

# BEHAVIOURAL INTERVENTION IN SAFETY MANAGEMENT OF INDIAN CORPORATES

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**Abstract** *This research paper (based on case studies of 10 organizations) depicts the success cases of behavioural safety cultural transformation in India and identifies how organisations are managing their manpower's at-risk behaviours at worksites. An objective behind this work is to bring together the field-tested knowledge in the implementation of behavioural safety across sites in India. These cases from diverse organisations across industrial sectors such as oil, gas, petroleum, chemicals, automobile, construction, power, and aluminium across Indian locations, revealed the best practices, experiences and challenges during their BBS implementation journey.*

**Keywords:** *Implementation, Behavioural Safety, Training, Industry, Safety Culture*

## INTRODUCTION

Most of these safety management systems have aimed at controlling unsafe conditions, whereas almost 100% of accidents are triggered by unsafe acts or behaviours (Kaila, 2014; Marsh et al., 1998; Algera, 1990; Pettinger, 2001). Even unsafe conditions are nothing but the result of unsafe behaviours. It is important for workers and safety personnel to prevent and minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemical substances, which result in toxic or explosive hazards (Dikshith, 2013). 'Safety First' is only a slogan in Indian industry; it does not appear in practice. Organisations are challenged every day to produce a safety culture characterized by a continual drive toward the goal of maximum attainable safety, one in which errors and incidents are not only reported, but are evaluated transparently (Njurka Rivero, Beth Zemetra, & Cynde Herman, 2014).

Globally, achieving zero accident at the workplace remains one of the major social and economic areas of concern. Every day, 6,300 people die as a result of occupational accidents or work-related diseases - more than 2.3 million deaths per year (International Labour Organization, 2013). The concept of zero-accident (JICOSH, 2013) refers to the total participation campaign into the organisation which sounds attractive in a theoretical sense. But practically, zero-accident seems a far-fetched promise of business managements as human safety would not get an absolute preference over profits from production. Safety mostly suffers as an attachment to the contractor, hence the financial responsibility should be of the contractor but safety responsibility must be held with the company (Chakraborty, 2016).

All renowned safety awards and certifications to organisations instituted by the reputed institutions in the country are questionable when on an average, about 30% at-risk behaviours are being practiced by the people at workplaces. According to a head of the chemical plants, "sometimes we all agree to about 5% tolerance of safety deviations, which gradually turns out to be much higher in reality, so unless we all behaviourally and truly lead to practice zero tolerance towards safety violations, we can't ensure safety culture and accidents would continue to happen as its happening" (Forum of Behavioural Safety, 2017).

Across the globe, it is now a well-established fact that unsafe behaviour is the root cause of almost all accidents. The Behaviour-Based Safety (BBS) as an application of Behavioural Science has been widely implemented by most of the progressive industrial organisations.

Back to basics of the accident causation philosophy, most of the industrial accidents are attributable to unsafe acts or unsafe conditions or both. Taking a closer look at the root causes of accidents, one can easily observe human behaviour is at the centre stage of any undesirable working condition that ultimately leads to an accident. Numerous studies in this area have revealed that most of these accidents are attributed to casual and careless at-risk behaviour of employees in the organisation. Industrial organisations with well-established organisational culture, despite having installed integrated safety management systems and the best compliance practices to remove all accidents, have realized that some incidents and accidents do appear to stubbornly resist all these efforts to remove them.

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BBS aims to improve the safety culture leading to improved safety performance and increased productivity of an organization, is a useful tool that involves mechanisms, such as awareness and assessment of existing state of safety culture, observation of employee behaviour that has a direct bearing on the social, economic, cultural and legal aspects - their habits, beliefs, convictions, etc., interaction with the employees on the observation feedback and soliciting their voluntary involvement, and finally, recognizing and celebrating achievements and success (OHSAS 18001, 2007).

BBS is drawn from the concepts of repeated exposure to employees for safe behaviours stimuli from colleagues at workplace which act as a strong group influence, and the company is geared up to achieve interdependent safety culture involving everyone. The ten basics of BBS for Converting Safety Compliance to Safety Culture are (Kaila, 2010, 2011):

- BBS is uncomplicating safety implementation.
- BBS is dehierchizing safety implementation.
- BBS is involving top to bottom.
- BBS is spot correction of at-risk behaviour.
- BBS is creating interdependent safety culture.
- BBS is achieving zero unsafe behaviour.
- BBS is personalizing correction of at-risk behaviour.
- BBS is accounting safe and unsafe behaviour each month.
- BBS is continuous journey.

- Finally, BBS is saving human life and business both.

The following 10 case studies drawn from diverse organisations reflect on these basic 10 tenets of BBS described above.

### RESEARCH OBJECTIVES

The major rationale of this study is to bring together the field-tested knowledge in the implementation of behavioural safety across sites for building safer India. More specifically, presentation of these cases of organisations which have implemented BBS would guide and assist the corporates that are struggling to achieve zero incidents and interdependent safety culture for saving both lives and business as a result of accidents.

### METHODOLOGY

This paper is an interdisciplinary intervention of Behavioural Science, management and safety which is part of an ongoing national longitudinal survey in India. Ten case studies were collected from diverse organisations on the best experiences and challenges during the BBS implementation journey in their respective units belonging to public and private industrial sectors such as gas, petroleum, oil, chemicals, automobile, construction, power and aluminium across Indian locations. There are more than 100 corporates that have implemented BBS in India. These 10 corporate cases were selected as representative based on the 20-point criteria as below:

<b>Behaviour Safety Compliance Index Calculation for your Plant/Site BBS Implementation Actions Taken in terms of:</b>	<b>Assign 5 Marks for each action of BBS Implementation</b>
1. Monthly Circular of CEO / Plant Head to all employees for BBS project implementation; 2. Formation of BBS Teams for every plant/site and regular monthly meeting of BBS Steering Team; 3. Inauguration of BBS programme by top /senior management; 4. Announcing BBS inaugural ceremony on company portal as corporate initiative;	
5. Conducting BBS observers' practical training for all employees/workmen at plant /site 6. Displaying BBS banners and posters across all work and office areas. 7. Ensuring strong leadership drive by all HODs for BBS activities. 8. Fixing BBS training budget;	
9. Developing IT enabled BBS observation checklist; 10. Allocation of BBS observers to each shift/area, and Ensuring daily observation rounds by trained observers; 11. Issuing BBS sticker for observers' identity to all trained observers;	
12. Compliance with proceedings of Steering Team (ST) meetings; 13. Linking BBS with PMS; EHS Policy and Annual Index; 14. Conducting quarterly internal BBS review across departments/sites	
15. BBS Monthly Score Board to display behavioural trends across plant; 16. Comparing safety statistics every quarter before /after launch of BBS; 17. Developing Employee road safety behaviour correction programme	
18. Conducting BBS awareness for employees families 19. Including BBS Rules in vendor's terms and conditions; 20. Rewarding monthly best observers based on a maximum number of observations.	

Important Note: Calculate your Total percentage of BBS Compliance Score out of 100 marks, i.e. equal Marks for each action (20x5=100).

## THE CASE STUDY RESULTS

Following are the results of the qualitative case studies on the Best Experiences, Practices, and Challenges of BBS implementation at ten reputed Organizations in India (Forum of Behavioural Safety, 2018).

The results of these 10 organizations are as below:

1. BBS at a Gas plants.
2. A step towards BBS in a Power, Operation, and Maintenance of EHV Substations and Transmission Lines.
3. SACHET, the BBS Intervention at a Petroleum Corporation Journey since 2015.
4. BBS – A Way of Life at an Oil Corporation.
5. BBS Implementation at Petroleum Process Plants.
6. Behavioural-based safety Implementation Experience, Approach, and Benefits in Construction Projects.
7. Spreading of BBS Awareness at an Automobile company.
8. BBS Journey at Aluminium Plants.
9. BBS Implementation at Construction Chemical Units.
10. Benefits of BBS in an Agro-chemical company.

Every organisation has to essentially customize BBS implementation as per its cultural context which is reflected in cases below.

### Behaviour-Based Safety (BBS) at a Gas Plants

Zero accidents or total safety culture means a total participation campaign in an organisation. BBS is closely linked to company culture and values and, most importantly, when it works, it is an excellent tool to improve safety performance in the workplace. In developing this guide, we have been privileged to have worked with a group of people from companies that are committed to the principles of BBS. We hope that many more employers and employees become interested in the implementation of BBS. This is another useful and practical tool for improving safety and health performance.

It was felt that to build strong Safety Culture one needs to imbibe safety in all activities of the organisation right from design stage to construction, commissioning, operation and maintenance. It is with this deep desire to eliminate incidences; the company embarked upon a journey of BBS to address the human element and improvise on the existing processes.

Given above, BBS journey was started in November 2013 and accordingly BBS was rolled out successfully across all gas installations in the year 2015. Sustaining BBS drive implementation is a big challenge (GAIL India, 2014). Understanding this Challenge, following actions have been taken to drive/sustain BBS at all sites in India:

- Development of web-based BBS Centralized Portal to facilitate the observation feedback process and smooth implementation of BBS across all installations.
- A steering committee headed by Office in charges and functional committees headed by respective HODs has been constituted to drive further BBS at their respective sites.
- Lead Trainers developed at sites for further transformation of the safety culture at their respective sites.
- Effective Implementation of BBS at all locations and for all employees working at site through awareness workshops, training, and sensitization.
- BBS promotional schemes to encourage employees and contract workers.
- Also with Site-specific awareness programme, Regional Safety Leadership Cum BBS Workshops are being organised on quarterly to penetrate BBS further.

Corporate Steering Committee and Task Force were constituted at Corporate Level to oversee the BBS implementation. The site steering committee, functional committees, and lead trainers, were developed to further drive BBS at respective sites. Till date, safe behaviours have gradually increased up to 90% from base data of 65% leading to the last two incident-free years. Sustaining high levels of “BBS” implementation is a challenge, which we face today.

### A Step Towards Behaviour-Based (BBS) Safety in a Power, Operation and Maintenance of EHV Substations and Transmission Lines

Operation and Maintenance activities of EHV Substations and transmission Lines are very challenging especially in the remote area regarding workers safety. The operations of these assets are widely spread across India in different geographical boundaries. In case of any emergency shutdown, tripping of lines, a gang of workers has to mobilize immediately with appropriate tools and equipment in order to restore supply in minimum possible time.

For quick restoration of supply and incident prevention, we initiated BBS in which human factors are taken into account

in Safety Management System at present day, particularly in our industry where operations are dominated by human activities.

Accidents occurring in such industries are attributed to unsafe human behaviour or human error. Various approaches practiced as SOP based operation, training, mock drill, measurement, and monitoring have had reasonable success in reducing unsafe behaviour at workplace.

When any incident investigations are triggered, it is found that many of the systemic causal factors are due to human actions. The common cause of failure is the casual approach on unsafe behaviour and poorly integrated BBS system with existing Safety Management System. This happens due to the lack of involvement of employees in promoting safety culture. In order to reinforce the involvement of employees and subcontractors workforce BBS acts as a tool to nurture total safety culture in our operation.

### How is BBS Significant for Our Organisation?

We initiated BBS philosophy as a tool to achieve the target of Zero Accident. As we know “A single risk might mean an accident from which we might never recover.” With the philosophy of BBS, we initiated-

- Active participation from all including subcontractors workforce, business head, departmental heads, front line managers, engineers, supervisors, and workers.
- Empowered and make every one responsible for their own and team safety (Geller, 2004).
- Observation and counseling with due respect as a part of organisation core value.
- Team leader performance evaluation based on individual performance concerning Process Implementation.
- Adherence of Transparency in EHS communication
- Observations till reaches safe behaviours and learns the concept of self-observation and observing others for safe performance.

The essence of BBS is “safety control” in the hand of each employee; they feel empowered and responsible.

The journey that we started on creating awareness on BBS philosophy has yielded results in line with our expectation that employees at Sterlite Power can understand safe/unsafe risk behaviours and can create a safe environment during work. It has improved communication among people and also the attitude of workmen towards safety.

### SACHET, the BBS Intervention at a Petroleum Corporation Journey Since 2015

Need Analysis: The Company has four major SBUs - Aviation, Direct Sales, LPG and Retail, and two supporting SBUs – ODandE (Operations, Distribution, and Engineering) and PandP (Projects and Pipelines). Our infrastructure includes LPG Plants, Depots, Terminals, Aviation service facilities, Retail ROs. Each SBU has its own business goals regarding production / Sales/ segment wise customer focus/ developing robust infrastructure etc. However, one goal that is common for all the SBUs is to create SAFETY as a culture in professional and personal spheres of life.

The Principle of “Safety First” is one of the major focus areas of all the SBUs in Vision 2020. We have full-fledged systems, structures and processes to ensure 100% compliance to safety standards. We had rolled out an intervention christened as “Sankalp” for O, D and E BU and “Shapath” for LPG BU that aims at enhancing technical safety aptitude of employees. While Shapath and Sankalp are focused intervention for technical competency enhancement, need was felt to design an intervention that focused on Behaviours.

It is known that behaviours drive actions, and attitude drives behaviours. Thus a need was felt to implement an intervention that could develop Safety attitude amongst our employees. One of the themes of two major leadership interventions (Project Shrestha for LPG SBU, and Project Daksh for O, D & E) rolled out during 2015-16 and 16-17 was “BBS.” The target audience of these initiatives were LPG Plant Heads / Depot/ Terminal Heads. The pedagogy included implementation of two projects, one in the area of operational excellence and the other on BBS. The project on BBS was reviewed every quarter by BBS experts and Apex Committee.

### Approach for Implementation

Although, location heads were spearheading the BBS project, the onus for successful implementation was on the Safety officer and every member of the location including contract labour and security guard. A BBS expert was engaged for designing the intervention and training Safety Officers and Location Heads. The Safety officer, in turn, trained other members of the location.

This intervention on BBS has been christened as “SACHET.” SACHET aims at enabling a safe workplace for all employees by creating a culture of Safety. Culture is related to attitude of an individual which is internal whereas behaviour is external. SACHET aims to strengthen the attitude of every

individual (workers/employees) and thereby create a safe behaviour which will lead to “Zero Tolerance” towards unsafe acts at workplace.

### Philosophy of SACHET: a BBS Project Name

<b>S</b> AFETY	–	<b>T</b> HROUGH <b>B</b> EHAVIOUR
<b>A</b> NTICIPATE	–	<b>R</b> ISKS
<b>C</b> ORRECT	–	<b>U</b> NSAFE <b>B</b> EHAVIOURS
<b>H</b> ABITUATE	–	<b>B</b> Y <b>P</b> OSITIVE <b>R</b> EINFORCEMENT
<b>E</b> LIMINATE	–	<b>A</b> T- <b>R</b> ISK <b>B</b> EHAVIOURS
<b>T</b> ARGET	–	<b>Z</b> ERO <b>A</b> CCIDENT

The following have been considered as pre-requisite to implementing SACHET successfully

- Strong Management Commitment.
- Respectful, trustful and Open Communication.
- Open, Feedback-rich culture.
- Increased Employee Engagement.
- Emphasis on Safe and Unsafe behaviours rather than on lagging indicators such as safety statistics.
- Awareness amongst all.

#### Intervention Design

- An annual calendar was designed with specific activities day wise.
- HQO steering committee was appointed.
- Plant wise steering committee was appointed.
- Observers were appointed and trained on what to observe and how to give feedback.
- Posters were put up for creating awareness.
- On day 1 of the rollout, all the staff took the Safety Pledge and underwent a half day workshop that helped in creating awareness amongst one and all.
- Observers recorded data on safe behaviours, at-risk behaviours and corrected behaviours, and improvement in the same. This data is presented on a monthly basis to the Apex committee as well as to the entire staff of the Plant.
- Members of the location are awarded for promoting safe behaviours.

Results revealed that in the first three months, the at-risk behaviours reduced by 40%. BBS Index enhanced from 72% to 83% in a span of 1 year.

### Learnings

- BBS is an ongoing effort, not a onetime provision. The intervention is still in progress.
- The focus should be on positive reinforcement and constructive feedback mechanisms rather than punishment.
- To understand progress and improvement, data to be supported by Metrics.
- Emphasis should be on increasing safe behaviours rather than on reducing the number of accidents.

### Behaviour-Based Safety (BBS) – A Way of Life at an Oil Corporation

Wikipedia defines BBS as the “application of the science of behaviour change to real-world safety problems” or “A process that creates a safety partnership between management and employees that continually focuses people’s attentions and actions on theirs, and others, daily safety behavior.” At its very core, BBS is based on a larger scientific field called organisational behaviour management (Mingzong Zhang, Dongping Fang, 2013).

BBS is the safety culture of the organisation that is by the people, of the people, and for the people. It focuses on what people do, and why they do – BBS then scientifically analyses the reason of WHY and then applies a research-supported intervention strategy to improve what people do”. Linking it to the Indian mindset – it is a mother-child relationship between different departments and different levels of the hierarchy of the organisation.

### Approach to BBS: How to Go about It

For improving the safety culture of the organisation since industrial revolution, various approaches have been tried to enhance the safety culture of the organisation. These approaches had reasonable success in reducing unsafe behaviours in the workplace. Some of the approaches involve penalties; others involve surveillance; others involve guidance, codes, and procedures to follow; others still are supportive and training-oriented. Some initiatives come from the employer, from the social partner organisations, from state regulatory bodies, and some worthwhile initiatives come from individual employees’ insights, ideas, training and development activities around health and safety. However, the methods being traditionally employed have had comparatively less success as the approach is mostly by FEAR.

BBS offers a paradigm shift in the existing approach to safety by being more people-centric. It has been realized by the industry that almost 90% of accidents are caused due to unsafe behaviour. To tackle this, a scientific approach to improving the behaviour induced unsafe acts is required. BBS offers a solution to this.

### BBS: Mr. 360 degree

A successful BBS programme includes ALL employees, from the Head Office, Regional Office, State Office, Location-in-charge, Safety officer and front line workers including daily wage, salary, union employees, contractors, and sub-contractors. To achieve changes in behaviour, a change in policy, procedures and systems is also warranted. These changes cannot be done without buy-in and support from all involved in making those decisions.

A BBS approach promotes interventions that are people-focused and often incorporate one-to-one or group observations of employees performing routine work tasks, setting goals carefully and giving timely feedback on safety-related behaviour, coaching and mentoring. The initiatives have a proactive focus, encouraging individuals and their work groups to consider the potential for incident involvement, (accidents) and to assess their behaviour as safe or unsafe always, no matter what.

### The Technique of BBS: Positive Reinforcement

One of the techniques in BBS is ‘reinforcement.’ Reinforcement occurs when a consequence that follows a behaviour makes it more likely that the behaviour will occur again in the future. Therefore, a reinforcing consequence is one that causes the behaviour to occur more frequently. For, e.g. to encourage safe behaviour – rewards are given. This prompts good workers to not only follow safety in their lifestyle, but they then become brand-ambassadors of safety. They also encourage their colleagues to follow a safer path.

The existing trend in improving safety culture is typically carried out under negative reinforcement conditions (i.e., because we ‘have to’). This results in adequate performance; employees do enough to satisfy a compliance standard, but they do not go that extra mile. On changing this trend via BBS, we have introduced a culture of working under positive reinforcement. Such conditions have resulted in employees going above and beyond their job duties, and employees taking personal account for safety. If employees work under positive reinforcement conditions (i.e., because they ‘want to’), then they will be:

- 1) working towards something good (as opposed to avoiding a negative),
- 2) motivated to work, which might result in
- 3) creative thinking, employing new strategies, successful decision making, seeking more responsibility.

Research into motivation and behaviour change tells us that setting goals leads to better results and that ‘what gets measured gets done.’ A person who is encouraged to get sixty letters typed in a day is far more likely to succeed than a person who is told to ‘do their best.’ Likewise, if there is any room for ambiguous interpretation, it is crucial to elaborate, e.g., rather than saying ‘Overalls should be worn correctly,’ say, ‘Overalls should be done up to the neck with sleeves outside gauntlet gloves.’ It is better to be specific than vague, to aim higher than lower and to get participation and engagement from the start. Safety should always be at the core of goal setting: saying ‘Do it by Friday but do it safely’ rather than ‘Do it safely but do it by Friday’ emphasizes safety as the most important factor, not the deadline.

### The case of a Bottling Plant (What gets Measured gets Improved)

Let us look at the graph of a bottling plant showing a trend of the safety culture at Bikaner BP throughout one year. Safety culture has penetrated among the common masses. The workers are now more inclined to complying with the safety norms. Not only this, but any new worker entering the system also inculcates this safety culture and safety becomes a part of his lifestyle. During interview with people, it was found that even BBS implementers have started wearing seat belts while driving their way home. People have started wearing helmets on motor-cycles. BBS has transformed the lives among all walks of life.

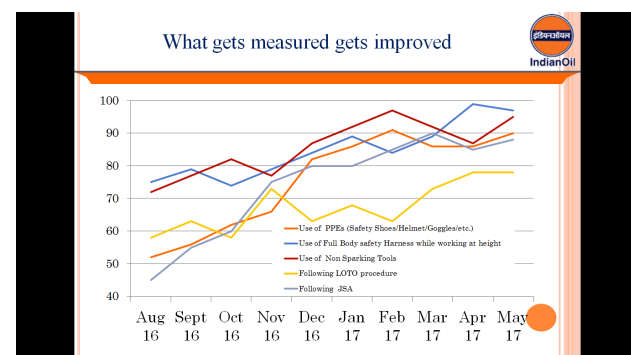


Fig. 1

### Rewards at a Bottling Plant

When we distribute rewards to our workers during safety week celebrations, new year celebrations, Indian Oil celebrations; we have included the following lines:

Words of encouragement have had a positive effect on the psychology of the workers performing the task.

Overall, we have had a good experience in enhancing the safety culture of our plant. It has been a learning and rewarding experience personally as well.



Fig. 2

The company has successfully realized the virtues of as depicted in the picture below:

### **BBS Implementation at Petroleum Process Plants at ONGC, Goa**

The rationale behind the move was that the Fatal Accident Index of the company was way above the international benchmark provided by Oil and Gas Producers (OGP). Although, most of our Assets/Basins/Plants have come a long way in safety implementation, and significant improvement has also been achieved over the past few years essentially due to strong management commitment and top driven thrust on safety performance, however, it was felt necessary to move a long way from the earlier stages of providing engineering solutions, redesigning and machine guarding, to the present risk-based management system approach and continuous improvement. It has then become apparent that the focus should now shift on people because the vast majority of incidents occur due to unsafe behaviour. Studies suggest that 90% of all disabling accidents are the result of employee behaviours and to achieve the coveted goal of 'zero accident', a 'Culture Change' is a must, and that can only occur when each employee takes his safety responsibility and performs functions safely. It is thus prudent that we should now adopt BBS as a tool for recognizing, measuring and monitoring unsafe behaviour or what is called 'At-Risk Behaviour' in our workplaces in order to bring cultural change in the way we do things in our day-to-day operations. BBS is the safety performance management by workforce through behaviour observations and root cause analysis.

### **BBS Training**

The Institute of Petroleum Safety, Health and Environment Management (IPSHEM), a premier institute set up by

ONGC way back in 1989 to promote awareness and impart technical trainings in the field of Occupational Health, Safety and Fire and Environment (HSE), took the initiative with a mandate from corporate level to conduct specialised training programme on BBS to bring awareness among the employees and the contract workers. Accordingly, a 3-day training module was prepared, and training to employees conducted both in the institute premises as well as at the work centers. Recently concluded programmes are at Ankleshwar Asset in Gujarat and Uran Plant in Maharashtra. The pre and post-test undertaken by the participants clearly show the visible improvement in the knowledge gained on the subject. They have been subjected through various BBS observation techniques including STOP card system with practical demonstration and role plays. Behavioural observation films also saw positive effects on the participant's subsequent behaviour. Besides, the feedback was encouraging, and each participants now can take up BBS field observations at their respective work centers to continue the process of implementation.

### **BBS Observation in Field**

After the necessary awareness and practical training, BBS observers from the Institute visited 3 installations in Ankleshwar Asset, Gujarat and carried out BBS observation while various tasks were being performed with the help of a customized checklist prepared beforehand based on the 10 Safety Rules issued by ONGC Corporate HSE, where in behavioural issues are observed to see the level of adherence to these basic safety rules. Some of the observations concerning the ten safety Rules have been analyzed to highlight the % safe Behaviour and the Appreciative and Constructive Feedbacks provided to the persons observed. Appreciative Feedbacks on –the –spot were given to the observees where safe behaviour is observed, and Constructive (corrective) Feedbacks were provided to the observees where At-Risk behaviours were noticed. Data collected in the field surveys are analysed and progress of implementation is being monitored.

### **Behavioural-Based Safety Implementation Experience, Approach, and Benefits in Construction Projects**

Tata Projects conducted leadership engagement workshop across the sites to facilitate the design of a Safety observation programme and set the platform for the launch of the behavioural-based safety initiative. All facilities across the region initiated a Safety Zoning to engage a cross-functional Team in a Safety Observation programme to commit to a weekly Gemba walkthrough looking out for Safe/At risk

Behaviours and Unsafe Conditions. This Model was centrally designed for a phased rollout at a Regional Conference and piloted across the locations. This was also taken as a Safety goal for the year. A Site leader was nominated to drive the implementation across the year. The progress of this programme to “Make a Difference” at each site by “Fixing the Foundation” of the incident pyramid by Potential hazard identification was reviewed on a monthly basis with each site ranked on relative performance.

As part of the programme, every location was classified into various Zones, with each Zone nominating a Zone Owner and representative team members from the respective areas, with every Zone comprising 4 to 6 members. An Apex committee was also established consisting of Cross-Functional Zonal champions and chaired by the Site Lead and Functional Heads / Safety representatives thus ensuring the major population of each site was on board the safety Journey.

The Zonal champions committed to conducting periodic (weekly) safety Gemba walkthroughs at their Zone are looking out for safety observations by observing unsafe acts and unsafe conditions and recording them as Incident Prevention Opportunities. Zonal Champions would identify and address unsafe behaviours of the workforce through intervention and a non-incriminating conversation ending on a consensus to behave safely henceforth. They would also observe and mitigate unsafe conditions by ranking on a severity scale of Low, Medium or High consequence and track the corrective and preventive actions to mitigate the risk to an As Low As Reasonably Practicable level with the support of the responsible personnel. The observations were recorded and taken up with the concerned department for rectification. The observations and closure progress were discussed in the monthly Apex Safety Committee.

The Site Leadership and Functional Heads provided guidance and necessary support to close the identified observations and also other safety improvement initiatives at the site.

Innovative aspects of the implementation and other benefits/impacts

- Safety being largely about culture with workforce engagement as the base for establishing a safety culture towards incident prevention.
- Defining Line Management Accountability for Safety.
- Zoning to obtain Safety Accountability with Zone owners and Responsibility with the functional line.
- Felt leadership demonstration of commitment towards Safety.
- Total workforce participation in safety programmes to

evolve an ownership culture.

- Making safety everyone’s business.
- Enhanced situational awareness among the workforce.
- Openness and Transparency in reporting Safety Observations.
- Improved hazard Identification and heightened Risk Perception of the workforce by reporting safety observations.
- Improvements in safety performance metrics.

### Benefits

- Safety Observations: The total Number of Incident Prevention Opportunities recorded by Zonal members through the process of safety observation programme across the region increased exponentially, sowing the seeds for openness and transparency in reporting safety observations leading to an increased risk perception through safe behaviours with enhanced situational awareness thus setting the platform for a sustainable safety culture.
- Recordable Injury Rate: Reduced and sustainable Recordable Injury Rates achieved across the sites.

### Spreading of BBS Awareness at an Automobile Company at Bajaj Auto Limited, Chakan, Pune

Forum of Behavioural Safety organized its 2nd Annual National Conference for spreading BBS awareness in India with a motto of making Bharat Bane Surakshit which is in line with our Prime Minister’s appeal to all Indians on Swachha Bharat Abhiyan. Both initiatives will take Bharat towards Safe and healthy building of our nation.

Safety field for almost 25 years has seen various systems and programmes developed and implemented in our country for the prevention of accidents. It has its merit in preventing accidents. By this, we could able to reduce accidents drastically, but still, accidents/incidents are occurring due to unsafe act of a person irrespective of the provision of most sophisticated machines and equipments. In incident analysis, it revealed that human element is most prominent in many cases and which is unpredictable and differs from person to person. Behaviour is an observable act. We need to develop a safety culture which will drive safe behaviour.

- Total safety culture has the following key parameters.
- Individuals hold safety as a ‘value’ and not just a priority;
- individuals take responsibility for the safety of their

co-workers in addition to themselves, and

- all level of the employee is willing and able to act on their sense of responsibility.

To tackle this, systematic approach to human behaviour is must, and BBS is one of the ways to address it.

A Safe Mind is Safe even in an unsafe condition. It indicates the importance of safe behaviour at work place, on the road and at home.

Learning from Mahatma Gandhi's three monkeys-These monkeys have come to resemble our observation, listening, and speaking. Bura Mata Dekho, Bura Mat Suno, And Bura Mat Kaho. In Bharat Bane Surakshit drive we have to see about at-risk behaviour and safe behaviour, listen to the person about his actions which may lead to injuries and speak out to the person about changing his at-risk behaviour to safe behaviour consistently till change to safe one is evident. Similar to the famous advertisement of Shri Amitabh Bachchan about Polio elimination from our country, i.e. Do Bund Zindagi Ke Liye, we have to talk; Do Bate Suraksha Ke Liye.

Bajaj Auto (Chakan Unit), with the TPM initiatives, had achieved and sustained zero major and minor accidents. Though there is a significant reduction still there are few first-aid injuries. Now BBS activities mixed with TPM system, we are striving towards prevention in first-aid cases also by converting at-risk behaviours to safe behaviours which will change our safety culture from compromise to compliance.

In order to implement BBS initiative in our plant, we have prepared road map which includes circular to all employees about BBS launching, awareness programme, BBS trainer in each area, steering committee formation and practical BBS implementation to cover every employee including contract employee. During this implementation journey, we had faced some challenges-change in mind-set from "Safety is someone's responsibility to safety is my responsibility. "As a pilot shop, we had implemented this in Machine Shop and Assembly area.

BBS concept is unique because it corrects unsafe behaviour on the spot without criticizing his mistakes or unsafe behaviour. It has enhanced our relations also.

Case study on BBS:- At Bajaj Auto, BBS project implementation started by a briefing to all employees about BBS movement in the entire plant through circular. One day Training on BBS was imparted to 40 employees who were identified then as BBS observers. In each shop, we had added this in our shop organisation structure and named them as BBS Trainer.

BBS movement forwarded through two approaches:

1. Safety Observation Tour (SOT) to gauge behaviour awareness base.
2. BBS check sheet by BBS observer and peer to peer discussion and resolutions to safe behaviour.

Trained 40 BBS observers conducted behaviour observation feedback process (BOFP) and observed number of unsafe/safe behaviours and unsafe conditions in a machine shop. After spot-corrections of observed risk behaviour, our safe behaviour percentage went beyond 90%. We are implementing it now for all plant operations for which road map is in place.

Emerging Outcomes/ benefits of BBS Implementation:

- Developed 400 BBS observers and 40 lead BBS trainers to carry forward safety culture movement to the remaining staff and contractors.
- BBS trainers felt a sense of satisfaction by correcting unsafe behaviours by regular reminders. They prepared a BBS awareness training module with field examples.
- Safe behaviours have gone up above 90% from 70%.
- BBS banners displayed in shops and training school.
- Behavioural changes are visible in the plant.
- Steering committee meetings linked with safety committee meeting for a progress review on BBS movement.

Tips on Maintaining Successful BBS Programme:

- BBS steering committee meeting on a monthly basis to review progress in safe behaviours.
- Display of BBS banners.
- Covering all employees in BBS training.
- Refresher training to lead BBS trainers/observers.
- Rewarding best observers.
- Developing BBS leading indicators.

BBS implementation in the plant is not only useful at work but in the day to day life. We are sure that this BBS movement will definitely boost the safety culture not only at the plant but in society and at large across the Nation to build "Bharat Bane Surakshit.

## **BBS Journey at Aluminium Plants**

As we all know almost 100% accidents are caused due to unsafe human behaviour. On this concept, the management of Vedanta Odisha decided to launch the BBS programme in 2013. We sought the services of BBS India wherein a BBS expert trained 440 BBS observers across the location. COO of Vedanta also launched online portal for BBS observation reporting.

Further, as a part of the BBS programme, BBS Steering teams (consisting of management and employees representatives) were formed both at SBU and Apex level. These Steering teams were chaired by the respective unit heads for reporting the progress of BBS. Here the causes of unsafe behaviours, monitoring of safe behaviours, action plan for correction of pending unsafe behaviours, repeated violation cases, and BBS training programme were reviewed by the teams.

Subsequently, the checklist of BBS reporting was modified to include name of the observee to track repeated violations and honest reporting. Though the data of the number of BBS reporting was reduced we start getting actual bbs reporting. New 'BBS Standard Operating Procedure was developed wherein schedule for BBS reporting was made with increased frequency with hierarchy.

In monthly BBS committee, the highest number of bbs observations employees got rewarded. Also, the quality of BBS reporting was encouraged in the form of awards.

These modifications brought a phenomenal change in BBS programme and started giving us great results. During the journey of the last four years, the incident trend reduced drastically, and safety leading indicators graph went up. In between in the year 2016, we conducted a BBS programme audit by the third party and further implemented the recommendations to strengthen our BBS programme. Moreover, the journey continues.

## **BBS Implementation at Construction Chemical Units**

Pidilite Industries followed three stages in BBS implementation as below:

### Initial Stage - 1

- Peoples are not aware of what is BBS.
- Unsafe Behaviours.
- Ratans (jewels) of BBS Checklist.
- Gaps identification of Unsafe Behaviours.
- Internal Fear of people to say in front of others.

### Awareness Stage - 2

- Awareness session organized in units about BBS to fulfill gaps.
- Gap Analysis of BBS again.
- Key initiatives were taken by units for development of BBS culture.

#### 1) Time Management

(As the manpower reaches the plant (10-15 minutes) early and sit unoccupied till the shift starts. The time which they spend free before shift now that free

time is being used to educate/aware them through tool box talk).

#### 2) Training Chain Reaction

(Mechanism to engage and Training for development: "Training Chain Reaction" Trained Individual will train another individual).

#### 3) Internal Training Programme

(To spread knowledge and to gain knowledge).

#### 4) Tool Box Talk (Dus Ka Dum)

(5 to 10 Mins Tool Talk with visuals displays for better understanding).

#### 5) Training with visuals and Displays

(Training Started with Visuals Clips for Connecting the People).

#### 6) Night Awareness Sessions

(Training and awareness session started in Night shifts).

#### 7) Recognitions and Reward System

(Reward scheme started for Adapting best EHS Practices for morale bootup and connectivity).

### Final Stage - 3 (Results)

- Internal fear Vanished.
- Internal Trainers developed.
- Participation of People increased.
- Contractors /staff giving training as a regular practice.
- No major incident in units based on Behaviour.

## **Benefits of Behaviour-Based Safety (BBS) in an Agro-Chemical Company**

Incidents/ accidents are found to be an outcome of numerous unsafe acts. These unsafe acts, in turn, emanate from unsafe behaviours. Statistics prove that 'Unsafe Behaviours' are the root cause of more than 90% of accidents that happen. It is quite possible to correct these unsafe behaviours through the implementation of BBS.

Behaviour Based Approaches need to be implemented from the top; top / senior management need to be instrumental in making this programme successful. BBS, if implemented effectively, adds to inculcating the desired Safety Culture within the organisation. Once this is done, rich gains are sure to be achieved.

India Glycols have implemented BBS under the guidance of a BBS expert. It was launched under the programme named "Bhavishy Banaye Surakshit (BBS)" in November 2012. The name of the programme and its logo were selected from

the suggestions invited from our employees. We awarded the employee who suggested the chosen name.

We are continually practicing and training on the concept of BBS. All these have added to improved safety performance.

Visible / positive changes have been observed in complying with basic PPE usage and in maintaining safe practices and conditions.

Unsafe acts and conditions have come down significantly as depicted in graph below.

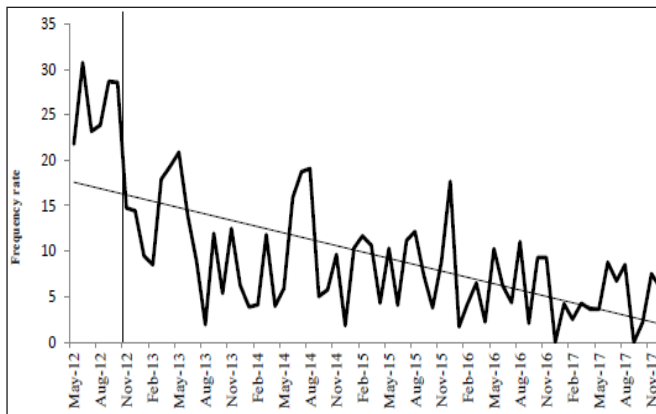


Fig. 3

## REFLECTIONS ON CASE STUDIES AND RECOMMENDATIONS

While comparing and reflecting on the results of the above cases, the following recommendations are deliberated.

Indian Corporates have now recognized that the unsafe behaviours of employees greatly hit the company's business and its balance sheet, and it is hoped that people at workplace would involve putting their efforts to prevent the pain, suffering and financial losses brought about by accidents and related injuries at work (Health and Safety Executive, 2005). Zero accidents/injuries perspective requires a host of change management strategies and initiatives for shifting existing safety situation to a new level, which would need a stringent review of the prevalent safety systems and implementation of the latest behavioural safety approach (Matthews, Grainne A. 2013). Zero accidents/total safety culture means a total participation campaign in an organisation (Japan International Center for Occupational Safety and Health, 2013).

Active Leadership for behaviouralization of safety implementation in industry is an urgent call without which the loss of life and business would be a regular affair. According to a senior safety professional with 20 years of experience, production priority of top management remains

a great challenge for BBS implementation in Indian industry. Mostly, safety systems in Indian organisations have served as documentation formalities and not so much practiced in safe behaviour of employees. Mostly, safety systems in Indian organisations have served as documentation formalities and not so much practiced in safe behaviour of employees. The Indian safety professionals agree that the management's priority is their cost and production, safety comes in the picture if they face incidents or dangerous consequences. According to the Health and Safety Executive (2013), the leadership focus is on production-not-safety and cost considerations of safety. The credibility of safety awards/certifications for organisations can also be questioned. Safety certifications/awards have kept industries in the dark that they are safe in the absence of accounting of safe/unsafe behaviours. Almost all Industrial safety audits and reviews have reflected the need for behavioural safety programmes (Kaila, 2017).

At the same time, we need to underline that as long as profits drive safety, we would never achieve the safety of people and business, rather lose both. We do not have a prevention or proactive attitude towards safety. Building a safety culture is a challenge for all safety professionals. ISO 45001 emphasizes leadership, commitment and participation for developing a safety culture. Both safety systems and behavioural safety are needed. Safety culture comes by the involvement of all, not by safety professionals alone. Thousands of new jobs are being created in construction / infrastructure sites, and this new workforce with diverse backgrounds entering into sites are going to pose more challenge in building safety culture. Intentions of top management are good, but the implementation of safety does not happen. Somewhere BBS fails due to lack or change of leadership of top management. BBS succeeds when management leaders make observation rounds at the site (Kaila, 2013).

The opinions shared by safety professionals at the meeting on 21st March 2018 in Mumbai shed a host of practical issues such as hiding accidents does not mean zero accidents. Safety does not mean only PPE. Controlling the safety officer by the boss does not ensure zero incidents. Cost of accidents runs into crores whereas cost of prevention runs into thousand of rupees. On documents, we can deceive the auditors any way we like. Many times, the safety officers are engaged in activities unrelated to safety function such as canteen, security, health, welfare, etc. Negligence towards low-income communities such as contract workmen is the key factor in corporate fatalities. The introduction of ISO 45001 (the world's first internationally recognized standard for health and safety) is a potential turning point in encouraging organisations to put in place a framework to improve employee safety, reduce workplace risk and create better safer conditions. Managements need to understand

that the world is no longer going to tolerate a casual approach to health and safety.

ISO 45001 emphasizes that you measure your organisation's risks and capacities for controlling those risks. Any organisation has potential risk associated with the behaviour of its leaders and its workforce. The typical behaviours are 1. Control: People who are low in Control often leave things to chance without proactively planning. 2. Awareness: Individuals with lower levels of awareness are exponentially more likely to lose track of a situation, which often leads to a lapse. 3. Rules: Individuals that are less rule-bound tend to see rules as just guidelines and often bend a rule if they perceive the little risk of injury or being caught. 4. Caution: People who are low on Caution are a lot more comfortable with risk than others. Important Caution here is that mere adoption of this ISO 45001 document, however, will not in itself guarantee prevention of work-related injury unless it becomes behaviour of an organisation. The secret of BBS depends upon the strength of group influence the observers create in changing the safety culture from compromising behaviours to compliance in an organisation.

The bigger challenge of behavioural safety is to involve top management to spending on removing the barriers to safe behaviours at work sites. Almost all organisations in India began behavioural safety intervention when they experienced that the accidents and fatalities at sites are unstoppable even after having all engineering controls and safety systems. It is also important to understand that the mere launch of BBS in an organisation does not ensure zero incident until the top management navigate it for complete implementation.

The application of BBS approach is facing a severe challenge that safety performance may decline when BBS intervention is removed (Mingzong Zhang, Dongping Fang, 2013). Cooper and Phillips (2004) cautioned that how complex the overall relationship is: changes in climate perceptions do not necessarily reflect changes in levels of behavioural safety performance. Equally, changes in safety behaviour are not necessarily reflected in safety climate perceptions. The true safety leadership lies in not passing-by an unsafe behaviours/conditions unless they are corrected there and then which is a true connect for business and human life.

This study of public and private sector companies has elaborated the steps and processes involved in BBS implementation across Indian industries which would guide organisations that are on the way to achieving zero accidents by increasing safe behaviours being practiced by employees as well as building the world best interdependent safety culture. These case studies have shown that by continuing the BBS approach over the years, the corporates have achieved the involvement of employees at all levels regarding controlling accidents as well as creating safer

workplaces. The at-risk behaviours which are the root-cause of accidents have significantly gone down.

BBS is personal learning to behave safe and support building safer culture and environment to work in. It is a shared responsibility for saving of the life of each person at the workplace. BBS is simple and scientific but not easy as it requires continuity of leadership at organisations. Though BBS in India is at initial stage, it has reaped good measurable results. These ten case studies have clearly depicted as to how organisations successfully managed the at-risk behaviours of employees at work sites and maintained the interdependent safety culture which is the crux of BBS. The challenges are to sustain and knit BBS across all organizational hierarchies. These case studies are the powerful data and convincing guidelines to strengthen the mindset of organisations to venture into zero incidents zone for saving both life and business. However, the success of BBS would depend upon: a) what proportion of the workforce is trained in how to do BBS observation and feedback? b) what proportion of the workforce is participating in the BBS process? How many observations are performed? Is this number trending up or down? c) Which observers are high performers whose contributions to the BBS process should be recognized? d) whether observers make follow-ups post-observations?

Safe business means a better economy. Hence the governments must register BBS into workplaces as essential element to ensure safe environments to work for its valuable human resource. Since at-risk behaviours are being practiced and have already ballooned to nearly 30% in the Indian industry, the management and all stake holders such as insurers and banks must make BBS compliance a condition for all economic activities in the country.

## REFERENCES

- Algera, J. (1990). Feedback systems in organizations. *International Review of Industrial and Organizational Psychology*, 5, London: John Wiley and Sons.
- Chakraborty, J. (2016). Behaviour based safety and you. *Management Guru: Journal of Management Research*, 4(1), 136–141.
- Cooper, M. D., & Phillips, R. A. (2004). Exploratory analysis of the safety climate and safety relationship. *Journal of Safety Research*, 35, 497–512.
- Dikshith, T. S. S. (2013). *Hazardous chemicals: Safety management and global regulations*. Bangalore: Bilekahalli.
- Forum of Behavioural Safety*. (2017). Annual National Conference of the Forum of Behavioural Safety on 16 January 2017, New Delhi.
- Forum of Behavioural Safety*. (2018). Sovenier of National BBS Conference on Best Experiences, Practices and

- Challenges of Behavioural Based Safety Implementation in Indian Industry at Mumbai on 19 January 2018.
- GAIL India. (2014). Launching of centralized portal on behaviour based safety. 12 December 2014. New Delhi.
- Geller, E. S. (2004). Behavior-based safety: A solution to injury prevention. Behavior-based safety empowers employees and addresses the dynamics of injury prevention. *Risk & Insurance*, 15(12), 66.
- Health and Safety Executive. (2005). *Good health and safety is good business*. Retrieved June 9, 2015 from [http://www.hse.gov.uk/costs/costs\\_overview/costs\\_overview.asp](http://www.hse.gov.uk/costs/costs_overview/costs_overview.asp)
- Health and Safety Executive. (2013). *Why leadership is important*. Retrieved June 30, 2013 from <http://www.hse.gov.uk/leadership/whyleadership.htm>
- International Labour Organization. (2013). *Safety and health at work*. Retrieved June 30, 2013 from <http://www.ilo.org/global/topics/safety-and-health-at-work/lang--en/index.htm>
- Japan International Center. (2013). *The concept of zero-accident total participation campaign*. Retrieved June for Occupational Safety 29, 2013 from <http://www.jniosh.go.jp/icpro/jicoshold/english/index.html> and Health.
- JICOSH (2013). Concept of Zero-accident Total Participation Campaign. Retrieved June 29, 2013 from <http://www.jniosh.go.jp/icpro/jicosh-old/english/index.html>
- Kaila, H. L. (2010, Fall). Behavior-based safety programs improve worker safety in India. *Ergonomics in Design*, 18(4), 17–22. CA, USA.
- Kaila, H. L. (2011, June–July). Organizational Cases on Behaviour Based Safety (BBS) in India. *International Journal of Human Resource Management*, 22, 10–12, 2135–2146.
- Kaila, H. L. (2013). Is industry really poised for zero accidents? *World Focus*, 13(2). International Practice Specialty's Technical Publication.
- Kaila, H. L. (2014). Are we really prepared for zero accident at work? *Business Manager*, 16(9), 14–20.
- Kaila, H. L. (2017). *Behaviour-based safety in organizations –Saving life before the accident*. IK International Publishing House Pvt. Ltd., New Delhi.
- Marsh, T. W., Davies, R., Phillips, R. A., Duff, A. R., Robertson, I. T., Weyman, A., & Cooper, M. D. (1998). The role of management commitment in determining the success of a behavioral intervention. *Journal of the Institute of Occupational Safety and Health*, 2(2), 45–56.
- Matthews, G. A. (2013). *Behavioral safety from the consumer's perspective: Determining who really provides behavior safety*. Retrieved July 4, 2013 from Cambridge Center for Behavioral Studies. <http://www.behavior.org/safety/consumer.cfm>
- Zhang, M., & Fang, D. (2013). A continuous behavior-based safety strategy for persistent safety improvement in construction industry. *Automation in Construction*, 34(2013), 101–107.
- Rivero, N., Zemetra, B., & Herman, C. (2014). The intersection of Leadership, Organizational Culture, and Clinical Performance. *Pediatric and Congenital Cardiology, Cardiac Surgery and Intensive Care*, 3391–3408.
- OHSAS 18001. (2007). *Occupational health and safety assessment series*. Retrieved February 2, 2010 from <http://www.scribd.com/doc/10081792/OHSAS-18001-2007-Occupational-Health-and-Safety-Management-Systems-Requirements1>
- Pettinger, C. B. (2001). *People-Based Safety: The optimal approach to behavior-based safety*. Safety Performance Solutions, Inc.