CHAPTER - IV
INDIAN SCENARIO OF
BEHAVIOR BASED SAFETY MANAGEMENT

The safety and protection of people, equipment and the environment is a serious concern in the Engineering industries. Many industries have recognized the advantages of Safe Work Environments and are progressively adopting Safety Management System to prevent hazardous events, avoid production & manpower losses and other fallouts associated with industrial accidents. Safety management system also assists industries to enhance employee knowledge of operations, improve technical procedures, maintain accurate process safety information and increase overall facility productivity.

Safety Management system is a proactive and systematic approach for identification, evaluation, mitigation, prevention and control of hazards that could occur as a result of failures in process, procedures, or equipment. Increasing industrial accidents, loss of life & property, public scrutiny, statutory requirements, aging facilities and intense industrial processes, all contribute to a growing need for Safety Management Program to ensure safety and risk management.

Indian industries generally do not accord high priority to safety like the developed countries, barring some few industries. Many industries view safety as an inconvenience, as a cost rather than a benefit. The importance of good safety practice at work has not been properly understood by the Indian industries and thus they fail to reap the benefits of being safe. The industries do not aim at the best safety practice but only attempts to meet the minimum legal requirements on safety.

Most of the industries do not have specific policy and budget for safety. It is also to be mentioned that most of the industries maintain separate safety wing or
department, only if they are legally bound to do so. Safety research in Indian industries is almost nil except the support extended by the government run organizations like Regional Labor Institutes spreading across the country, Central Labor Institute, Mumbai and a few other academic institutions.

Responsiveness & competence needs to be created among the Indian Industry about tools & methodologies of safety techniques to understand and mitigate the hazards they are dealing with on a day-to-day basis, and create a safe working environment, for its own machinery, employees and community around.

An effective occupational health and safety program includes:

- Management Commitment and Employee Involvement
- Worksite Analysis
- Hazard Prevention and Control
- Safety and Health training

The concept of the safety in the present era of industrialization has become vital. The Factories Act, 1948 strongly envisages that the adoption of safety measures cannot be postponed until provision is made for them in rules. It is the owner’s responsibility for taking all measures necessary to secure the safety of workers in his factory. For many years the slogan was “safety first”, and many professional believed and preached this. Today we do not want safety, first or last. In other words, we do not want to think of safety as being separate from the other aspects of production. The safety and production goes hand in hand. The present scenario is -- we do not want production and safety or production with safety but, rather, we want safe production. In this context, the study of “Behavior Based Safety Management” has gained momentum in researches related to industrial safety.
Engineering solutions have been achieved to a great extent in the Organizations but behavioral engineering in managing safety is a lot more challenging to learn. Dr. H.L. Kaila, a Professor of Psychology, Mumbai and a BBS Trainer writes that so far in the past 15 years nearly 200 BBS workshops has been conducted in Indian locations in diverse sectors. Every organization has introduced and customized BBS as per their cultural background.

Some organizations first exposed their senior management to BBS concept, process and implementation; and then taken down the levels. Others have started off with bottom level employees and contract workers; whereas some other organizations exposed their middle management and non-management employees together. At some places, organizations have introduced ‘train the trainers’ programme and then these in-house trainers have trained other employees in various departments.

BBS has shown positive results in terms of reducing unsafe behaviors, promoting safe behaviors and creating safety culture in Indian organizations. BBS has provided better accident prevention practices than before. BBS exposure to employees has been an enriching and refreshing experience on understanding the fact that in order to prevent near misses at workplaces, we need to tackle first unsafe / at-risk behaviors through BBS approach.

Behavior Based Safety Management is a bottom-up approach, whereas all other organizational safety systems are top-down driven (Kaila, 2006). Research indicates that BBS has reduced accident rates by 40percent to 75percent within six months to one year of its implementation (Kaila, 2008).

OHSAS 18001:2007 mandates that multinational organizations increasingly think about the human and behavioral aspects of workplace safety (Kaila, 2010). Although OHSAS 18001: 2007 urges organizations to comply with the behavioral
aspects of safety, such compliance has not been achieved because implementation guidelines do not exist (Kaila, 2010).

**Theoretical Approaches of Behavior Based Safety:**

The challenge before the industries now is how to prevent the recurring unsafe behaviors that are contributing to accidents? The factors and the environment that influence and compel the individuals to do unsafe acts is the area we should deal with now. To equip the industries to face this challenge, the concept of Behavior Based Safety Management has been emerged.

**Behavioral Safety Basics - Way It Works?**

**ABC Analysis:**

Our basic premise is that behavior is a function of the immediate environment. Once we have pinpointed a specific behavior, we can then divide environmental events into two sets of categories: events that precede the behavior and events that follow the behavior.

**Figure 4.1 Relationship between Antecedents, Behavior and Consequences**

Behavioral psychologists use the terms antecedents for events that occur before the behavior and consequences for those that follow behavior Figure (4.1). Antecedents are events that precede behavior and prompt or cue the occurrence of that behavior. Consequences are events that follow behavior and that influence the
likelihood that the behavior will occur again under those antecedent conditions in the future. Consequences either strengthen or weaken behavior.

The two-way arrow between consequences and behavior in Figure (4.1) suggests that consequences affect the likelihood that the behavior will occur again. They may either strengthen or weaken the behavior. Consequences cause the frequency of behavior to increase or decrease. In other words, they can increase the likelihood that the behavior will occur again under similar conditions.

The relationship between these behavior events is a contingency relationship, that is, an if-then relationship. If the antecedent conditions are present, then the behavior will occur. If the behavior occurs, it will be followed by the consequence.

It can be explained with some examples. If someone walk into a dark room, the dark room is likely to be an antecedent for what? It will usually prompt you to flip or look for a light switch. The consequence of flipping the light switch is what? When you flip a light switch, the light comes on and he can find his way around to room.

The diagram of this event is shown in Figure (4.2) below. In this example, what is controlling the behavior? The answer is that both the antecedents and the consequences are controlling the occurrence of the behavior. The antecedent prompts one to respond. Consequences are important in maintaining the effect of the antecedent condition.
In fact, the antecedents are effective in prompting behavior only because of the consequences. Since the antecedent would not be effective without consequences, the consequences are what really control behavior.

But why is the behavior occurring in the first place? The behavior occurs because of a history of experience with these antecedents and consequences.

**Consequences:**

As mentioned, consequences can either increase or decrease the behaviors they follow. The two types of consequences are generally familiar: Reinforcement increases behavior while punishment decreases behavior. As a rule, safety improvement efforts need to add consequences that support safe behavior on the job. The consequences occurring in the natural work environment simply do not maintain the levels of safety that we strive for in today’s workplace. The key to improving safety performance is identifying and arranging consequences that support compliance with safety procedures.
Built-in consequences:

The probability of getting hurt because of not following a safety procedure is part of the consequences “built in” to the job itself. Many consequences involved in safety are natural consequences that occur simply as a result of engaging in the behavior. Discomfort associated with wearing protective equipment on a hot day is built in to the act of wearing the equipment and makes the use of that equipment less likely. Following safety procedures often takes more time than short cutting those procedures. Climbing a structure without a safety harness or making a quick weld without a hot-work permit may result in getting the job done more quickly. Conversely, if a tool is dropped from above, the head is protected by a hard hat. The protection from injury is reinforcement that is built in to the act of wearing the hard hat.

Unfortunately, most built in consequences support unsafe acts rather than compliance with safety procedures. Too often, following safety procedures creates delay or discomfort or inconvenience that punishes compliance with established
safety practices. However, following safety procedures reduces the risk of injury, which is also a built-in consequence. Unfortunately, the likelihood of actually avoiding injury by following the safety procedure is usually too improbable to provide reinforcement significant enough to offset the built-in punishing consequences.

**Added consequences:**

Because most of the built-in consequences do not support safe practices, the contrived consequences must be arranged in the workplace. Social consequences are used to provide such support. Social consequences require that another person to present and act immediately following someone’s behavior.

In traditional safety management, the most common added consequence is the threat of punishment. It can take the form of corrective feedback, criticism, nagging, or disciplinary action. Employees follow the safety procedures to escape from or avoid punishment. In contrast, the behavioral approach provides added positive consequences for safe behavior. Added reinforcing consequences include positive attention from management and from peers. Such attention may include simple personal praise as well as suggestions or offers of support. Added reinforcement may be provided in the form of publicized comments that employees are making progress toward a goal or have earned recognition or awards.

Often, safety award programs do not affect behavior on the job because

1. The awards are not significant to the employees or
2. The employees are likely to get the award regardless of safe or unsafe practices on the job.

Some safety programs continue to use awards and forms of recognition that are not meaningful to employees. One of the challenges in designing an effective safety
award program is to be able to select awards that will be meaningful to particular groups or individuals.

**Antecedents:**

An antecedent must present immediately before the behavior of interest. When identifying an antecedent, one should identify the stimulus conditions that prompted the behavior to occur. Safety antecedents include verbal instructions, signs, and the situation that prompted action. Other events not immediately preceding the behavior of interest may include written procedures, safety rules, and safety improvement goals. Because these events do not immediately precede safe behavior, you should consider them part of the person’s history rather than an antecedent.

Often, an individual’s unsafe response to a situation may suggest a problem with the training or instruction that the employee has received some time prior to the behavior of interest. A written procedure may be an antecedent if the employee referred to the procedure immediately before starting the job. Otherwise, the procedure and training on that procedure are part of the employee’s individual learning history.

**Individual Learning History:**

As mentioned, many behavioral events, such as training, role models, and reviewing procedures, occur too far in advance of the behavior to be considered as antecedents yet are important to how a person responds in a given situation. These factors often establish employees’ skill or knowledge of job procedures, both actual on-the-job practices and formal procedures. This behavior environment clarifies all of the functions of the behavioral safety process.
Behavioral Safety - How It Works?

1. **Observation at site:** The Behavior-Based Safety (BBS) process depends on site observation. Site observation includes individual feedback, which is the most effective act in the BBS process. At the end of the observation, the observer would fill in a checklist with the safe and at-risk behaviors he noticed along with the date, time and location of the observations. The worker's name or identification number is not noted in the checklist. The worker's comments and reasons for the at-risk behavior are recorded along with the suggested safe behavior. Recording this interaction is important for a later detailed analysis so feedback can be provided to both workers and management, to help identify the most appropriate corrective actions.

2. **Data gathering and preliminary reports:** Observation checklists are gathered and entered in electronic database. Reports are generated for BBS steering committee to analyze and recommend practical solutions. These reports flag out trends of at-risk behaviors and in which location they are taking place.

3. **Report analysis and recommendation:** The steering committee is made up of high-level influential members and chaired by a Management Representative. The committee has periodical meetings to discuss and analyze BBS report findings. The committee then produces a set of recommendations to tackle workers' behaviors. Such recommendations are sent to top management for necessary approvals. Implementing the recommendations would change the at-risk behaviors at the targeted location. Also the recommendations would eliminate hazards and risks caused by hardware or wrong design.

Behavioral Safety - Why It Works?

What is behavior? Furthermore, why do people behave the way they do? These are two important questions, particularly for those interested in improving safety.
Behavior is simply anything someone does or says. Behavior is any activity that a
dead person cannot do, any muscular or glandular action or reaction (Malott et al.,
2000). While attitudes may be important, the behavioral approach addresses how
people behave on the job. We can only know someone’s attitude by our observations
of how they behave and what they tell us.

If we can change their safety habits, their attitudes about safety will follow,
especially as their colleagues also adopt better safety habits. Once we have a group of
people with similar habits and attitudes about safety, then we begin to talk about
people having a common safety culture, we have to talk about changing people’s
behavior. When we get behavior change, changes in attitude and culture will follow.

Typically Behavior Based Safety Management consists of:

1. Identification of behaviors which could contribute to or have contributed to
   accidents (Agreed by management and employees).

2. A system of ongoing observations (as identified and defined) and feedback
   (intervention), typically peer to peer and employee driven combined with
   positive verbal feedback, information collection and problem solving to
   improve the identified behaviors and the management system that produced
   them.

3. Use of the information to identify corrective actions.

Ultimately, the safety of those working at an industrial facility depends on the
actions of everyone involved. Programs and good intentions by themselves achieve
nothing. What are needed are actions, i.e., changes in behavior. From this philosophy
flows the concept of Behavior Based Safety. Behavioral Based Safety is a process that
reduces unsafe behaviors that can lead to incidents occurring in the workplace. The
process works by reinforcing safe behavior and identifying the causes of unsafe behavior.

**The Six Pillars of Behavioral Safety:**

Any Behavioral Safety process should seek to include the six pillars of behavioral safety, namely:

1. **Awareness:** to increase understanding and reduce resistance
2. **Management:** to lead by example and support the process
3. **Ownership:** to increase participation and develop commitment to continuous improvement
4. **Measurement:** to provide a pro-active means of measuring daily safety performance
5. **Feedback:** to recognize and praise good safety performance and seek understanding of unsafe acts may occur
6. **Analysis:** to objectively identify systemic drivers of unsafe behavior and to allow for targeted recommendations for improvement

A Behavioral Safety process can be introduced in numerous ways but can be categorized into one of three generic types, these are:

- **Top Down:** a management driven process that typically has supervisors measuring behavior and providing one to one feedback and relaying recommendations for improvement to the management team.
- **Bottom Up:** an employee driven process which encourages front line participation in safety. This works on the basis of using peer-to-peer observations which are fed back to a workforce run behavioral safety team who then conduct analysis to develop recommendations for managers to implement.
• **Collective**: a collective approach is where both managers and front line personnel conduct observations. Analysis is then conducted by a behavioral safety team (represented by both managers and front line personnel) to identify the root causes of unsafe practices. Recommendations are then identified and implemented to improve safety performance.

**The Seven principles of BBS:**

1. Fully engage employees to the significance of behavioral safety. Set standards for all employees at all levels for participation in safe behavior.

2. Careless small behaviors lead to the magnitude of accidents and injuries. Targeting specific behaviors and creating a checklist approved by all employees for input creates workplace involvement in safe behaviors.

3. Training employees to lead as safety monitors and active observation and reporting promotes employee engagement and compliance.

4. Historical review of previous injuries and accidents provide data-driven results for decision making for change implementation.

5. Improvement intervention through a systematic observation by employees with regular meetings and brainstorming will incorporate continuity of safety based behavior.

6. Provide evaluations to employees on individual practices and safety behavior.

7. Key leadership commitment is important to provide mentoring and examples for employees to commit to the idea of working in an environment dedicated to safe behavior.

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

Blaming those with the least say; although the supporters of BBS programs say they do not “blame workers” this is what happens if you do not ask ”why “ someone did what they did. By asking “why” we can trace the chain of events and reasons that lead to workers being exposed to risks. When we begin to ask why the behavior occurred we move back along various chains which invariably implicate management. Just as the great majority of accidents can be attributed to unsafe behavior by front line workers, the great majority of accidents are at the same time attributable to actions or inactions by management.

An example will make the point.

A worker descending a set of stairs falls and is injured.

Why did he fall?

He was not using the handrail, as he was required to do by company policy.

Why not?

He was using both hands to carry tools.

Why?

If he used one hand to hold the rail he would have had to make more than one trip up and down the stairs to get his tools to the lower level.

Why didn’t he do this?

Because there was pressure from the supervisor to get the job done quickly.

Production pressures routinely lie behind unsafe actions by workers in this way. Despite all the company rhetoric about putting safety first, the experience of many workers, not all, is that production takes precedence over safety. But we can go
further than this. The failure to use the handrail is not the only reason the worker fell. He fell because the stairs were too steep, far steeper than would be acceptable in the building code for houses, for example.

Why were they so steep?
Because the designers had not considered the hazards of steep stairways.
Why had the designers not considered this hazard?
Because they had not adopted the philosophy of designing out hazards at source.
Why not?
Because the regulator was not enforcing the relevant regulations.
This example could easily be developed further, but this is far enough to demonstrate the truly multi-causal nature of every accident.

**Psychology of Behavioral Safety - Why Focus on Unsafe Behavior?**

Although difficult to control, approximately 80-95 percent of all accidents are triggered by unsafe behaviors, which tend to interact with other negative features (termed Pathogens) inherent in workflow processes or present in the working environment. Often inadvertently introduced by the implementation of strategic plans, every organization has its fair share of accident causing pathogens. These pathogens lie dormant and are relatively harmless, until such time as two or more combine and are triggered by an unsafe behavior to produce an accident.

Behavioral safety approaches identify and focus on particular sets of unsafe behaviors; people tend to be more aware of their potential to cause harm. In turn this gives people the mechanism by which they can control their own safety behavior and that of their colleagues.
A focus upon unsafe behaviors also provides a much better index of ongoing safety performance than accident rates for two reasons: First, accidents are the end result of a causal sequence that is usually triggered by an unsafe behavior; and second, unsafe behaviors can be measured in a meaningful way on a daily basis. Accident rates tend to be used as the primary outcome measure of safety performance simply because they signal that something is wrong within the company's safety management system. Because of the way they are calculated, they also provide a crude benchmark by which companies can compare the effectiveness of their safety management systems across industries. Unfortunately, this tends to result in management attention and resources being focused on safety only when accident rates rise dramatically. When the immediate problems appear to be resolved, management attention and resources are diverted to other pressing organisational issues until such time as the accident rate rises once again, and so on.

Consequently, rather than being proactive, those who focus almost exclusively on accident rates as a measure of safety performance tend to be reactive in their approach to safety. Conversely, a regular focus on actual safety behavior is proactive as it allows other safety-related issues in the accident causal chain to be identified and dealt with before an incident occurs. Because 'safety behavior' is the unit of measurement, a collaborative, problem-solving approach involving both management and employees is adopted to identify critical sets of safe and unsafe behaviors and used to develop 'Safety Behavior Inventories'. These inventories provide the basis for personnel to systematically monitor and observe their colleague's ongoing safety behavior, on a daily basis, in an enabling atmosphere. Based on the first few weeks' results of the peer monitoring, the workforce set their own 'safety improvement' targets. Information feedback is then provided on a periodic basis to allow the
workgroups to track their progress in reaching the safety improvement targets. Companies adopting this approach are usually rewarded by fewer accidents, consistent safety management, better communications and greater involvement in team working, all of which can exert beneficial effects on production related issues and bottom line profits.

**Why Do People Behave Unsafely?**

People often behave unsafely because they have never been hurt before while doing their job in an unsafe way: 'I've always done the job this way' being a familiar comment. This may well be true, but the potential for an accident is never far away as illustrated by various accident triangles. Heinrich's triangle, for example, suggests that for every 330 unsafe acts, 29 will result in minor injuries and in a major or lost time incident. Over an extended period of time, therefore, the lack of any injuries for those who are consistently unsafe is actually reinforcing the very behaviors that in all probability will eventually lead them to be seriously injured. The principle being illustrated here is that the consequences of behaving unsafely will nearly always determine future unsafe behavior, simply because reinforced behavior tends to be repeated.

Although it is not unusual to find the continuation of unsafe behaviors being supported by more than one reinforcer, some will exert stronger effects on peoples' behavior than others. This is particularly the case for reinforcers that are soon, certain and positive. Employees will find it hard to follow certain safety rules and procedures if they are consistently (certain) rewarded by an immediate (soon) timesaving that achieves extra production (positive) by behaving unsafely.

In some instances, the actual workflow process also reinforces peoples' unsafe behavior. Unsafe behavior is sometimes further reinforced by line managers turning a
blind-eye, or actively encouraging employees to take short-cuts for the sake of production. Unfortunately, this has negative effects that are not always immediately apparent: First, employees learn that unsafe behavior pays; Second, it wastes resources as the very behaviors that companies spend a lot of time, money and effort trying to eradicate are reinforced; and third, by condoning unsafe behavior, line managers are transmitting conflicting messages that undermines employee's confidence in the whole of management's commitment to safety.

**How Do We Stop People Behaving Un SAFELY? Why not engineer out hazards?**

Eliminating hazards by engineering them out or introducing physical controls can be an effective way of limiting the potential for unsafe behavior. While successful in many instances, it does not always work, simply because people have the capacity to behave unsafely and override any engineering controls. Although engineering solutions have a strong place in safety management, they cannot be relied upon.

**How Do We Stop People Behaving Un SAFELY? Why not change people’s attitudes?**

Comments on accident reports often say 'so and so should take more care. With better attitudes and safety awareness, this accident would not have happened'. Where this occurs, attempts to change unsafe behavior usually hinge upon the belief that attitudes determine behavior. Remedies tend to rely on publicity campaigns and safety training to bring about changes in people’s attitudes, which in turn is expected to change people’s behavior. Although positive safety attitudes are important and very desirable, the link from attitude change to behavior change is very weak. This can be explained by the fact that a single attitude comprises of at least three components: thinking (cognitive), feeling (emotional), and the intention to act on it (commitment).
Additionally, a single attitude is usually linked with a set of other related attitudes. Logic dictates, therefore, that attempts at attitude change must target each individual component of each individual attitude, for each single employee. In practical terms this is nigh on impossible.

Fortunately, the link from behavior change to attitude change is much stronger. If people consciously change their behavior, they also tend to re-adjust their associated attitudes and belief systems to fit the new behavior. This occurs because people try to reduce any tension caused by a mismatch between their behavior and attitudes. Behavior change, therefore, tends to lead to new belief and attitude systems that buttress the new set of behaviors (Cooper & Phillips, 2004).

An additional factor that enhances attitude change by focusing on behavior is the positive reinforcement brought about by peer pressure. Psychologists have known for some time that group membership demands conformity to the groups' behavioral and attitudinal 'norms'. If a workgroup adopts the 'norm' that 'thinking and behaving safely' is best for all concerned, the group as a whole will tend to apply social 'sanctions' to the individual who deviates from this norm and behaves unsafely. If people wish to remain a part of the social fabric of the workgroup, they soon revert back to the safety norm and behave safely. Importantly, this illustrates the point that workgroups will adopt a collective definition of those behaviors, work practices or tasks that are considered to be risky (Cooper, 1997). This fact lies at the very heart of Behavioral Safety, simply because its essence is to help workgroups positively redefine their own safety related norms.
How Do We Stop People Behaving Unsafely? Why not punish people until they behave safely?

Some approaches to safety management are heavily reliant on the use of authority, fear and punishment (i.e. if you do not behave in a safe manner at work you could be reprimanded, fined or even dismissed). These approaches emphasize the use of discipline and punishment to discourage unsafe behavior, while safe behavior is largely ignored. This often results in the opposite of that intended (e.g. accident or near-miss incidents are not reported for fear of sanctions). Although the judicious use of discipline and punishment can have the intended effects, more often than not it doesn't. The reason for this is quite simple: The effectiveness of punishment is dependent upon its consistency. It only works if is given immediately, and every single time an unsafe behavior occurs. It is self-evident that punishing someone every time they behave unsafely is a very difficult thing to do, simply because they will not always be seen to do so by those in authority. This means those soon, certain and positive reinforces gained from behaving unsafely will tend to outweigh any uncertain, late, negative reinforces received from inconsistent punishment.

Thus, although punishing those who deliberately put other people at risk is a valid option, punishing people for everyday infractions of safety rules (e.g. not wearing a safety helmet) is a very difficult thing to do consistently and does not address the underlying problems (e.g. the safety helmet is uncomfortable or gets in the way of doing the job safely).

In essence, therefore, punishment should be reserved:

1) To those who deliberately put other people at risk; and

2) Only after the organization has done everything in its power to create the safest working environment, provide the most comfortable protective
equipment and a persons' unsafe behavior is a consistent, willful act aimed at flouting authority.

**How can we stop unsafe behavior? Why not praise people for behaving safely?**

So how can line management ensure that the reinforcers for working safely outweigh those for working unsafely? It is a fact that most people tend to respond more to praise and social approval than any other factor. Some people may not use PPE or follow a procedure at work because of their colleague’s disapproval: e.g. it goes against the workgroup's macho image.

It makes sense, therefore, to make use of this phenomenon and praise people for behaving safely (something very rarely done) to bring about the required changes (Incentive and reward schemes reflect this principle). Crucially, the effect of this is to explicitly link the desired safe behavior to the praise received. Once the required behavior pattern starts to become established, the timing and frequency of the praise and social approval can be reduced over a period of time: i.e. it doesn't need to be given immediately and every single time that someone is seen to be behaving safely. Additional benefits include the strengthening of a positive safety culture due to increased trust and confidence between line managers and the workforce.

Thus, positive praise coupled with constructive feedback, tends to eliminate unsafe behavior.

**What next?**

Focusing on people's safety behavior will bring about the desired changes and that attitude changes follow behavioral changes. Social approval and encouragement can bring about positive changes in safety 'norms'. The workforce is best placed to redefine their safety 'norms, as they control their own behavior. It follows, therefore,
that any safety improvement initiative which relies almost exclusively on line management's efforts, is less likely to be as successful as one that empowers and enables the workforce itself.

Accordingly, behavioral safety approaches are very much driven and shaped by the workforce, in conjunction with line management. In this way, the workforce is given responsibility and authority for identifying, defining and monitoring their own safe and unsafe behaviors, as well as setting their own 'safety improvement' targets. As a result, workgroups are able to redefine their own safety related 'norms' in an enabling atmosphere. Line management facilitate this process by providing the necessary resources and support to encourage 'employee ownership of safety', while also stressing that no individual will be identified or disciplined as a result of the monitoring. In this way a 'blame free' pro-active safety culture is created that is so vital for long-term success.

**Does it work?**

Because the behavioral approach differs considerably from traditional ways of improving safety, a question commonly asked is 'Do these ideas work in practice?' Overwhelmingly, the answer is yes! Researchers from around the globe have consistently reported positive changes in both safety behavior and accident rates, regardless of the industrial sector or company size. Positive results have been obtained over the last decade in many sectors in construction, mining, engineering, bakeries, food processing, manufacturing, oil & gas, shipbuilding and others.

**Typical results include:**

1. 40-75 percent reductions in accident rates and accident costs year on year
2. 20-30 percent improvements in safety behavior year on year
3. Greater workforce involvement in safety
4. Better communications between management and the workforce
5. Ongoing improvements to Safety Management Systems
6. Improved Safety Climates
7. Greater 'ownership' of safety by the workforce
8. More positive attitudes towards safety

Thus Behavioral Safety has a lot to offer to the world of work, although it must be stressed that it is not a panacea to cure all ills.

The purpose of a Behavioral safety process is to reduce incidents triggered by unsafe or at-risk behaviors. To achieve this, specific behavioral problems are identified by focusing on incidents that result from the interaction between people and their working environment. This could include the presence, quality and functioning of various management systems (safety and no safety), the quality of leadership, resources available (financial and nonfinancial) and the overall safety culture (Cooper, 2000). Once these problems are identified, attempts are made to discover which antecedents (e.g., unavailable equipment) are driving at-risk behavior (e.g., using improvised tools), and which consequences (e.g., saves time) are reinforcing or maintaining that behavior so that appropriate corrective actions can be taken.

Executing the change strategy usually involves addressing the antecedents to remove barriers while the associated safety behaviors are placed on checklists so workers can conduct observations of ongoing behavior. Observation results are used to facilitate corrective feedback (i.e., a consequence) to those observed and to track overall progress.

BBS emphasizes that employees need to take ownership of their safe and unsafe behaviors. If they behave unsafely, they are not to be punished but, rather, told
repeatedly to correct such behavior. When they behave safely, they are encouraged (Kaila, 2010).

The secret of the success of BBS is that it puts safety control into the hands of each employee, enabling him or her to feel empowered and responsible (Kaila, 2010). BBS makes workers aware of their unsafe and safe behaviors and helps to maintain an accounting of these behaviors on a monthly basis (Kaila, 2010).

**Research and experience indicate that:**

1. 90 percent or more of the accidents are due to unsafe human acts or behaviors.
2. 50 percent of the unsafe behaviors are identified or noticeable at any plant any given point of time.
3. 25 percent-30 percent of safety awareness is lacking among employees which gets reflected in their unsafe behaviors.
4. So we need to focus our efforts on unsafe and safe behaviors in safety.
5. BBS secret of success is that safety control is in the hands of each and every employee, they feel empowered and responsible.

BBS training is found to facilitate a growing number of safe behaviors, helps reduce the number of unsafe behaviors, and assists in decreasing the number of unsafe conditions in the organization (Kaila, 2010). Prevention of near misses, accidents, injuries is relative to correcting series of Unsafe Behaviors on part of every employee at work. With BBS Approach, we can not only bring down accidents, we can also prevent them.

**BBSM in Indian Industries:**

With the inclusion of behavior aspects in the OHSAS 18001:2007 as safety compliances, Indian organizations have taken BBS seriously in its training applications. In India, industrial groups such as ESSAR, ITC, Reliance, CFCL,
Colortex, Sandoz, ultratech, GAIL, ICC, NPC, Jindal, Suzlon, BHEL, GE, ONGC, M&M and Tata Motors have implemented BBS in different ways. BBS Workshops have been conducted for ITC, ESSAR, Reliance Industries, ColourTex, Reliance Energy, Ultratech, GAIL, Sandoz, Chambal Fertilizers, RKHS, TATA Motors, JINDAL, and NPC for various locations in INDIA.

Many Indian companies viz. Tata Chemicals Limited (TCL), Mithapur, Tata Steel Ltd (construction), Hindustan Uniliver Ltd and Dr. Reddy’s Laboratory etc. have gone for implementation of BBS in their organization.

The result on implementation of BBS at Tata Steel Ltd (construction) is as given in Figure (4.3).

**Figure 4.3 Result of BBS at Tata Steel Ltd (construction)**

![Lost Time Injury Frequency Rate Graph](image)

The improvement on implementation of BBS at Tata Chemicals Limited (TCL), Mithapur is given below in Figure (4.4).
Figure 4.4 Result of BBS at Tata Chemicals Ltd. (TCL)

The impact of implementation of BBS is given below in Figure (4.5), in a Case Study of GLAXOSMITHKLINE, Rajahmundry, Andhra Pradesh, India:

Figure 4.5 (a) Result of BBS at GLAXOSMITHKLINE

(b)
The safety statistics about fatality and lost time Injury on implementation of BBS is given below in Figure (4.6) in a Case Study of Saint-Gobain a leading glass manufacturing company in India:

**Figure 4.6 Result of BBS at Saint-Gobain**

The concept and process of BBS can bring for safety professionals and everyone who are concerned about correcting unsafe behaviors for reduction of accidents and promoting safe behaviors for developing injury free culture in their organizations.
References:


