

Behaviouralization of Safety Implementation in India (Learning from 10 Organizations' Cases)

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This research paper (based on case studies of 10 organizations) identifies how organizations are managing the at-risk behaviours at work sites. 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 organizations across industrial sectors such as oil, gas, petroleum, chemicals, automobile, construction, power, and aluminium across Indian locations, revealed the best experiences and challenges during their BBS implementation journey.

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

All renowned safety awards and certifications to organizations 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 plant, "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 they are happening" (Forum of Behavioural Safety, 2017).

According to Dr Avneesh Singh, Director General FASLI Mumbai, "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 organizations".

According to Nagarajan Periyar (HSE specialist with over 35 years of experience in Corporate Safety Management and Project Safety Management), "a National Conference held in Mumbai on 19th Jan 2018 on the theme of Best Experiences, Practices and Challenges of BBS implementation in India is a good step forward in meeting the needs of the well-meaning industrial organisations in their efforts to bring in an incident and injury free work culture".

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 behavior 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 behavior 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.

Behaviour Based Safety which aims to improve the safety culture leading to improved safety performance and increased productivity of an organisation, 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.

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):

1. BBS is uncomplicating safety implementation.
2. BBS is dehierarchizing safety implementation.
3. BBS is involving top to bottom.
4. BBS is spot correction of at-risk behaviour.
5. BBS is creating interdependent safety culture.
6. BBS is achieving zero unsafe behaviour.
7. BBS is personalizing correction of at-risk behaviour.
8. BBS is accounting safe and unsafe behaviour each month.
9. BBS is continuous journey.
10. Finally, BBS is saving human life and business both.

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

Methods

Objective:

A 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.

Ten case studies were collected from diverse organizations 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.

The Case Study Results

Following are the results of the qualitative case studies on the Best Experiences, Practices

- Effective Implementation of Behavioural Based safety 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.
- In addition, with Site-specific awareness programme, Regional Safety Leadership Cum BBS Workshops are being organized on quarterly basis to penetrate BBS further.

Corporate Steering Committee and Task Force were constituted at Corporate Level to oversee the BBS implementation. 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 last two incident free years. Sustaining high levels of "Behaviour Based Safety" implementation is a challenge, which we face today.

A step towards Behavior Based Safety (BBS) in Power, Operation & Maintenance of EHV Substations and Transmission Lines

Operation & Maintenance activities of EHV Substations and transmission Lines are very challenging especially in remote areas in terms of 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, gang of workers has to mobilize immediately with appropriate tools & equipment in order to restore supply in minimum possible time.

For quick restoration of supply and incident prevention, we initiated Behavior Based Safety (BBS) in which human factors are taken into account in Safety Management System at present, particularly in our industry where operations are dominated by human activities.

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

reasonable success in reducing unsafe behavior 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 casual approach on unsafe behaviour and poorly integrated BBS system with existing Safety Management System. This happens due to lack of involvement of employees in promoting safety culture. In order to reinforce the involvement of employees and subcontractors workforce Behaviour Based safety (BBS) acts as a tool to nurture total safety culture in our operation.

How BBS is significant for our organization?

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-

1. Active participation from all including subcontractors workforce, business head, departmental heads, front line managers, engineers, supervisors and workers.
2. Empowerment and make every one responsible for their own and team safety.
3. Observation and counseling with due respect as a part of organization core value.
4. Team leader performance evaluation based on individual performance with respect to Process Implementation.
5. Adherence of Transparency in EHS communication
6. Observations till it reaches safe behaviors 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.

According to Ved Mani Tiwari CEO (Global Infrastructure Business) Sterlite Power "The journey that we started on creating awareness on BBS philosophy has yielded results in line with our expectation that employees at

Sterile Power are able to understand safe/unsafe risk behaviours & are able to create safe environment during work. It has improved communication among people & also attitude of workmen towards safety".

SACHET, the BBS Intervention at a Petroleum Corporation Journey since 2015

Need Analysis: The Company has 4 major SBUs - Aviation, Direct Sales, LPG and Retail, and two supporting SBUs – OD&E (Operations, Distribution & Engineering) and P&P (Projects & Pipelines). Our infrastructure includes LPG Plants, Depots, Terminals, Aviation service facilities, Retail ROs. Each SBU has its own business goals in terms of production / Sales/ segment wise customer focus/ developing robust infrastructure etc. But 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&E BU and "Shapathi" for LPG BU that aim at enhancing technical safety aptitude of employees. While Shapathi and Sankalp are focused intervention for technical competency enhancement, need was felt to design an intervention that focused on Behaviours.

As a matter of fact, 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 Shreshtha for LPG SBU and Project Daksh for O,D&E) rolled out during 2015-16 and 16-17 was "Behaviour Based Safety". 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, but 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 Behaviour based safety has been christened as "SACHET". SACHET aims at enabling safe workplace for all employees by creating a culture of Safety. Culture is related to attitude of an individual, which is internal whereas behavior is external. SACHET aims to strengthen the attitude of every individual (workers/employees) and thereby create a safe behavior, which will lead to "Zero Tolerance" towards unsafe acts at workplace.

Philosophy of SACHET: a BBS Project name

SAFETY – THROUGH BEHAVIOUR
ANTICIPATE – RISKS
CORRECT – UNSAFE BEHAVIOURS
HABITUATE – BY POSITIVE REINFORCEMENT
ELIMINATE – AT-RISK BEHAVIOURS
TARGET – ZERO ACCIDENT

Following have been considered as prerequisite to implement SACHET successfully

- Strong Management Commitment
- Respectful, trustful and Open Communication
- Open, Feedback-rich culture
- Increased Employee Engagement
- Emphasis on Safe and Unsafe behaviors 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 the day 1 of 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 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.

- 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 behaviors rather than on reducing the number of accidents.

Behavior Based Safety – A Way of Life at a Oil Corporation

Wikipedia defines Behavior-Based Safety (BBS) as the "application of science of behavior 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 organizational behavior management (Mingzong Zhang, Dongping Fang, 2013).

BBS is safety culture of the organization 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 Indian mindset – it is basically a mother-child relationship between different departments and different levels of hierarchy of the organisation.

Approach to BBS: How to go about it

For improving the safety culture of the organization since industrial revolution, various approaches have been tried to enhance the safety culture of the organization. These approaches had reasonable success in reducing unsafe behaviors 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 organizations, from state regulatory bodies, and some worthwhile initiatives come from individual employees' own 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 behavior. To tackle this, a scientific approach in improving the behavior induced unsafe acts is required. BBS offers a solution to this.

BBS: Mr. 360 degree

A successful BBS program 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 behavior, a change in policy, procedures and/or systems is also warranted. These changes cannot be done without buy-in and support from all involved in making those decisions.

A behavior-based safety 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 behavior, 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 own behavior as safe or unsafe always, no matter what.

Technique of BBS: Positive Reinforcement

One of the techniques in BBS is 'reinforcement'. Reinforcement occurs when a consequence that follows a behavior makes it more likely that the behavior will occur again in the future. Therefore, a reinforcing consequence is one that causes behavior to occur more frequently. For eg. To encourage safe behavior –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:

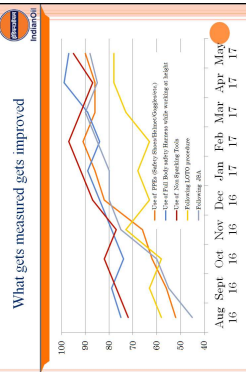
- 1) working towards something good (as opposed to avoiding a negative),
- 2) motivated to work, which might result in
- 3) creative thinking, employing new strategies, successful decision making, seeking more responsibility.

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' puts the emphasis on safety as the most important factor, not the deadline.

Case of a Bottling Plant (What gets Measured gets Improved)

Let us look at the graph of a bottling plant showing trend of safety culture at Bikaner BP over the period of one year. Safety culture has penetrated among the common masses. The workers are now more inclined in complying with the safety norms. Not only this, any new worker entering the system also inculcates this safety culture and safety becomes a part of his lifestyle. During my interview with people, I have 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



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 following lines:

Words of encouragement have had a positive effect on the psychology of the workers actually performing the task. Overall, we have

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

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



BBS Implementation at Petroleum Process Plants

According to Dr. U K Chakrabarty, 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 & 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 now 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 Behaviour-Based Safety (BBS) as a tool for recognising, 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. In fact, Behaviour-Based Safety

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 & Fire and Environment (HSE), took the initiative with a mandate from corporate level to conduct specialised training program 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 programs are at Ankleswar Asset in Gujarat and at Uran Plant in Maharashtra. The pre & post-test undertaken by the participants clearly shows 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 Ankleswar Asset, Gujarat and carried out BBS observation while various tasks were being performed with the help of a customised 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 with respect to the 10 safety Rules have been analysed 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 observers 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

According to R Shankar VP – SHE, Sustainability, Quality & Business Excellence of Tata Projects, "leadership engagement workshop was conducted across the sites to facilitate the design of a Safety observation program 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 program to commit to a weekly Gemba walkthrough looking out for Safe/At risk Behaviours & 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 program 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 program, 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 & 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 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 an intervention and a non-incriminating conversation ending on a

consensus to behave safely henceforth. They'd 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 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 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 programs 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 program

across the region increased exponentially, sowing the seeds for an 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

According to S.M. Salunkhe Manager (Safety) of Bajaj Auto Limited, Chakan, Pune, "First of all I take this opportunity to thank Forum of Behavioural Safety for organizing second Annual National Conference on Behaviour Base Safety 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 & healthy building of our nation".

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

Total safety culture has 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 employees are willing and able to act on their sense of responsibility

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

A Safe Mind is Safe even in unsafe condition. It indicates the importance of safe behaviour at work place, on 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 person about changing his at-risk behaviour to safe behaviour consistently till change to safe one is evident. Similar to famous advertisement of Shri Armitabh Bacchan about Pilo elimination from our country i.e. Do Bund Jindagi Ke Liye, we have to talk; Do Bate Suraksha Ke Liye.

Bajaj Auto (Chakan Unit), with the TPM initiatives we had achieved and sustained zero major and minor accidents. Though there is significant reduction but 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 program, BBS trainer in each area, steering committee formation and practical BBS implementation to cover each & 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 & 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 Behaviour Based Safety (BBS):- At Bajaj Auto, BBS project implementation started by 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 organization structure and named it 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 & peer to peer discussion & 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 machine shop. After on spot corrections of observed risk behaviour, our safe behaviour percentage went beyond 90%. We are implementing it now for all plant operations for which roadmap are in place.

Emerging Outcomes/ benefits of Behaviour Based Safety Implementation.

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

Tips on Maintaining Successful BBS Program.

- BBS steering committee meeting on monthly basis to review progress in safe behaviours.

According to S K Sivastava- DGM HSE, Vedanta Limited, these modifications brought a phenomenal change in BBS program and started giving us great results. During the journey of last four years, the incident trend reduced drastically and safety leading indicators graph went up in between in the year 2016, we conducted BBS program audit by third party and further implemented the recommendations to strengthen our BBS program. And the journey continues...

BBS Implementation at Construction Chemical Units

According to Gursharan Singh, Executive-EHS & Management Representative Pidlite Industries, three stages were followed in BBS implementation as below:

Initial Stage -1

- People are not aware about what is BBS
- Unsafe Behaviors
- 9 Rattans (jewels) of BBS
- Gaps identification of Unsafe Behaviors
- 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 taken by units for development of BBS culture

1) *Time Management.* (As the manpower reaches the plant (10-15 mins) early and sit idle till the shift starts. The time which they spend free before shift is now being used to educate/aware them through tool box talk)

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

3) *Internal Training Program.* (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) *Trainings with visuals & Displays.* (Trainings Started With Visuals Clips for Connecting the People)

6) *Night Awareness Sessions* (Trainings and awareness session started in Night shifts)

7) *Recognitions and Reward System* (Reward scheme started for Adapting best EHS Practices for morale boostup 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 in an Agro-chemical company

Incidents/ accidents are found to be outcome of numerous unsafe acts. These unsafe acts, in turn, emanate from unsafe behaviours. Statistics prove that 'Unsafe Behaviours' are the root cause for more than 90% of accidents that happen.

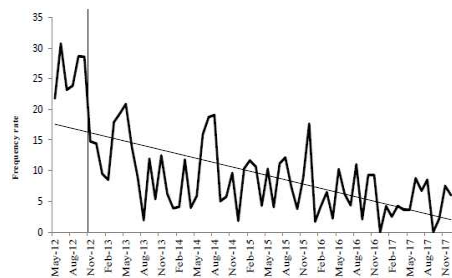
It is quite possible to correct these unsafe behaviours through implementation of behaviour based safety (BBS).

Behaviour Based Approaches need to be implemented from 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 organization. Once this is done, rich gains are sure to be achieved.

According to Mr. MK Rao the IGL 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 behaviour based safety

(BBS). All these have added to improved safety performance. Visible/ positive changes have been observed in complying with basic PPEs usage and in maintaining safe practices & conditions. Unsafe acts and conditions have come down significantly.



Conclusion and Implications

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 organizations 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 picture if they face incidents or dangerous consequences. The credibility of safety awards/certifications for organizations can also be questioned. In fact, safety certifications/awards have kept industries in 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 programs (Kaila, 2017).

BBS is a shared responsibility of all for safety of life of each person at workplace. BBS is simple and scientific but not easy as it requires continuity of leadership at organizations. Though BBS in India is at initial stage, it has reaped good measurable results. These ten case studies have clearly depicted as to how organizations

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 organizations to venture into zero incidents zone for saving both life and business.

Safe business means 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 practised 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.

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