts, Regulations or site programs and is intended to supplement existing practices. Users of this Best Practice should determine their level of implementation or use of tools from this document.

SECTION 1 - WHAT IS A BEHAVIOUR BASED SAFETY PROCESS?

A Behaviour-Based Safety (BBS) is a process through which work groups can identify, measure and change their behaviours.

It is a process that applies the principles of the **A**ntecedent **B**ehaviour **C**onsequence (ABC) behaviour model. This assumes that all behaviours have one or more antecedents or activators or prompts which initiate the behaviour and one or more consequences that either encourage or discourage repetition of the behaviour.

SECTION 2 - WHY USE BEHAVIOUR BASED SAFETY (BBS)?

Analysis of incidents shows that +/- 90% of them have the behaviour of the person(s) involved as a key contributing factor. Of the 10% remaining, +/- 90% of them have the behaviour of a person, not directly involved in the incident, as a contributing factor.

Increasing the number of safe behaviours being performed is essential for incident elimination. Behaviour Based Safety helps with this. It is not a silver bullet or THE solution however. It is a process that goes along with the other elements of a good incident reduction program. These other elements are:

Hazard elimination: remove the hazard from the task location; delay the hot work till the back shift.

Substitution to reduce/eliminate a hazard: substitute a material or task to reduce the hazard.

Engineering controls: install ladders, ventilation, fall prevention.

Administrative controls: procedures, practices, training, field level risk assessment, work scheduling.

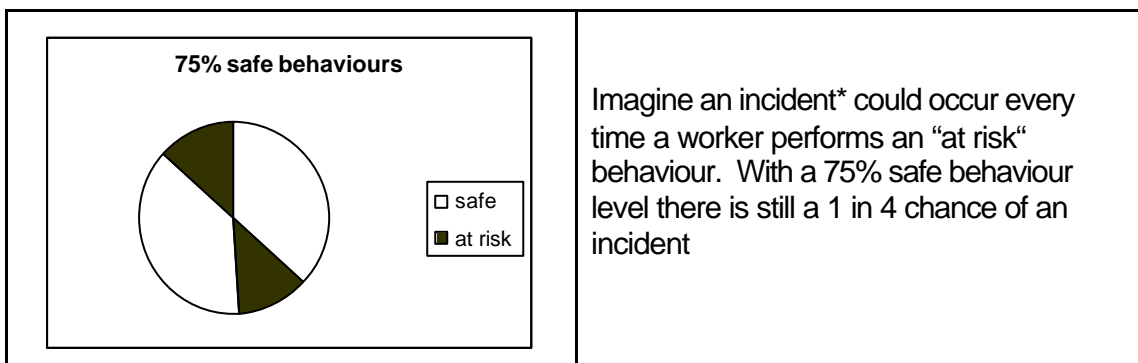
Personnel Protective Equipment

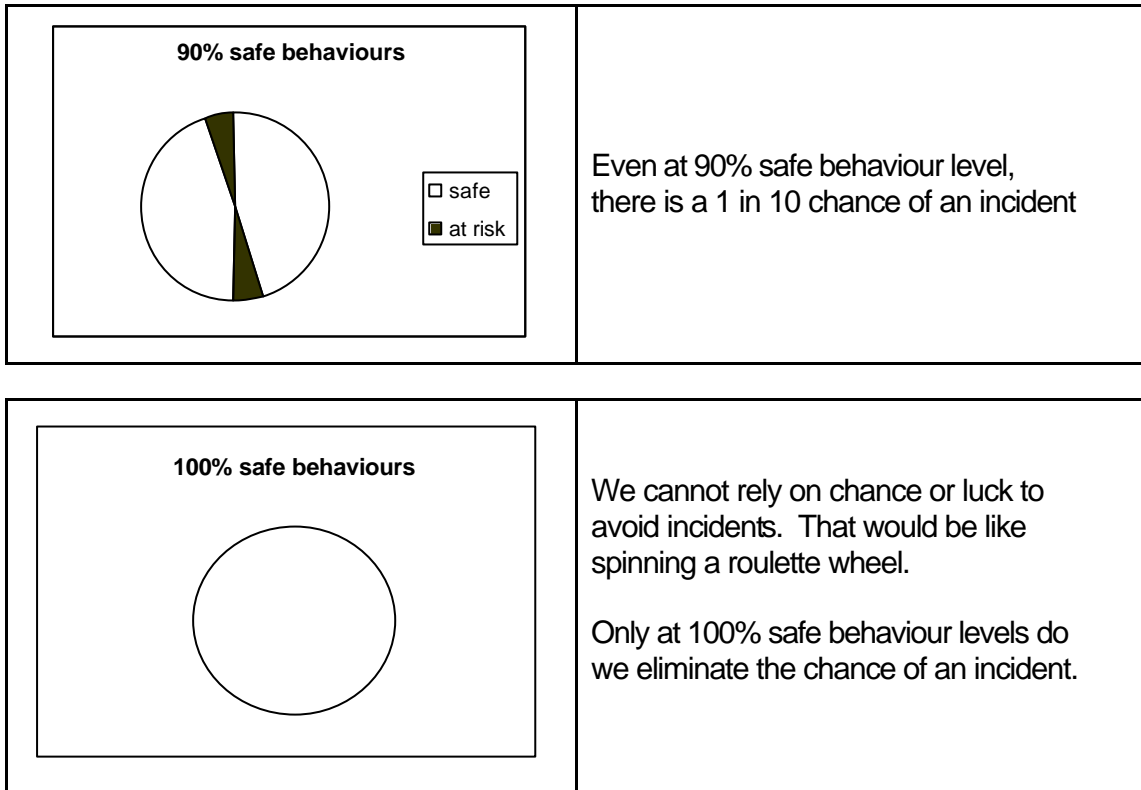
For BBS to be fully effective in an organization, the organization already needs to be committed to, and fully implementing, the incident control measures listed above. In this way workers should see BBS as an addition to an already strong safety program, not a replacement for it. If workers see BBS as a way of “dumping” the responsibility for injury elimination onto their behaviours BBS will not be effective. The idea behind BBS is to fix the behaviour problem, not assign blame.

Companies should not rely on BBS to do it all for them - it probably won't work.

What can be the impact of implementing BBS?

Compare the charts below





*Incident is defined as any event ranging from a near miss, through first aids right to a fatality.

The situation all companies should be striving for is to have work groups performing at 100% safe behaviour levels. This would give the best chance of eliminating incidents. BBS is a key tool that can move companies from performing in chart 1 to performing in chart 3.

BBS will get a company beyond workplace audits and inspections, past the policing role and closer to really knowing how much your workforce understands their work practices, procedures, conditions and behaviours that cause people to make mistakes.

BBS is a proactive process that helps to get changes in a work group's safe behaviour levels before incidents happen. All incidents are preceded by some kind of behaviour, e.g. a worker falls off a ladder because he was over-reaching or the ladder was not secured. Both of these are individual behaviours. BBS seeks to change the person's mindset, habits and behaviours so that these "at risk" behaviours will no longer be performed. As a result the worker will no longer fall off the ladder.

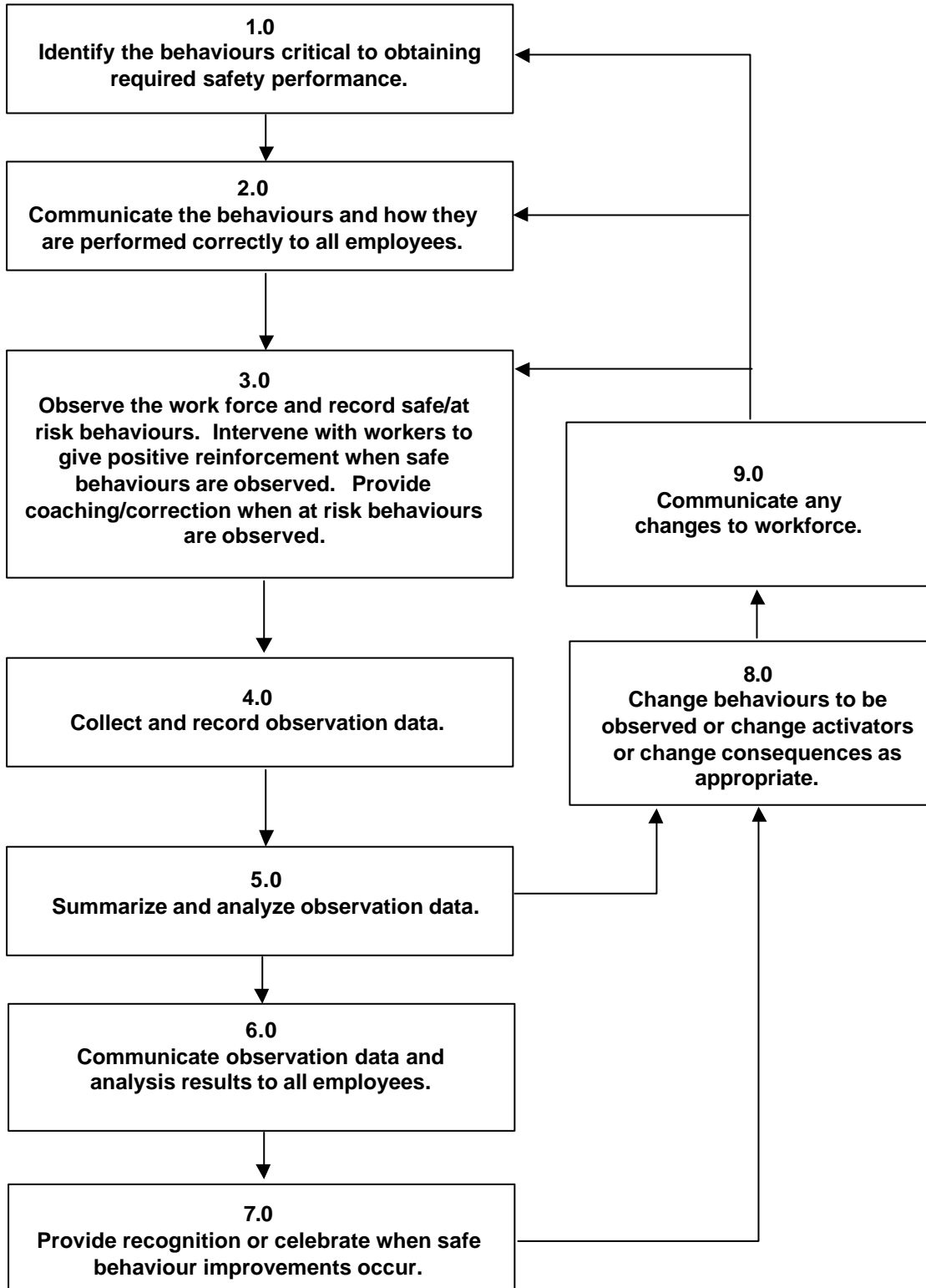
It is built on the fundamentals of the **A**ntecedent **B**ehaviour **C**onsequence (ABC) behaviour model. This is a behaviour change model that can be used to change ANY behaviour, not just safety.

It can help operations behaviours (thanking the Operator for taking the sample on time is a clear encouraging consequence for the desired operations behaviour), children's behaviours (being allowed to stay up an extra ½ hour is a clear encouraging consequence for a good behaviour by a child) and pets' behaviours (the treat given after a dog does a trick is a clear encouraging consequence).

The ABC behaviour model is not complicated, its' application in a company does not require a new organization chart or structure. The ABC behaviour model and a BBS process can be integrated with existing structures, organizations, procedures, safety and health programs.

SECTION 3 – BBS PROCESS MAP

Behaviour Based Safety Process



SECTION 4 - BEHAVIOUR BASED SAFETY PROCESS GUIDANCE

<p>STEP 1.0 Identify the behaviours critical to obtaining required safety performance</p>	<p>All workers regardless of their employer, trade or tasks they perform will perform behaviours which are <i>the observable actions of people</i>. A behaviour can also be observed as having been performed by observing the result of the behaviour. E.g. the required behaviour is: <i>Complete a field level risk assessment</i>. It is unlikely that an observer will actually observe the worker completing the field level risk assessment, but by looking at the field level risk assessment card the observer can confirm the behaviour has been satisfactorily performed.</p> <p>In this step the behaviours that the workers need to perform to achieve the desired safety performance e.g. zero injuries, are identified. Behaviours expected of workers, supervisors and management should be identified. There can be a number of sources of possible required behaviours:</p> <p>Learning experience reports, Incident investigations, Individuals who actually perform the work, First aid/ injury records and details (i.e part of body injured, action causing injury), incident and inspection trends.</p> <p>Representatives of all segments of the workforce should be involved in identifying behaviours: experienced workers, supervisors, new workers, management. Involving workers in choosing the behaviours helps to get them involved and get their buy-in to the process.</p> <p>Behaviours should be described as specifically as possible. Behaviour descriptions should meet the following criteria: Measurable - can be measured Active - something the worker has to do Reliable - the behaviour is repeatable the same each time and at least two people should be able to see the behaviour and measure it the same way Controllable - the action is the control of the worker performing it Observable - can be observed, seen happening Specific - described so that the worker doing it knows exactly what to do</p> <p>Note: In BBS “workers” includes all levels in an organization foremen, general foremen, superintendents, project managers, managers, CEOs. Everyone should expect to have behaviours defined for them that will help bring about injury elimination. A critical behaviour for a manager might be:</p>
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	<p>Start every meeting with a safety topic or reference. Complete all observations as part of BBS implementation When visiting a job site perform one observation accompanied by another worker.</p> <p>No one is exempt from participating in BBS Some examples of behaviours are: Wear hearing protection when required through posted signs, work permit, field level risk assessment Attach fall prevention harness to a secure anchor point Complete a field level risk assessment before starting a task Wear a seat belt while driving a motor vehicle Check hand tools for defects before use Intervene with co-workers to provide coaching/ correction when they perform an “at risk” behaviour</p>
Sample tools	See Section 8
<p>STEP 2.0 Communicate the behaviours and how they are performed correctly to all employees</p>	<p>All workers need to know what the required behaviours are and most important, how the required behaviours are performed safely. E.g. wear fall protection harness when working at height. A person can wear a fall protection harness safely or in an “at risk” way. If it is not snug fitted properly to the workers body, the cross strap is too high etc, then the worker is not wearing the harness safely.</p> <p>In this step the required behaviours and how to do them safely is communicated clearly to all workers. It is important to the success of a BBS process that all participants receive a clear, easily understood, communication. Weekly/monthly safety meetings provide a good forum for this to happen.</p>

<p>STEP 3.0 Observe the work force and record safe/unsafe behaviours and Intervene with workers to give positive reinforcement when safe behaviours are observed. Provide coaching/correction when unsafe behaviours are observed.</p>	<p>In this step workers who have received the proper training in how to:</p> <ul style="list-style-type: none"> a) perform observations and b) interact with the workers observed to provide feedback/correction/coaching c) go out into the workplace to observe the workers. <p>Individuals providing this training should have a good understanding of the ABC Behaviour model and the BBS process.</p> <p>Observations should be planned when possible. There are a variety of different factors to be considered when performing an observation. These include:</p> <ul style="list-style-type: none"> a) consider observing work where the higher risk hazards, or the experience of the workers may be a factor; b) avoid interfering with the work activities; c) do observations in two person teams; d) complete the observation report away from the work area; e) examine the work area for access/egress, housekeeping. <p>When planning observations here are some of the worker groups that can be observed:</p> <ul style="list-style-type: none"> a) new employees b) younger employees c) people under pressure/stress (mind on task) d) new sub-contractors e) people rushing/running. <p>A possible set of steps to perform a complete observation / interaction are:</p> <ul style="list-style-type: none"> a) observe the workers for 30 - 60 seconds as you approach them, introduce yourself to the workers. When doing this the observer should not distract the workers at a critical moment (e.g. cutting, lifting, using ladders etc). Wait until the interruption can occur when there will be no risk posed to the workers b) explain what you are doing and that you will observe them for a bit longer, c) observe them for some additional time d) stop workers, e) feedback what you have observed in a positive manner with awareness of the self esteem of the workers that have been observed, f) provide positive reinforcement for all those behaviours that were performed in a safe manner
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- g) when at risk behaviours are observed ask for feedback from the workers to help understand why the at risk behaviours are being performed, and provide coaching/ correction so that the required safe behaviour is obtained
- h) thank the workers for their assistance,
- i) encourage them to continue to work safely.

It is most important that all observed behaviours that are immediately dangerous to life, health or the environment are stopped as soon as they are observed. In this situation the observer does not follow the observation steps. The first priority is to stop the dangerous behaviour. The observer should discuss the problem with the workers. If the workers do not accept the observer's action and challenge the observer aggressively the observer should not confront the worker. The observer should stop the discussion and deal with the problem by talking to a foreman or supervisor.

It is important that observers make it their primary objective to look for behaviours being performed safely. It is too easy, and in fact it is human nature, to only look for the at risk or wrong behaviours. For a Behaviour Based Safety process to give the best results the emphasis must be on recognizing/rewarding the workers when they perform the behaviours safely. After the observers have completed their observations they must intervene with the workers to either provide positive reinforcement/feedback to the workers on their successful performance of the required behaviours or to provide correction/coaching to the workers when the required behaviours have been performed unsafely.

In most cases each intervention will involve positive reinforcement/feedback and correction coaching. At times recognition or reward (silver dollar, scratch and win lottery tickets) can be used to provide additional positive reinforcement.

The positive reinforcement the observer provides to the worker when the safe behaviours are observed are a key part of improving the overall behaviour performance of a work group. It is essential that this positive reinforcement is given every time safe behaviours are observed.

The comments made by the workers observed should be recorded when possible. Often these comments will give good indications of why the required behaviour is not being performed. E.g. wearing gloves - if the observed workers' comments all suggest they are uncomfortable to wear (too big, too small), then it points to the need for making a wider range of sizes available to the workers.

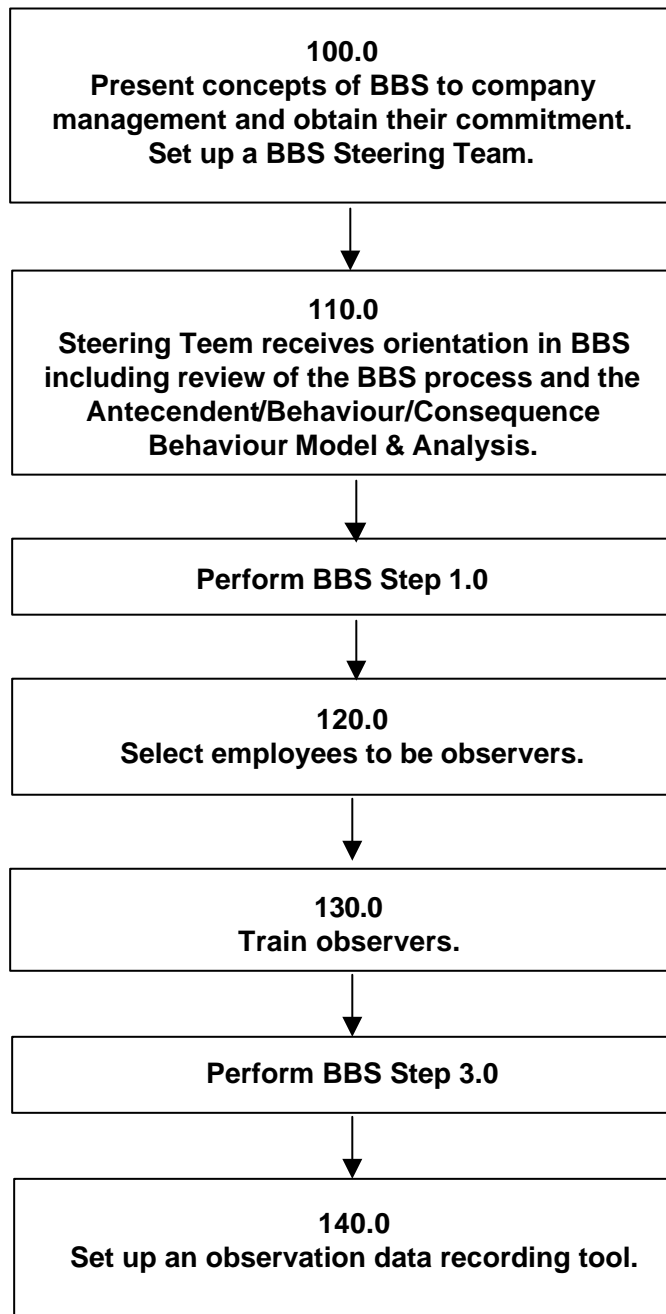
	<p>The more information that can be obtained from the workers as to why they are not performing the correct behaviours the better. It will help to identify the appropriate changes required to get the behaviours performed correctly.</p> <p>It is important that whenever an “at risk” behaviour is observed, there is an interaction with the person performing it, so that some coaching/ correction can occur. If this does not happen, particularly when a supervisor sees an “ at risk” behaviour and ignores it, then the workers will get the feedback that doing the “at risk” behaviours is acceptable. They will see that there is no consequence resulting from the “at risk” behaviour and there will be no influence on the worker to stop doing the “at risk” behaviour.</p> <p>To assist an observer to document the observation results properly an observation form listing the behaviours being observed should be available to the observers. It is recommended that the number of behaviours being observed is limited so that a one-page observation form can be used.</p>
Sample tools	See Section 8
STEP 4.0 Collect and record observation data	In this step the results of the observations are collected from the observation forms and recorded in a data collection/analysis system. This can be manual or electronic. An electronic system is the better option because it can also provide an ability to analyze the observation results.
STEP 5.0 Summarize and analyze observation data	<p>In this step the observation results recorded in Step 4.0 are summarized and analyzed. Observation data should be summarized into a format that will be simple to interpret and enable extraction of behaviour performance data. During the analysis it is important to review the observation data for quality and consistency. Problems with either can lead to invalid data. The frequency at which the data is summarized and analyzed is at the choice of the work group. Some suggested summaries are:</p> <ul style="list-style-type: none"> Overall % Acceptable for all behaviours % Acceptable for each separate behaviour Observation comments Trend Chart - Overall % acceptable for all behaviours plotted over time Trend chart - % acceptable for each behaviour plotted over time Observation and Intervention activity data - # observations performed for each behaviour Charts showing correlation between behaviours and incidents <p>When the data is summarized, an analysis of behaviours that are not being done at risk can be done. An ABC analysis technique can be used to do this. The analysis will typically result in suggestions</p>

	<p>for changes to: Antecedents or Consequences of the behaviour. Changes in conditions are sometimes the outcome. E.g. buy a wider range of glove sizes. These changes are made in step 8.0</p>
Sample Tools	See Section 8
STEP 6.0 Communicate observation data and analysis results to all employees	<p>In this step the results of the observations, the summarized data, the data analysis and any changes to Antecedents, Consequences or Conditions are communicated to the employees. It is essential that this communication happen. It ensures that the workers are kept informed of the results of the observations and changes that may be happening. This should encourage their continued participation.</p> <p>Communication to the work group can act as an antecedent in the ABC model. What is not known cannot be corrected. It is expected that the simple act of communicating the information will prompt the work group to proactively correct their unsafe behaviours.</p> <p>The communication method should be the one most suited to the audience. Notices on bulletin boards, story boards or at meetings are all suitable alternatives. A prominent bulletin board can be very effective because it is always visible and thus gives continuous feedback on the behaviours.</p>
STEP 7.0 Provide recognition or celebrate when safe behaviour improvements occur.	<p>In this step the appropriate recognition of the workers or celebrations happen when the desired, or improvements in, behaviour performance occurs. Often this is not done and the workers may get the impression that no-one cares that the behaviours are being done safely. This step is very important to provide the positive reinforcement to the workers for performing the behaviour safely.</p> <p>Recognition and celebration happen when the behaviours are being done safely. Often the % acceptable behaviour reaches 95% plus scores. When this happens it may be appropriate to change the behaviours that are critical to obtaining required safety performance. This is done in Step 8.0. If the critical behaviours are changed they behaviour observation forms being used need to be changed also.</p>
STEP 8.0 Change behaviours to be observed or change activators or change consequences as appropriate	<p>In this step any changes to Antecedents to, or Consequences of, the behaviour resulting from the ABC analysis are made. Changes in conditions resulting from the analysis are also made in this step. E.g. buy a wider range of glove sizes. The changes should be properly recorded in all relevant BBS documentation.</p> <p>When the % acceptable behaviour reaches 95% plus scores, or other inputs suggest it (e.g. first aid causes), it may be appropriate to change the behaviours that are critical to obtaining required safety performance. This is done in this step.</p>

	<p>To help with problem solving the following can be considered:</p> <ul style="list-style-type: none"> • Improvement opportunities can be identified through observation, intervention and root cause trends • Positive intervention techniques present the best opportunity for improvement • Use knowledge and experience of others to assist • Management system failures can typically account for 85% of unacceptable behaviours <p>Improvement strategies can include:</p> <ul style="list-style-type: none"> • Consider impact on existing safety program • Obtain necessary support and resources • May require changes to behaviour based training • Monitor implementation and evaluate impact on behaviours
<p>STEP 9.0 Communicate any changes to workforce</p>	<p>In this step any changes made in Step 8.0 are communicated to the work force. If the changes are going to be made it is essential that all the work force know what they are so they can change their behaviours accordingly.</p>

SECTION 5 - BEHAVIOUR BASED SAFETY IMPLEMENTATION PROCESS MAP

Behaviour Based Safety Implementation Steps



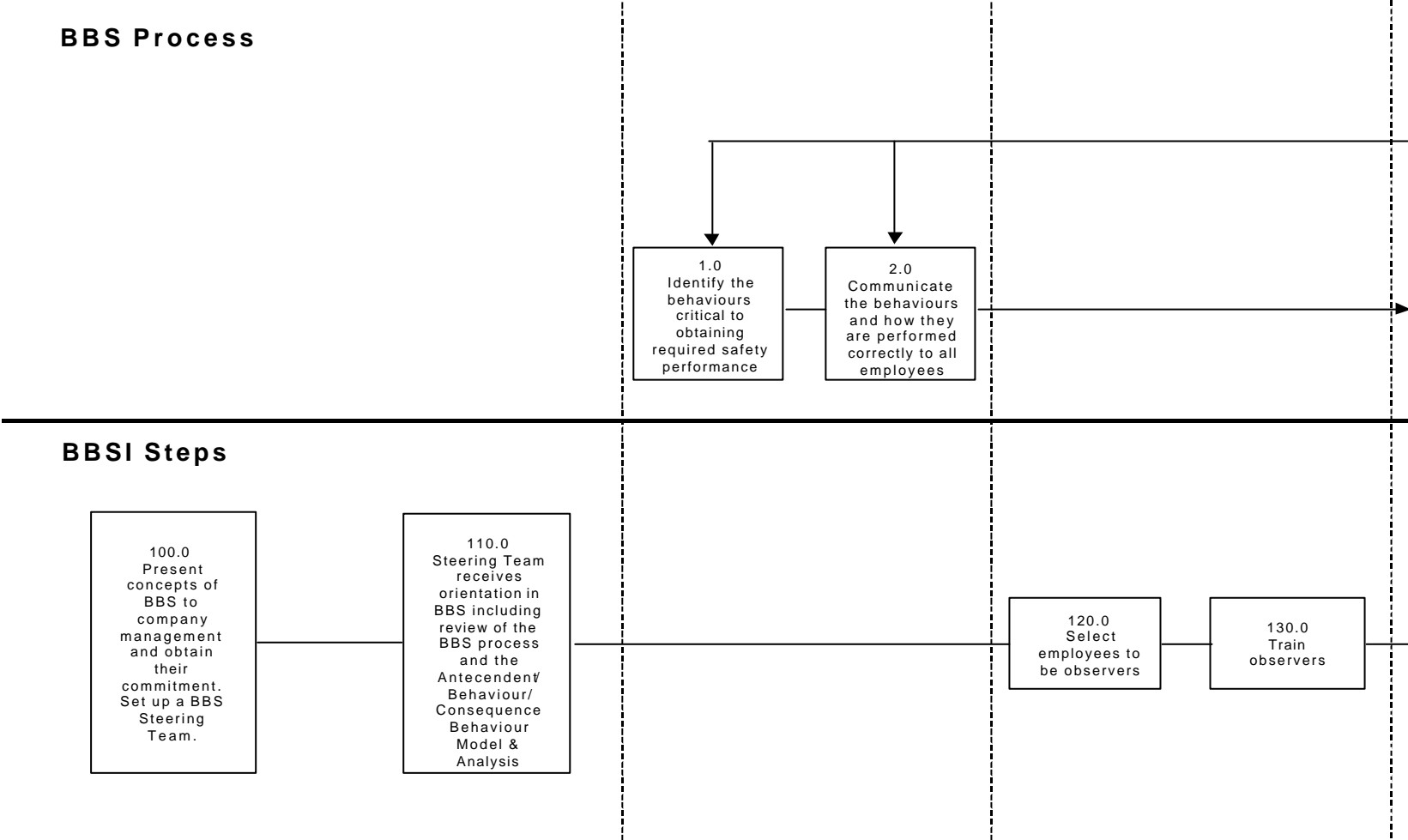
SECTION 6 - BEHAVIOUR BASED SAFETY IMPLEMENTATION GUIDANCE

<p>Step 100.0 Present concepts of BBS to company management and obtain their commitment and set up a BBS Steering Team</p>	<p>A strong Steering Team is essential to the success of BBS. The membership will depend on the size and organization. To emphasize the importance and value of BBS to an organization it is recommended that the team be led by a senior management team member.</p> <p>The Steering Team provides the drive for, and steers, BBS implementation. The team will also review the observation and intervention data and contribute to the development of any required improvement strategies. At work sites that have a joint Health and Safety Committee the steering team can be aligned with that team. Members drawn from management, supervision and workers, should have as many (as possible) of the following characteristics:</p> <ul style="list-style-type: none"> • Natural leader • Respected by others • Interest in behaviour management • Committed to safety improvement • Strong interpersonal skills • Good coaching skills • Able to commit required time • Good communication skills • Able to provide resources to the process <p>The fit within existing organizations</p> <p>Each company will have to customize the basic material to fit their own organization as the success of BBS is dependent on the quality of a company's Environment, health and Safety management system, leadership, commitment and culture. Companies need to make BBS "fit in" so it is complementary to their safety initiatives and not an add on.</p> <p>BBS will not be successful unless the company has a comprehensive EH&S system, trained employees, commitment, resources, etc. It does not and will not replace existing EH&S systems.</p>
<p>Step 110.0 Steering team receives orientation in BBS including review of the BBS process and the ABC Behaviour Model and ABC Analysis</p>	<p>Once the steering team members have been selected they need to receive training in Behaviour Based Safety. The training should include the following elements not specific to behaviours - problem solving, root causation, trend analysis. This will help them with their review of the observation and intervention data and development of any required improvement strategies.</p>

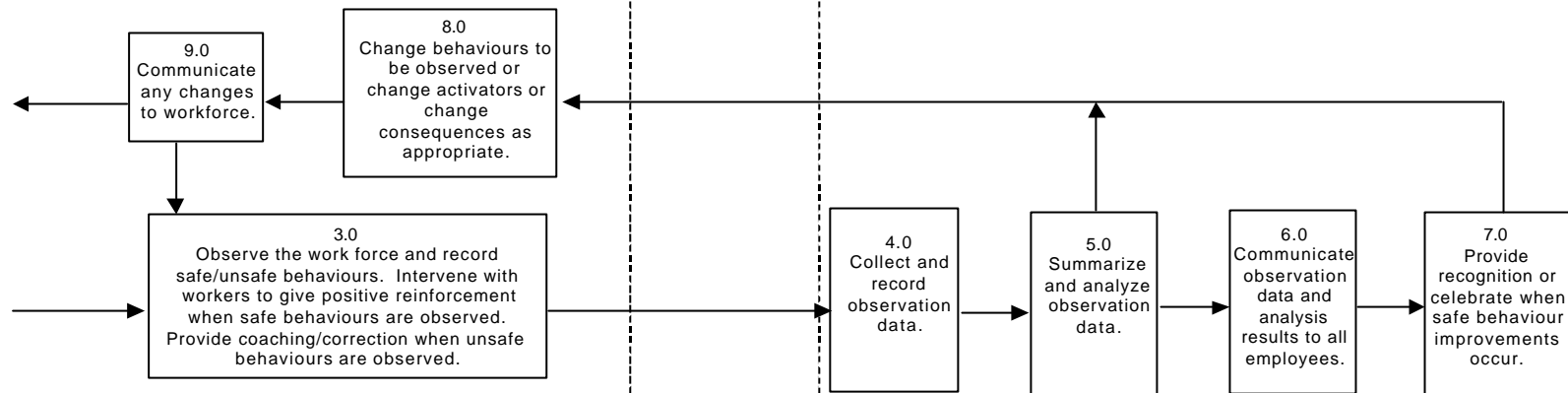
Resources Available	See Section 9
Step 120.0 Select Employees to be Observers	<p>Observers perform an important role in the successful implementation of BBS. Observers should be chosen from employees with as many as possible of the following characteristics:</p> <ul style="list-style-type: none"> • Respected by peers • Interest in safety improvement • Interest in BBS • Good people skills <ul style="list-style-type: none"> • able to provide positive reinforcement for safe behaviours • able to provide coaching/correction for unsafe behaviours • able to interact with co-workers
Step 130.0 Train Employees to be Observers	<p>The Observers play a key role in the BBS process. The process relies on them to provide the behaviour performance observations that are used to identify which behaviours are being done safely and which are not.. Some important training elements are:</p> <ul style="list-style-type: none"> • Ensure they know when the critical behaviours are being performed acceptably and when they are not. It can be damaging to the observation process if an observer suggests to a worker they are doing the behaviour wrongly when they are not. • Observation and intervention techniques • Observation recording techniques • Observation sequence: interrupt the workers or not, etc. <p>Issues for Observers</p> <p>One of the toughest things to overcome when implementing a BBS process is to improve observers interpersonal and intervention skills. It can be extremely difficult for a worker to observe a fellow worker and then intervene (positively or negatively). Observer training needs to have a strong component that helps observers to improve their intervention skills and their confidence in performing observations.</p> <p>Another issue is when the observer is a person who holds a position of authority i.e. foreman, supervisor, manager, etc. They have a difficult time as the natural tendency is for them to revert to their legitimate authority position to correct an observed "at risk" behaviour or situation. BBS will not be successful if it is perceived as just another program to get compliance.</p>
Resources Available	See Section 9.

<p>Step 140 Set up an Observation Data Recording and Analysis tool</p>	<p>Steering teams can help the implementation by establishing some form of electronic tool to record and analyze the observation data. A tool that is user friendly and allows the observers to easily enter their data is most desirable. A spreadsheet workbook with pre-formatted reports/ charts or a database with pre-formatted reports/charts are suggested alternatives.</p>
<p>Resources available for Behaviour Based Safety in general.</p>	<p>See Section 9.</p>

SECTION 7 – BEHAVIOUR BASED SAFETY & IMPLEMENTATION PROCESS MAP



BBS Process



BBSI Steps

140.0
Set up an
observation
data
recording
tool

SECTION 8 - SAMPLE TOOLS

PROCESS STEP 1

Identify the behaviours critical to obtaining required safety performance

From Delta Catalytic Industrial Services Creating an inventory of safe behaviours

There are several methods that can be used to create a list of safe behaviours. Employees can develop a list based on their knowledge of work activities. Safe work procedures and training can be used. One of the most common methods is to identify the “at risk” behaviours and situations that resulted in injuries or incidents for your company. After identifying the “at risk” behaviours you can create a list of safe behaviours by rewriting them in a format of positive actions (safe behaviours). For example, the “at risk” behaviours of “lifting in excess of capability” can be rewritten as “lifting within personal capability” and “throwing material from above grade to ground level” can be rewritten as “using a rope and bucket method to lower material from above grade”. Try to be specific in identifying the safe behaviour.

Your inventory of safe behaviours should reflect the work you are doing. Generic checklist should be used for guidelines only. The development of the safe behaviour inventory is also an excellent educational activity.

The following list of “at risk “ behaviours and situations was created from recent incidents, injuries and observations. This list can be used as a guide to develop an inventory of safe behaviours.

- Lifting in excess of capability
- Lifting in an awkward position
- Twisting while lifting
- Losing control of object being lifted
- Putting hands and fingers between objects
- Failing to use tool holders for hammer wrenches
- Failure to obtain a flange spreader to spread two flanges
- Failure to follow asbestos removal procedures
- Using a stepladder propped against a column
- Failing to extend stepladder legs fully
- Using a ladder that was too short to reach work area
- Standing on the top step of a stepladder
- Straddling the top step of a stepladder and an instrumentation box
- Ascending and descending the scaffold structure
- Working above grade without fall protection
- Failing to wear fall arrest equipment
- Attaching a fall arrest lanyard to an improper anchor point
- Failing to hold handrail when descending stairs
- Failing to sand icy walkway
- Climbing a shelving unit rather than using rolling stairs
- Using a damaged stepladder
- Failing to remove ice and snow from stairs
- Failing to flag area below overhead work
- Failing to secure material that could fall from above
- Failing to install a barrier to protect workers below work area
- Spreading flanges without confirming line content
- Failure to wear face shield while grinding
- Failure to obtain permit prior to starting work
- Lifting beyond physical capacity
- Using chain hoist that was under rated for the job

- Trying to save time by taking a short cut
- Operations failed to conduct proper gas test
- Failure to obtain proper wrench
- Using a wrench as a pry bar
- Carrying material up ladders
- Throwing material from above grade to ground
- Dropping insulation material from a piperack to the ground
- Failure to confirm electrical isolation was done
- Failure to conduct pre-job hazard review
- Failure to confirm competency of worker prior to assigning work i.e. Aerial lift platform
- Failing to plan a job properly
- Failure to provide adequate time to perform the task safely
- Failure to install proper shoring
- Standing on pipe while unloading from truck trailer
- Working under loads without protection
- Objects being dropped from above work area
- Failure to protect hands from sharp objects
- Failure to wear proper gloves when handling sharp objects
- Failure to arrest sparks
- Failure to maintain 3 point contact while ascending ladder
- Reaching beyond the side rails of a ladder
- Failure to provide proper access to work area
- Failure to provide drip pan under drum spout
- Failure to provide proper storage for valves, fittings, etc.
- Failure to wear survival suit
- Failure to cover a floor opening
- Working near an opening without fall protection
- Using gasoline as a diluting agent for a crude spill
- Failure to verify air supply prior to wearing SCBA
- Loose clothing being caught on material while climbing
- Welding cables left in walkway
- Electrical cables, power cords etc. left on stairs
- Guard removed from grinder
- Cord of grinder pulled from grinder
- Signal person not wearing vest or gauntlet
- Signal person not in proper place to see other workers
- Frayed nylon slings being used
- Failure to remove frayed nylon slings from service
- Workers being transported in a pickup box
- Failure to wear seat belt while driving vehicle
- Failing to follow confined space entry procedure
- Removing SCBA in an ID HL environment
- Failure to obtain prompt medical attention for a minor injury
- Failure to identify the root cause of an incident
- Failure to correct an observed "at risk" behaviour

From The Dow Chemical Company

BEHAVIOUR PICK LIST

Application Guidelines

- The work group has full ownership of the identification of critical behaviors to be observed in order to achieve the work group goals. Nevertheless, business/function or site suggested critical behaviors should be taken into account when identifying these critical behaviors.
- This list of critical behaviors is intended to facilitate the selection of critical behaviors to be observed. It may be used to trigger the selection of critical behaviors that were not identifiable through the other sources identified in the step description document..
- This pick list should be used as a reference and is not to be understood as mandatory or limiting. Work groups may use all or part of the suggested examples in the pick list to better fit their specific needs.
- Work groups that have chosen to list the critical behaviors to be observed using the [fully stated approach](#), can combine the text of both columns to fit their needs.

Critical Behaviours Pick List

Global Categories	Other Categories	Other Categories
<ul style="list-style-type: none"> • Personal Protective Equipment • Tools and Equipment: <ul style="list-style-type: none"> • Hand-held Tools • Equipment: <ul style="list-style-type: none"> • Blasting / Lancing Equip. • Cranes • Forklifts • Land Moving Equipment • Motor Vehicles (excludes cranes, forklifts, land moving equipment): • Ergonomics • Hazard Identification & Control: <ul style="list-style-type: none"> • Pre task Analysis • Hazard Identification • Work / Task Area: <ul style="list-style-type: none"> • House Keeping 	<ul style="list-style-type: none"> • Compressed Gas Cylinders • Confined Space Entry • Eating, Drinking and Smoking • Excavations • Exhaust Ventilation Systems • Hot Work • Loading and Unloading • Office Safety • Procedures • Stacking & Storage • Working at Heights 	

[Back To Top](#) **Personal Protective Equipment (Global Category)**

Behaviour to Be Observed	Details
Hard hat properly worn, adequate for the job and in good condition	<ul style="list-style-type: none"> • no visible cracks • no visible contamination • acceptably clean • fitted appropriately (not loosely) • oriented properly (bill to the front) • not over aged • Meets site safety standard
Eye protection properly worn, adequate for the job and in good condition	<ul style="list-style-type: none"> • use of goggles for corrosive chemicals • clean lenses, does not impair visibility • no visible breaks • side shields are in place • UV protection when required • fitted appropriately (not loosely) • properly positioned (goggle strap on head not hard-hat, etc.)
Face shield properly worn, adequate for the job and in good condition	<ul style="list-style-type: none"> • Properly fixed to the hard hat • positioned correctly (completely down)

Remember, behaviours are the actions of people and are observable. At risk behaviours and situations can lead to injuries and incidents if not corrected.

PROCESS STEP 3
Sample Observation Forms
From Dow Chemical

BEHAVIOUR OBSERVATION SHEET

Date: _____ Observer(s): _____ Area: _____

	Observation	N/A	S	U	Comments
1.	PERSONAL PROTECTIVE EQUIPMENT (Hard hat, Goggles, Boots, Safety Glasses, Harne				
	1.1 Is necessary PPE being worn?				
	1.2 Is PPE adequate for the job?				
	1.3 Is PPE being worn properly?				
	1.4 Is PPE in good condition?				
	1.5				
2.	PROTECTIVE DEFENSES (Barricade, Tape, Tags, Tie-off, Warning signs, etc.				
	2.1 Is isdation adequate?				
	2.2 Is warning adequate?				
	2.3 Are defenses secure?				
	2.4				
3.	POSITIONS/ACTIONS OF PEOPLE (Use of what-if approach to foresee the unexpected				
	3.1 Striking against or being struck by				
	3.2 Caught in or between objects				
	3.3 Falling at the same level or to a different level				
	3.4 Contact with temperature extremes				
	3.5 Contact with electric current				
	3.6 Contact with chemicals				
	3.7 Overexertion while lifting, pushing, pulling or re				
	3.8				
4.	TOOLS (File, Grinder, Stringer, Wrench, etc.)				
	4.1 Are the tools right for the job?				
	4.2 Are the tools being used properly?				
	4.3 Are the tools in safe condition?				
	4.4				
5.	EQUIPMENT (Cranes, JLG, Bobcat, etc.)				
	5.1 Is the equipment right for the job?				
	5.2 Is the equipment being used correctly?				
	5.3 Is the equipment in safe condition?				
	5.4				
6.	HOUSEKEEPING				
	6.1 Is the housekeeping standard adequate?				
	6.2 Is the housekeeping standard understood?				
	6.3 Is the housekeeping standard followed?				
	6.4				
7.	PROCEDURES (Planning, Permits, SOP, JSA, Red tags, Pipe specs Procedures)				
	7.1 Are the procedures adequate?				
	7.2 Are the procedures established & understood?				
	7.3 Are the procedures maintained & followed?				
	7.4				
8.	SPECIAL HIGH RISK JOBS (Pick from the list on the next page)				
	8.1				
	TOTAL				

Special High Risk Jobs

CUTTING (Knife, Oxy Acet, etc.)

- Cutting direction:
- Hand protection:
- Backflash arrestors
- Hoses

MOTOR VEHICLES

- Speed:
- Walk around:
- Stop signs:
- Seat belts:

WATER BLASTING/LANCING

- Equipment check:
- PPE:
- Exposure:
- Training:
- Competency:

TRUCKS

- Loading/unloading:
- Engine off:
- Chocked:
- Position of load:

RAILCARS

- Loading:
- Cleaning/Serviceing:
- Mounting/dismounting:
- Speed:
- Switching:

FORKLIFTS

- Training:
- Load:
- Speed:
- Back-up beeper:
- Condition:
- Flashing lights

EXCAVATIONS

- Permits:
- Hand digging:
- Cut back:
- Spoil pile:
- Access/egress:
- Shoring

HIGH VOLTAGE OVERHEAD

- Clearance:
- Tools:

ENERGIZED ELECTRICS

- Face shield:
- Smock:
- Permits:
- CPR:
- Extension cords
- GFI's:

CONFINED SPACES

- Flammable gas
- Chemicals taken in
- Tools taken in
- Guard duties:
- Rescue plan:
- Rescue equipment:
- Permits:
- Gas testing:
- Warning signs

HANDLING CHEMICALS

- Body protection:
- Respirator protection:
- Exposure:

CRANES

- Loading data:
- Lifting permit:
- Rigging:
- Knowledge:
- Crane size:

HOT WORK

- Permit:
- Gas test:
- Fire extinguisher:
- Spark watch:
- Fire blankets:

ELEVATIONS

- Handrails:
- Openings:
- Barricades:
- Fall prevention:
- Walking surfaces:
- Roofs, ladders, scaffolds:

HEAVY EQUIPMENT

- Condition:
- Use:

INSTRUCTIONS

During the observation session:

1. As you approach observe some people working.
2. Assess their actions relative to question 1 Personal Protective Equipment.
3. As you observe, check the item "**S - Safe**" if it is 100% safe. Max one check per item regardless of the number of safe occurrences observed. If the item is not 100% safe, then it is to be checked as "**U - Unsafe**" for each violation. (This makes the measurement system more sensitive to Unsafe actions.)
4. Go over and introduce yourself to the work group.
5. Explain that you had been observing safe behaviour so that you can give some feedback, in a belief that this will help them work more safely.
6. Positively reinforce all desired behaviours that you observed.
7. Correct any undesired behaviours. It helps if you ask the performer what they think they could do more safely rather than telling them. This allows for a more constructive discussion. You can then give your input.
8. Ask if the work group mind if you continue to observe the balance of the items on the check sheet while they continue their job.
9. Observe for items 2, 3, 4 & 5.
10. Stop the work group, give feedback as described above.
11. Review Items 6 & 7 with the group.
12. Thank the work group for their help and calculate the "**% Safe**" for the observation session. Update graphic feedback.

% SAFE CALCULATION FORMULA

$$\frac{\text{Safes}}{\text{Safes} + \text{Unsafes}} \times 100 = \% \text{ SAFE}$$

From PCL Industrial Constructors Inc.

PCL Safe Performance Behaviour Observation Worksheet

Exhibit 036

Date: _____

Auditors _____

Area: _____

	Observation	S	U	Comments	Interventions		
					PR	C/C	SI
1.	Safe Use of Personal Protective Equipment						
	1.1 Is Necessary PPE being worn?						
	1.2 Is PPE adequate for the job?						
	1.3 Is PPE being worn properly?						
	1.4 Is PPE in good conditions?						
	1.5						
2.	Safe Positions/Actions of People (Barricade, tape, tags, tie-off, warning signs)						
	2.1 Striking against or being struck by						
	2.2 Caught in, on or between objects						
	2.3 Falling.						
	2.4 Contact with temperature, electric current or chemicals						
	2.5 Overexertion						
	2.7 Repetitive Motions						
	2.8 Awkward positions/Static Postures						
	2.9						
3.	Reactions of People (adjust PPE, put on hard hat, etc. due to your presence)						
	3.1 Adjust PPE						
	3.2 Changing position						
	3.3 Rearranging job or task						
	3.4 Stopping job or task						
	3.5 Obtaining equipment/performing safe work practice.						
4.	Tools/Equipment Used Safely (File, grinder, wrenches)/ (Cranes, JLG, Bobcat, Fire Extinguisher, etc.)						
	4.1 Correct tools/equipment being used?						
	4.2 Tools/equipment used properly?						
	4.3 Tools/equipment in safe condition?						
5.	Housekeeping (Area housekeeping reflects commitment to safety)						
	5.1 Is the housekeeping standard adequate?						
	5.2 Is the housekeeping standard understood?						
	5.3 Is the equipment in safe condition?						
	5.4						
6.	Protective Defenses (Barricades, Tape, Tags, Tie-off, Warning Signs, etc.)						
	6.1 Is isolation adequate?						
	6.2 Is warning adequate?						
	6.3 Are defenses secured?						
7.	Procedures (Planning, permits, JSA, red tags, pipe specs, etc.)						
	7.1 Are the procedures adequate?						
	7.2 Are the procedures established and understood?						
	7.3 Are the procedures maintained & followed?						
8.	Special Procedures						
	8.1 Did you receive pre job instruction from your Foreman?						
	8.2 Safety instructions given as part of this instruction?						
	8.2 Is the Pre Job Safety Instruction process understood?						
	8.3 Has a Pre Job Safety Instruction been given?						
	8.4 Has the Pre Job Safety Instruction been followed?						
	8.5						
	Total				Total		

BEHAVIOUR OBSERVATION SHEET

Date: _____ Auditor(s): _____ Area: _____

	Focus	R ⁺	C/Ac	F/Up		Focus	R ⁺	C/Ac	F/Up
1.	PPE				8.	HOUSEKEEPING			
2.	PROTECTIVE DEFENSES				9.	ENVIRONMENTAL			
3.	POSITIONS/ACTIONS OF PEOPLE				10.	INDUSTRIAL HYGIENE			
4.	EQUIPMENT				11.	REACTIVE CHEMICALS			
5.	PROCEDURES				12.	Pre-Job Hazard Assessment Form:	Yes	No	F/UP
						Are Job Items checked off?			
						Are Hazard Identifications written out?			
						Are Preventative Measures written out?			
6.	TOOLS								
7.	SAFE DRIVING				13.	Near Miss Book	Yes	No	F/Up
						Are any filled out?			
	TOTALS:					TOTALS:			
FOLLOW UP:								Item #	Who:

BOA TRIGGERS:

1. PPE

- being worn
- adequate for the job
- worn properly
- in good condition

2. PROTECTIVE DEFENSES

- adequate isolation
- adequate warning
- secure defenses

3. POSITIONS/ACTIONS OF PEOPLE

- striking against or being struck by
- caught in or between objects
- falling at the same level or to a different level
- contact with temperature extremes
- contact with electric current
- contact with chemicals
- overexertion while lifting, pushing, pulling or reaching

4. EQUIPMENT

- right equipment for the job
- used correctly
- safe condition

5. PROCEDURES

- adequate
- established and understood
- maintained and followed

6. TOOLS

- right for the job
- used properly
- in safe condition

7. SAFE DRIVING

- seatbelts worn
- stopping at Stop signs
- driving at the posted speed
- using signals
- following railway crossing rules

8. HOUSEKEEPING

- areas kept clean of debris
- hoses are neatly stored
- unnecessary material being stored
- area used for what is intended

9. ENVIRONMENTAL

- areas clean
- any spills evident

10. INDUSTRIAL HYGIENE

- noisy areas posted
- spills roped off

11. REACTIVE CHEMICALS

- shop chemicals stored adequately
- any potentials in the process

BEHAVIOUR OBSERVATION AUDITOR EVALUATION

Based on the audit which was just completed:

	Poor		Good	
1. Do you feel the audit was positive?	1	2	3	4
2. How would you rate the interaction between you and the auditor?	1	2	3	4
3. What did you like about this audit?				

4. What would you change to improve this audit?

Behaviour Observation Audit Card		
Contractor:		
Date:		
Auditor(s):		
Hazard	Positive	Negative
Fall from elevation		
Struck By hazard(s)		
Tripping/Fall Same Level		
PPE - Eye Protection		
PPE - Gloves		
PPE - Fall protection		
PPE - Hearing		
PPE - Other		
Struck Against Hazard(s)		
Driving Habits		
Permit Complete		
STAC Analysis By All		
Scaffolds		
Excavations		
Equipment		
Near Miss Program Active		
Total:		

An example form from Dow Behaviour Based Performance

Behavior Observation Entry Form Form:

Observer: Self or Other:

Location: Plant:

Task: Date: Time:

Trade: Dow/Contractor: #People:

Free Entry:

Category: Acceptable Unacceptable *Include comments for unacceptable behaviors. Number and enter comments at bottom of form.*

Personal Protective Equipment		1
Appropriate hand protection worn	<input type="checkbox"/>	#
Body protection worn correctly	<input type="checkbox"/>	#
Head protection worn correctly	<input type="checkbox"/>	#
Foot protection worn	<input type="checkbox"/>	#
Permit requirements met/PPE worn	<input type="checkbox"/>	#
Appropriate hearing protection being worn correctly	<input type="checkbox"/>	#
Appropriate eye Protection	<input type="checkbox"/>	#

Work/Task Area		6
Specific disposal requirement followed	<input type="checkbox"/>	#
Garbage handled directly to bin	<input type="checkbox"/>	#
Material stored in safe manner	<input type="checkbox"/>	#
Work area kept clear of debris	<input type="checkbox"/>	#
Tripping hazards eliminated	<input type="checkbox"/>	#

Ergonomics		3
Limit repetitive or static motion	<input type="checkbox"/>	#
Limit manual lifting to <25 kg	<input type="checkbox"/>	#
Using proper body position	<input type="checkbox"/>	#
Keeping body out of "Line of fire"	<input type="checkbox"/>	#

Positions/Actions of People		7
Workers intervene to correct unacceptable behavior	<input type="checkbox"/>	#
Complying with scaffold tag requirements	<input type="checkbox"/>	#
Prevent people from entering hazardous area	<input type="checkbox"/>	#
Alternatives to fall protection have been considered	<input type="checkbox"/>	#
Harness being worn properly fitting	<input type="checkbox"/>	#
Tie off anchored to substantial point	<input type="checkbox"/>	#
Tied off over 1.8 m when required to do so	<input type="checkbox"/>	#

Tools & Equipment		4
Using grinder with guard/correct disc etc	<input type="checkbox"/>	#
Proper use of grinder	<input type="checkbox"/>	#
Using tools in good condition	<input type="checkbox"/>	#

Hazard Identification & Control		2
PTA card in field with workers	<input type="checkbox"/>	#
People per PTA card (4 maximum)	<input type="checkbox"/>	#
Workers names on card	<input type="checkbox"/>	#
PTA completed at task location	<input type="checkbox"/>	#
Hazard elimination step(s) written on card	<input type="checkbox"/>	#
Task hazard(s) written on PTA card	<input type="checkbox"/>	#

Motor Vehicle		5
Stopping when required to do so.	<input type="checkbox"/>	#
Stopping to use cell phone	<input type="checkbox"/>	#
Driving with seat belt on	<input type="checkbox"/>	#

Other Comments

Observation Rating 1-4 Plus

Interaction Rating 1-4 Delta:

#	Comment

Page 1 of 2 April 17, 2000 Behavior Based Performance Tool

PROCESS STEP 4

Shell MEG Project Observation Reports



OBSERVATION REPORT

PROJECT: Shell MEG PROJECT NO: M8716481
 OBSERVER: _____ BRASS NO: _____
 WEATHER: _____ WEEK OF: _____ TIME: _____
 LOCATION: _____

ACTIVATORS	SAFE		ACTIONS	INTERVENTIONS				
	YES	NO		PR	C/C	S	SI	FAR
SAFE BEHAVIORS								
B1. Authorized operation of equipment								
B2. Proper warning								
B3. Tools/equip. secured								
B4. Operating at safe speed								
B5. Use of safety devices								
B6. Equipment in safe condition								
B7. Safe use of PPE								
B8. Safe loading								
B9. Safe placement								
B10. Safe lifting								
B11. Safe position for task								
B12. Equipment safely serviced								
B13. Safe behavior (no horseplay)								
B14. Physically/mentally fit (no impairment)								
B15. Safe use of equipment								
SAFE CONDITIONS								
C1. Proper guards/barriers								
C2. Proper protective equipment								
C3. Safe tools, equipment, materials								
C4. Unrestricted/uncongested areas								
C5. Adequate warning systems								
C6. Fire and explosion hazards controlled								
C7. Good housekeeping/orderly								
C8. Noise exposure controls								
C9. Radiation exposure controls								
C10. Temperature extreme controls								
C11. Safe lighting/illumination								
C12. Proper ventilation								
C13. Safe environmental conditions								
PR – Positive Reinforcement		C/C – Correction and Coaching		S – Supervisor				
SI – Supervisor Informed			FAR – Further Action Required					

O:\MEGSafety\Behavior-based Safety\Observation rpt.doc -- Rev. 2

OBSERVATION REPORT

Project: _____
 Observer: _____

Project No.: _____
 Brass No: _____
 Time: _____

ACTIVATORS		OBSERVATIONS		ACTIONS		INTERVENTIONS			
SAFE BEHAVIORS		Safe	At Risk	%Safe	% AR	PR	C/C	SI	FAR
B.1	Authorized Operation of Equipment	23	2			15	2	0	2
i.	Is there a permit required	5	0	100.00%	0.00%	3	0	0	0
ii.	Is the permit with the equipment	2	0	100.00%	0.00%	2	0	0	0
iii.	Has the employee been trained in the use of the equip.	15	2	88.24%	11.76%	9	2	0	2
iv.	Other	1	0	100.00%	0.00%	1	0	0	0
B.2	Proper Warning	16	1			7	0	1	0
i.	Signage in place	4	1	80.00%	20.00%	1	0	1	0
ii.	Back up alarm working	12	0	100.00%	0.00%	6	0	0	0
iii.	Other (ie. Signal person utilized)	0	0	#DIV/0!	#DIV/0!	0	0	0	0
B.3	Tools/Equipment Secured	15	4			8	1	0	1
i.	Use of canvas buckets	3	0	100.00%	0.00%	2	0	0	0
ii.	Bottles in rack or cart (Tied off in the upright position)	5	0	100.00%	0.00%	2	0	0	0
iii.	Hoses and cords tied up	2	4	33.33%	66.67%	1	1	0	1
iv.	Materials/tools tied down during transport	4	0	100.00%	0.00%	3	0	0	0
v.	Other	1	0	100.00%	0.00%	0	0	0	0
B.4	Operating at Safe Speed	17	1			9	0	0	0
i.	Speed limits observed	9	1	90.00%	10.00%	5	0	0	0
ii.	Swinging of cranes, manlifts at safe speed	5	0	100.00%	0.00%	2	0	0	0
iii.	Turning of bobcats	3	0	100.00%	0.00%	2	0	0	0
iv.	Other	0	0	#DIV/0!	#DIV/0!	0	0	0	0
B.5	Use of Safety Devices	15	5			8	4	0	2
i.	Guards are in place	1	1	50.00%	50.00%	1	1	0	0
ii.	Safety devices not overridden (ie.block in foot switch)	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iii.	Fire extinguishers charged and in place	4	1	80.00%	20.00%	3	1	0	0
iv.	Tag lines used when hoisting	4	0	100.00%	0.00%	1	0	0	0
v.	G.F.I. Receptacles used	4	1	80.00%	20.00%	2	1	0	0
vi.	Other	2	2	50.00%	50.00%	1	1	0	2

ACTIVATORS		OBSERVATIONS		ACTIONS		INTERVENTIONS			
SAFE BEHAVIORS		Safe	At Risk			PR	C/C	SI	FAR
B.6	Equipment in Safe Condition	22	1			7	0	0	0
i.	Is there a maintained service log	4	0	100.00%	0.00%	1	0	0	0
ii.	Is there physical damage which could cause a failure	2	0	100.00%	0.00%	0	0	0	0
iii.	Correct color code tape on cords & other equip.	3	1	75.00%	25.00%	2	0	0	0
iv.	Manlifts in good mech. Condition (tires, oil leaks, etc.)	6	0	100.00%	0.00%	3	0	0	0
v.	Other	7	0	100.00%	0.00%	1	0	0	0
B.7	Safe Use of P.P.E.	46	15			21	9	1	1
i.	Safety harness worn correctly (straps, lanyards, etc.)	2	2	50.00%	50.00%	2	2	0	0
ii.	Face shield clean	1	0	100.00%	0.00%	0	0	0	0
iii.	Ear plugs not just set in outer ear	3	1	75.00%	25.00%	1	1	0	0
iv.	Tied off to basket in manlift	3	3	50.00%	50.00%	3	1	0	1
v.	Hooked to life line when on steel	1	0	100.00%	0.00%	0	0	0	0
vi.	100% tie off when climbing steel	2	2	50.00%	50.00%	0	0	0	0
vii.	Safety glasses used	9	2	81.82%	18.18%	3	1	0	0
viii.	Gloves used	8	1	88.89%	11.11%	2	1	0	0
ix.	Use of respiratory equip.	1	1	50.00%	50.00%	1	1	0	0
x.	Use of face shields	8	3	72.73%	27.27%	4	2	1	0
xi.	Use of cutting goggles	0	0	#DIV/0!	#DIV/0!	0	0	0	0
xii.	Proper foot protection	3	0	100.00%	0.00%	2	0	0	0
xiii.	Other	5	0	100.00%	0.00%	3	0	0	0
B.8	Safe Loading	16	3			3	2	1	0
i.	Is trailer placed on level ground	5	0	100.00%	0.00%	1	0	0	0
ii.	Is trailer blocked up properly	5	2	71.43%	28.57%	1	1	1	0
iii.	Is operator loading on level ground	4	0	100.00%	0.00%	1	0	0	0
iv.	Is area ribboned off/signage posted	1	1	50.00%	50.00%	0	1	0	0
v.	Other	1	0	100.00%	0.00%	0	0	0	0
B.9	Safe Placement	15	2			7	0	0	0
i.	Is load placed in a level area	5	0	100.00%	0.00%	3	0	0	0
ii.	Is load blocked up properly	2	0	100.00%	0.00%	1	0	0	0
iii.	Is load ribboned off	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iv.	Concrete trucks	1	0	100.00%	0.00%	0	0	0	0
v.	Loaders	1	0	100.00%	0.00%	0	0	0	0
vi.	Cranes	4	1	80.00%	20.00%	3	0	0	0
vii.	Others	2	1	66.67%	33.33%	0	0	0	0
B.10	Safe Lifting	28	1			20	0	0	0
i.	Inspect slings	3	0	100.00%	0.00%	3	0	0	0
ii.	Sling load rating sufficient	1	0	100.00%	0.00%	1	0	0	0
iii.	Proper manual lifting	8	1	88.89%	11.11%	5	0	0	0
iv.	Outrigger pads are used	7	0	100.00%	0.00%	5	0	0	0
v.	Ground under crane is stable	6	0	100.00%	0.00%	4	0	0	0
vi.	Others	3	0	100.00%	0.00%	2	0	0	0

ACTIVATORS		OBSERVATIONS		ACTIONS	INTERVENTIONS				
SAFE BEHAVIORS		Safe	At Risk		PR	C/C	SI	FAR	
B.11	Safe Position for Task	8	4		6	1	0	1	
i.	Body positioned for task	4	1	80.00%	20.00%	3	0	0	
ii.	Using proper P.P.E. for specific tasks (ie. knee pads)	1	0	100.00%	0.00%	1	0	0	
iii.	Proper footing for task	1	1	50.00%	50.00%	1	0	0	
iv.	Proper balance for task	1	1	50.00%	50.00%	1	0	0	
v.	Others	1	1	50.00%	50.00%	0	1	1	
B.12	Equipment Safely Serviced	6	1		5	1	0	0	
i.	No visual fluid leaks	3	0	100.00%	0.00%	3	0	0	
ii.	Log book is up to date	2	1	66.67%	33.33%	2	1	0	
iii.	Government regulatory stickers current	0	0	#DIV/0!	#DIV/0!	0	0	0	
iv.	Other	1	0	100.00%	0.00%	0	0	0	
B.13	Safe Behavior (No Horseplay)	9	2		3	1	0	0	
i.	Tail gate & Safety meetings are being held	1	0	100.00%	0.00%	0	0	0	
ii.	No Horseplay, rowdiness, practical jokes, fighting, running, sleeping	4	0	100.00%	0.00%	3	0	0	
iii.	Are you running because of an emergency (running is prohibited on site)	0	0	#DIV/0!	#DIV/0!	0	0	0	
iv.	Do you know and understand correct work procedure	2	1	66.67%	33.33%	0	1	0	
v.	Other	2	1	66.67%	33.33%	0	0	0	
B.14	Physically/Mentally Fit (No Impairment)	7	0		5	0	0	0	
i.	Is person capable of safely carrying load or is additional person(s) required	3	0	100.00%	0.00%	3	0	0	
ii.	When was workers last job	0	0	#DIV/0!	#DIV/0!	0	0	0	
iii.	Physically competent to safely perform specific task	2	0	100.00%	0.00%	1	0	0	
iv.	Other	2	0	100.00%	0.00%	1	0	0	
B.15	Safe Use of Equipment	16	7		9	3	0	1	
i.	Is person familiar with the safe use of equip. (alarms)	3	0	100.00%	0.00%	1	0	0	
ii.	Could person spot damage and repair or service equip.	0	0	#DIV/0!	#DIV/0!	0	0	0	
iii.	Is a spotter or signal man required	6	3	66.67%	33.33%	3	1	0	
iv.	Proper ticket or years of experience to operate equip.	0	0	#DIV/0!	#DIV/0!	0	0	0	
v.	Proper use of ladders	4	1	80.00%	20.00%	3	0	0	
vi.	Flagging, hazards in area, permit, and other equipment required (fire extinguishers, face shields, etc.) for the safe use of equipment	3	2	60.00%	40.00%	2	1	1	
vii.	Other	0	1	0.00%	100.00%	0	1	0	
TOTAL		259	49			133	24	3	8

Total Observations	308
---------------------------	------------

ACTIVATORS		OBSERVATIONS		ACTIONS		INTERVENTIONS			
SAFE CONDITIONS						PR	C/C	SI	FAR
C.1	Proper Guards/Barriers	17	10			1	5	0	1
i.	Solid barriers installed	7	1	87.50%	12.50%	1	0	0	0
ii.	Guards on grinders	6	0	100.00%	0.00%	0	0	0	0
iii.	Guards on small hand tools	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iv.	Barricades around/secured covers on roof or floor openings	0	1	0.00%	100.00%	0	1	0	0
v.	Perimeter guard rails at elevations	0	1	0.00%	100.00%	0	1	0	0
vi.	Flagging in place-color, tagged	4	6	40.00%	60.00%	0	2	0	1
vii.	Warning signs in place	0	1	0.00%	100.00%	0	1	0	0
viii.	Guards on chop saws	0	0	#DIV/0!	#DIV/0!	0	0	0	0
ix.	Other	0	0	#DIV/0!	#DIV/0!	0	0	0	0
C.2	Proper Protective Equipment	10	0			5	0	0	0
i.	Flash back preventor on torches and bottles	2	0	100.00%	0.00%	1	0	0	0
ii.	Overhead protection in place	3	0	100.00%	0.00%	2	0	0	0
iii.	Welding shades and screens	3	0	100.00%	0.00%	1	0	0	0
iv.	Other	2	0	100.00%	0.00%	1	0	0	0
C.3	Safe Tools, Equipment, Materials	26	2			14	1	0	0
i.	Neatly and safely stacked	12	0	100.00%	0.00%	7	1	0	0
ii.	Flammable materials separated and stored in ventilated area	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iii.	Cords on small tools are O.K.	4	2	66.67%	33.33%	3	0	0	0
iv.	Materials properly stored & identified/labelled	7	0	100.00%	0.00%	2	0	0	0
v.	Other	3	0	100.00%	0.00%	2	0	0	0
C.4	Unrestricted/Uncongested Areas	11	2			5	1	0	1
i.	Steps are kept clean	3	0	100.00%	0.00%	1	0	0	0
ii.	No debris in walkways	3	1	75.00%	25.00%	2	0	0	1
iii.	Evacuation routes are clear	1	0	100.00%	0.00%	1	0	0	0
iv.	Is one craft/task interfering with another craft/task	2	1	66.67%	33.33%	1	1	0	0
v.	Other	2	0	100.00%	0.00%	0	0	0	0
C.5	Adequate Warning Systems	14	1			8	1	0	0
i.	Back up alarms on equipment	6	0	100.00%	0.00%	3	0	0	0
ii.	Ribbon off lift swing areas	3	0	100.00%	0.00%	2	0	0	0
iii.	Barricade excavations	3	0	100.00%	0.00%	2	0	0	0
iv.	Other	2	1	66.67%	33.33%	1	1	0	0
C.6	Fire & Explosion Hazards Controlled	5	12			0	1	0	1
i.	Flammables stored outside of buildings and hoardings	0	0	#DIV/0!	#DIV/0!	0	0	0	0
ii.	Oxygen/acetylene stored at storage racks only	1	0	100.00%	0.00%	0	0	0	0
iii.	Fire extinguishers present and up to date	1	12	7.69%	92.31%	0	1	0	1
iv.	Bottles turned off at end of shift	0	0	#DIV/0!	#DIV/0!	0	0	0	0
v.	Other	3	0	100.00%	0.00%	0	0	0	0

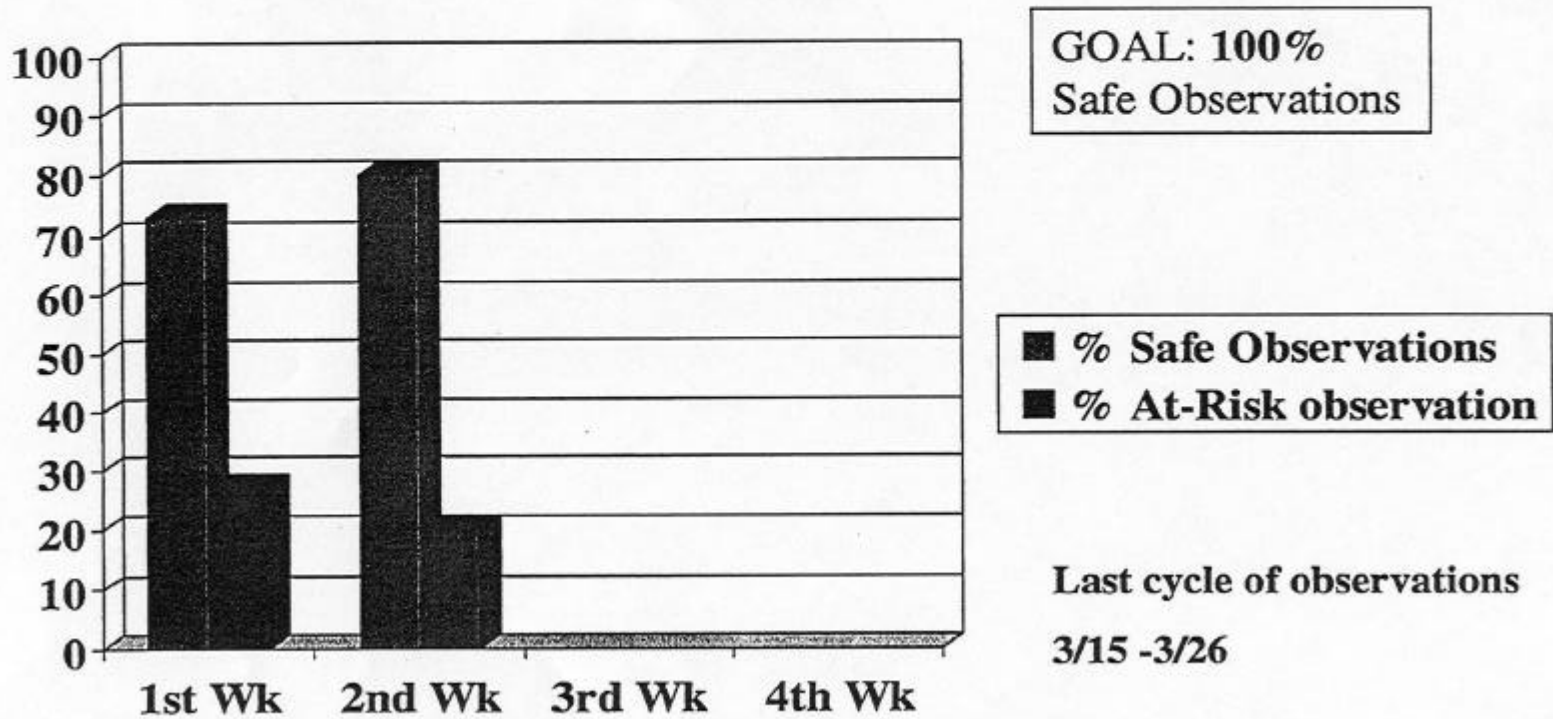
ACTIVATORS		OBSERVATIONS		ACTIONS		INTERVENTIONS			
SAFE CONDITIONS						PR	C/C	SI	FAR
C.7	Good Housekeeping/Orderly	30	10			9	2	3	0
i.	Cables and cords or not tangled	8	1	88.89%	11.11%	4	1	0	0
ii.	Tools are on work tables not cluttering walkways	4	1	80.00%	20.00%	0	0	0	0
iii.	Equipment container to be used for specific equip. only	1	1	50.00%	50.00%	0	0	0	0
iv.	Work area kept clean	11	4	73.33%	26.67%	5	0	2	0
v.	Consumables are properly stored in containers	0	0	#DIV/0!	#DIV/0!	0	0	0	0
vi.	Other	6	3	66.67%	33.33%	0	1	1	0
C.8	Noise Exposure Controls	4	0			1	0	0	0
i.	Ribboned and tagged if required	0	0	#DIV/0!	#DIV/0!	0	0	0	0
ii.	Hearing protection at work station in use	4	0	100.00%	0.00%	1	0	0	0
iii.	Tailgate meetings- review noisy environments	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iv.	Other	0	0	#DIV/0!	#DIV/0!	0	0	0	0
C.9	Radiation Exposure Controls	0	0			0	0	0	0
i.	Signage	0	0	#DIV/0!	#DIV/0!	0	0	0	0
ii.	Permits	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iii.	Notification	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iv.	Controlled area perimeter	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iv.	Other	0	0	#DIV/0!	#DIV/0!	0	0	0	0
C.10	Temperate Extreme Controls	0	0			0	0	0	0
i.	Signage (Stress Relieve)	0	0	#DIV/0!	#DIV/0!	0	0	0	0
ii.	Insulation	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iii.	Other	0	0	#DIV/0!	#DIV/0!	0	0	0	0
C.11	Safe Lighting/Illumination	3	0			1	0	0	0
i.	Check type (power, temp., permanent)	1	0	100.00%	0.00%	0	0	0	0
ii.	CSA approved	1	0	100.00%	0.00%	0	0	0	0
iii.	Other	1	0	100.00%	0.00%	1	0	0	0
C.12	Proper Ventilation	1	0			1	0	0	0
i.	Gas test log	0	0	#DIV/0!	#DIV/0!	0	0	0	0
ii.	Air movers installed correctly	0	0	#DIV/0!	#DIV/0!	0	0	0	0
iii.	Other	1	0	100.00%	0.00%	1	0	0	0
C.13	Safe Environmental Conditions	3	1			2	0	0	0
i.	Permit in place	2	0	100.00%	0.00%	2	0	0	0
ii.	Log filled out correctly	1	0	100.00%	0.00%	0	0	0	0
iii.	Other	0	1	0.00%	100.00%	0	0	0	0
TOTAL		124	38			47	11	3	3

Total Observations	383	87
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180	35	6	11
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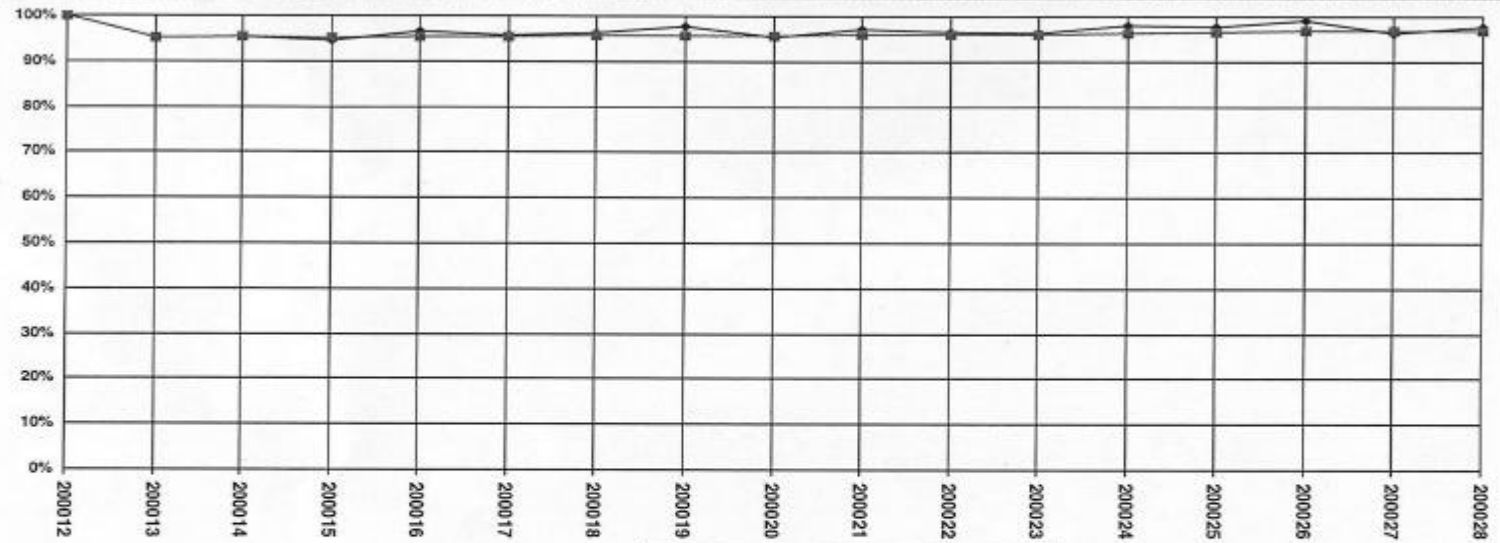
MAINTENANCE DEPT. CRITICAL BEHAVIOR OBSERVATION FEEDBACK

Wearing Safety Glasses with side shields when using powered tools



From The Dow Chemical Company

Behavior Overall Performance				PlantName: Dow Design & Construction	Trade: *
Location: *				Contact person: Bowes, Henry	Plant: *
Activity/Task: *				Category: *	Superintend: *
Period: 00-03-01 <-> 00-07-05 Weeks				Critical Behavior: *	
Type: *				Discipline: *	
				Dow/Contractor: *	



X-Axis Format: YYYYWW

Weeks

◆ %Acceptable ■ Cumulative%Acceptable

#	%Acceptable	Period	Ergonomics	Hazard Identif	Motor Vehicle	Personal Prote	Positions/Actio	Pre-task Analy	Tools & Equip	Work/Task Are
1	100.0%	200012				100%				
15	95.2%	200013	100%	100%	67%	98%	94%	95%	100%	88%
28	95.5%	200014	100%	93%	100%	98%	91%	88%	100%	95%
24	94.7%	200015	100%	89%		97%	93%		100%	98%
27	96.6%	200016	100%	95%	100%	98%	88%		100%	98%
20	95.8%	200017	98%	93%	67%	99%	91%		100%	97%
21	96.3%	200018	100%	91%	0%	98%	95%		100%	100%
17	97.7%	200019	100%	99%	100%	98%	95%		100%	95%
33	95.6%	200020	100%	88%	67%	100%	92%		100%	99%
22	97.1%	200021	96%	98%	60%	99%	97%		100%	91%

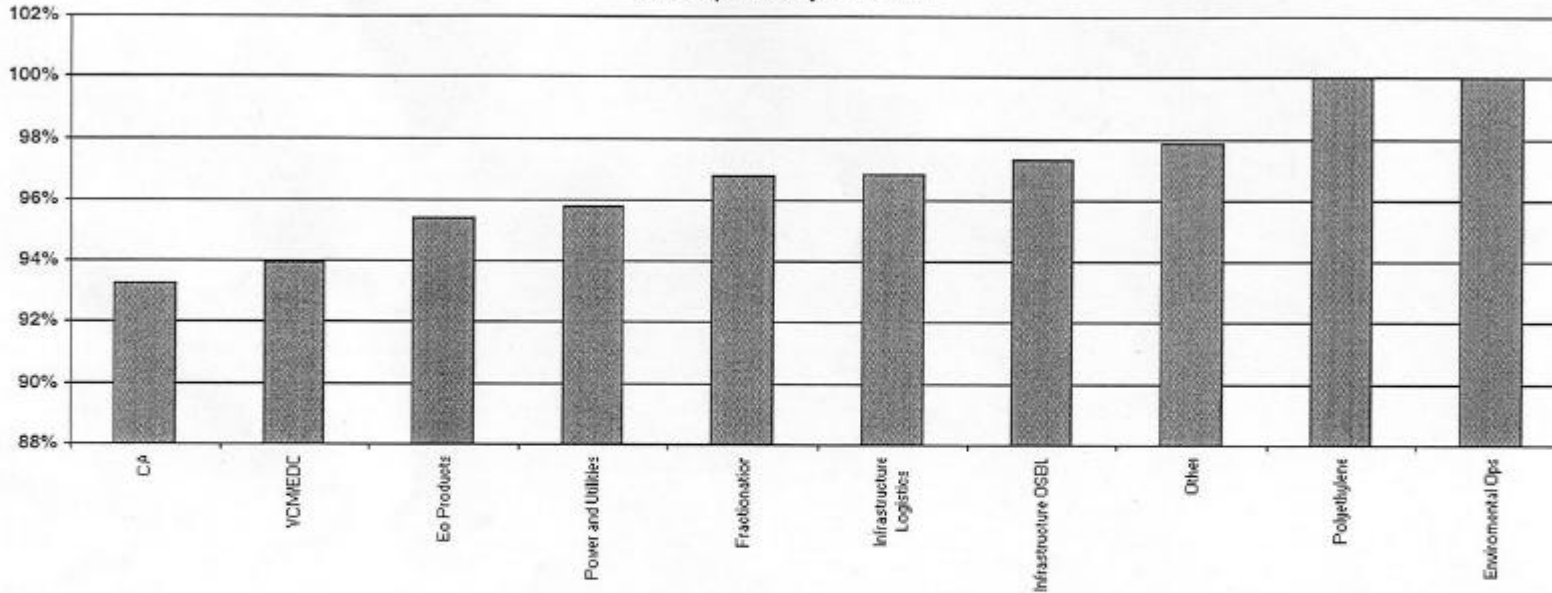
Behavior Performance by Location

PlantName: Dow Design & Construction
 Contact person: Bowes, Henry
 Category: *
 Critical Behavior: *
 Discipline: *
 Dow/Contractor: *

Trade: *
 Plant: *
 Superintend: *

Location: *
 Activity/Task: *
 Period: 00-01-01 <-> 00-04-18 Months Type: *

% Acceptable by Location



Location	#Observations	%Acceptable	#Acceptable	#Unacceptable
CA	13	93%	221	16
VCM/EDC	16	94%	294	19
Eo Products	24	95%	495	24
Power and Utilities	5	96%	114	5
Fractionation	7	97%	152	5
Infrastructure Logistics	6	97%	124	4
Infrastructure OSBL	8	97%	73	2
Other	4	98%	92	2
Polyethylene	2	100%	50	0
Environmental Ops	2	100%	38	0

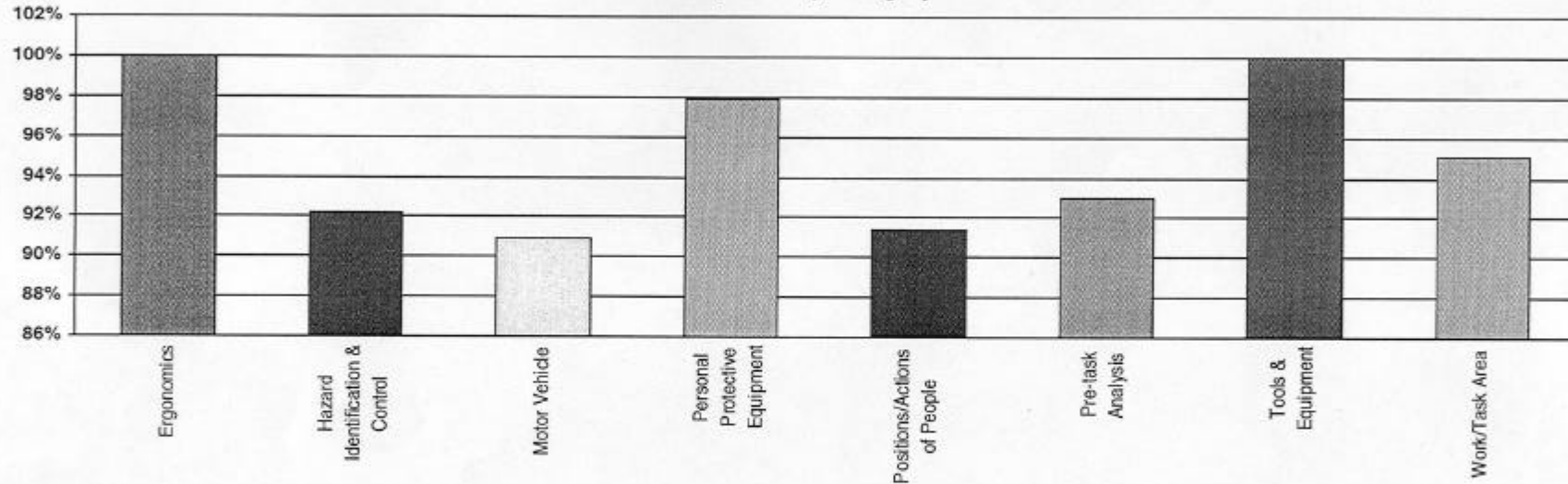
Behavior Performance by Category

Location: *
 Activity/Task: *
 Period: 00-01-01 <-> 00-04-18 Months Type: *

PlantName: Dow Design & Construction
 Contact person: Bowes, Henry
 Category: *
 Critical Behavior: *
 Discipline: *
 Dow/Contractor: *

Trade: *
 Plant: *
 Superintendent: *

% Acceptable by Category



Category	%Acceptable	#observations	#Acceptable	#Unacceptable
Ergonomics	100.0%	75	189	0
Hazard Identification & Control	92.2%	59	319	27
Motor Vehicle	90.9%	6	10	1
Personal Protective Equipment	97.9%	84	551	12
Positions/Actions of People	91.4%	57	203	19
Pre-task Analysis	93.0%	17	93	7
Tools & Equipment	100.0%	52	73	0
Work/Task Area	95.1%	69	212	11

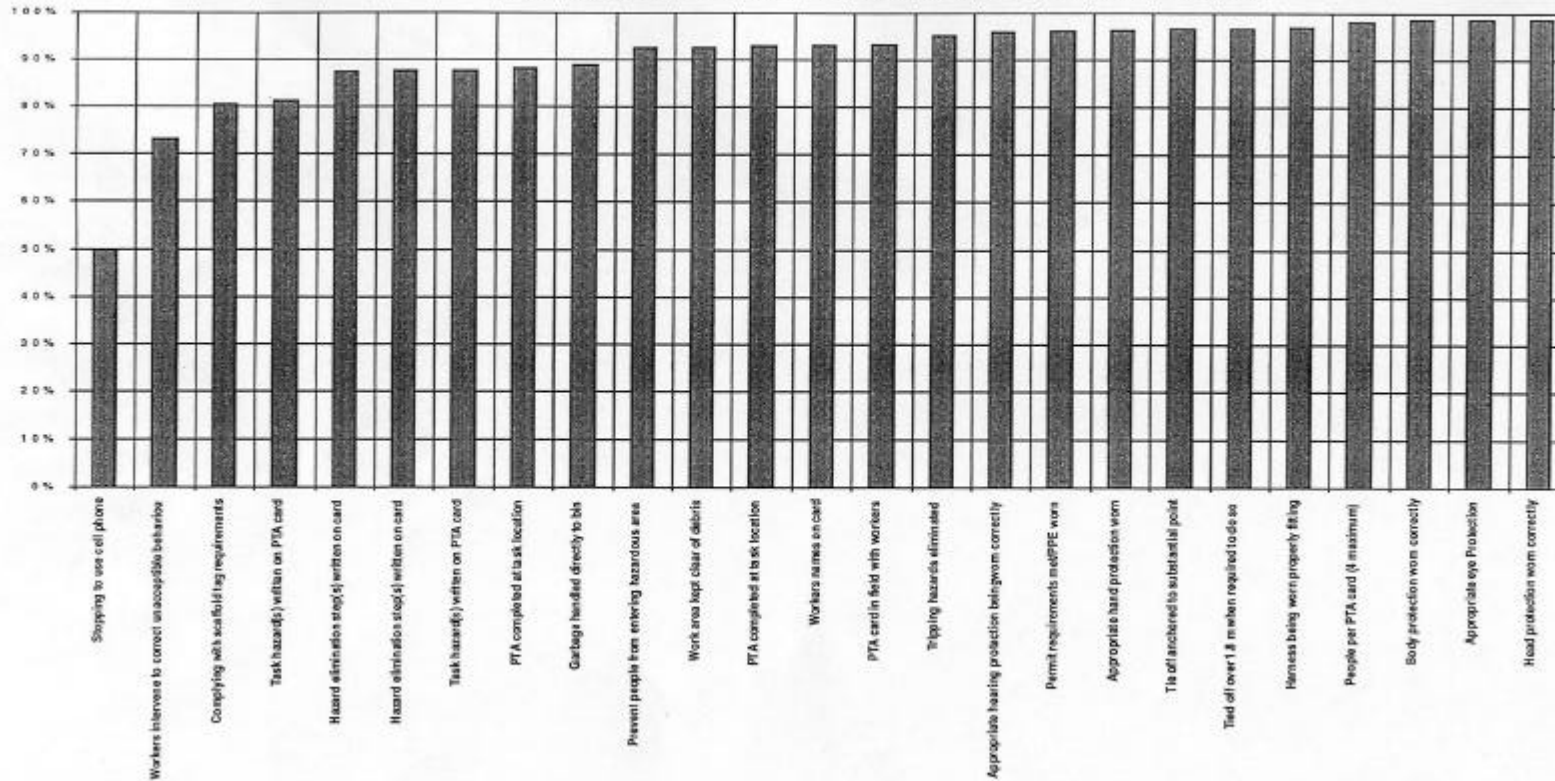
Behavior Performance by Critical Behaviors

Location: *
 Activity/Task: *
 Period: 00-01-01 <-> 00-04-18 Months Type: *

PlantName: Dow Design & Construction
 Contact person: Bowes, Henry
 Category: *
 Critical Behavior: *
 Discipline: *
 Dow/Contractor: *

Trade: *
 Plant: *
 SuperIntend: *

The graph below only shows those Critical Behaviors which are less than 100% acceptable



SECTION 9 - RESOURCES

BOOKS

Bringing Out the Best in People by Aubrey C. Daniels; publisher McGraw-Hill; ISBN 0-07-015358-2

Performance Management: Improving Quality Productivity through Positive Reinforcement by Aubrey C. Daniels; publisher McGraw-Hill

Behaviour Based Safety Process by Thomas R. Krause, John H. Hidley and Stanley J. Hodson; publisher Van Nostrand Reinhold; ISBN 0-442-00227-0

The Behaviour-Based Safety Process: Managing Involvement for an Injury-Free Culture, 2nd edition by Thomas Krause & Stanley Hodson; ISBN: 0-471-28758-X

CONSULTANTS

Integrated Performance Systems, Ann W. Pinney President, P.O. Box 38699, Colorado Springs, Colorado. USA. 80937-8699

WEB LINKS

Aubrey Daniels and Associates, Inc., 3531 Habersham at Northlake, Tucker, Georgia, USA. 30084: toll free 1-800-223-6191. Internet at www.aubreydaniels.com

Behavioural Science Technology, Inc., 417 Bryant Circle, Ojai, California, USA. 93023: toll free 1-800-548-5781; fax 805-646-0328; Internet at www.bscitech.com; email bstojai@bstsolutions.com

Liberty Mutual at web page www.libertymutual.com/business/safety/performance

TRAINING RESOURCES

Associated Training, Educational and Consulting Services Ltd., 69 Geneva Crescent, St. Albert, Alberta, Canada. T8N 0Z3. Phone 780-459-2128; fax 780-459-2084 —Behaviour Based safety: Getting Started

Sarnia - Lambton Industrial Educational Co-operative, 252 Chippewa Street, Sarnia, Ontario Canada. N7T 8A9. Phone 519-337-5935; fax 519-3830-1305; email iec@ebtech.net — Behaviour Based Safety Training, Course I.D. - BBS

COMPANY SPECIFIC RESOURCES

The Dow Chemical Company - Meet Behaviour Expectations Work Process, Behaviour Based Performance Sub-Process.

PCL Industrial Constructors Inc. & Fluor Constructors Canada Ltd. Behaviour Based Safety Workshop Best Practices – ppt.

PCL Industrial Constructors Inc. Behaviour Based Safety – ppt.