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## A STUDY ON BEHAVIOR BASED ON SAFETY MANAGEMENT WITH REFERENCE TO SHASUN CHEMICALS AND DRUGS LIMITED (SCDL), SIPCOT, CUDDALORE DISTRICT.

- L. Santhana Raj\*

### Abstract

Accidents may be caused by unsafe working environments, defective plant and equipment, poor supervision, careless acts etc., Industrial safety management is a vital part of the human resources management in any industry because it ensures job satisfaction, job security and motivates the employees for higher productivity, and also it helps in loss control for the overall benefit of the organization. Hence, industrial safety is beneficial to the workers as well as management. Before discussing other issues relating to safety, it is useful to understand the nature of safety. Safety, in simple terms, means freedom from the occurrence or risk of injury or loss. Industrial safety or employee safety refers to the protection of workers from the danger of industrial accidents. An accident, then, is an unplanned and uncontrolled event in which an action or reaction of an object, a substance, a person, or a radiation results in personal injury. Life of Industrial workers is becoming more and more prone to danger. The Industries are becoming more in number, size and sophistication. Every year, lakhs and lakhs of workers meet accidents in factories, mines and workshops leading to injuries, permanent disabilities and sometime deaths. In this article behavior based safety management is discussed.

### INTRODUCTION

Organizations are becoming increasingly aware of the need to provide a workplace that is not only free of common injuries but one that also protects workers, facilities and the environment from the consequences of more serious incidents involving safety, security, environmental and other risks.

The industrial revolution brought in new inventions of machines and techniques of production which changed the way of man's living and thinking throughout the world. The industrial revolution and

the consequent industrialization have brought in lot of hazards and risks to the industrial workers. Every year millions of industrial accidents occur causing immense suffering to the accident victim, their family and enormous loss to the organization and ultimately to the nation. Considering the human sufferings and economical loss due to accidents, it becomes imperative on the part of every one to prevent the accidents by removing or controlling the hazards in industries. Accident prevention does not lie on devising safe machines alone but also on improving the knowledge, skill, attitude, behavior and morale of the industrial workers.

\*Associate Professor, Department of Commerce, St. Joseph's College of Arts & Science (Autonomous), Cuddalore-1. Tamil Nadu, India. E-mail: [lsanthanaraj@gmail.com](mailto:lsanthanaraj@gmail.com), Mobile: +91 9442718097.

## REVIEW OF LITERATURE

Behavior-Based Safety Management focuses on the identification and modification of critical safety behaviors and emphasizes how such behaviors are linked to workplace injuries and losses. Behavior Based Safety is a process that reduces unsafe behaviors that can lead to incidents occurring in the workplace. The process works by reinforcing safe behavior and identifying the causes of unsafe behavior. Behavior Based Safety Management also discusses the future directions for strategies and for improving the management of workplace safety. In India and abroad some researchers have undertaken many surveys on Behavior Based Safety in different organizations.

The review of literatures on Behavioral Based Safety in various organizations shows that different authors and researchers examined the concept from different dimensions. Behavioral research on learning teaches us powerful lessons about how to teach and build performance improvement on safety. Many companies have spent a lot of time and effort improving safety, usually by addressing hardware issues and installing safety management systems that include regular line management safety audits. Over a number of years these efforts tend to produce dramatic reductions in accident rates. Although many of these are attributed to peoples' carelessness or poor safety attitudes, most of these are triggered by deeply ingrained unsafe behaviors. Behavioral Based Safety addresses these by making use of proven management techniques which almost always results in a positive change in safety performance and safety attitudes.

A substantial number of workplace accidents are instigated through unsafe acts and the unsafe conditions created by the employees in the work place. The employers need to be aware that further reducing accidents can only be achieved by identifying, examining and focusing upon such unsafe behavior or the at-risk behavior.

## BEHAVIOR BASED SAFETY MANAGEMENT

The safety and protection of people, equipment and the environment is a serious concern in the Engineering industries. Many industries have recognized the advantages of Safe Work Environments and are progressively adopting Safety Management System

to prevent hazardous events, avoid production and manpower losses and other fallouts associated with industrial accidents. Safety management system also assists industries to enhance employee knowledge of operations, improve technical procedures, maintain accurate process safety information and increase overall facility productivity.

Safety Management System is a proactive and systematic approach for identification, evaluation, mitigation, prevention and control of hazards that could occur as a result of failures in process, procedures, or equipment. Increasing industrial accidents, loss of life and property, public scrutiny, statutory requirements, aging facilities and intense industrial processes, all contribute to a growing need for Safety Management Program to ensure safety and risk management. Indian industries generally do not accord high priority to safety like the developed countries, barring some few industries. Many industries view safety as an inconvenience, as a cost rather than a benefit. The importance of good safety practice at work has not been properly understood by the Indian industries and thus they fail to reap the benefits of being safe. The industries do not aim at the best safety practice but only attempts to meet the minimum legal requirements on safety. Most of the industries do not have specific policy and budget for safety. It is also to be mentioned that most of the industries maintain separate safety wing or department, only if they are legally bound to do so. Safety research in Indian industries is almost nil except the support extended by the government run organizations like Regional Labor Institutes spreading across the country, Central Labor Institute, Mumbai and a few other academic institutions. Responsiveness and competence needs to be created among the Indian Industry about tools and methodologies of safety techniques to understand and mitigate the hazards they are dealing with on a day-to-day basis, and create a safe working environment, for its own machinery, employees and community around in the organization.

## Antecedents

An antecedent must present immediately before the behavior of interest. When identifying an antecedent, one should identify the stimulus conditions that prompted the behavior to occur. Safety antecedents include verbal instructions, signs, and the situation that prompted action. Other events not immediately

preceding the behavior of interest may include written procedures, safety rules, and safety improvement goals. Because these events do not immediately precede safe behavior, you should consider them part of the person's history rather than an antecedent. Often, an individual's unsafe response to a situation may suggest a problem with the training or instruction that the employee has received some time prior to the behavior of interest. A written procedure may be an antecedent if the employee referred to the procedure immediately before starting the job. Otherwise, the procedure and training on that procedure are part of the employee's individual learning history.

### Individual Learning History

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

### Behavioral Safety

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

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

### Typically Behavior Based Safety Management consists of the following:

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

2. A system of ongoing observations (as identified and defined) and feedback (intervention), typically peer to peer and employee driven combined with positive verbal feedback, information collection and problem solving to improve the identified behaviors and the management system that produced them.
3. Use of the information to identify corrective actions. Ultimately, the safety of those working at an industrial facility depends on the actions of everyone involved. Programs and good intentions by themselves achieve nothing. What are needed are actions, i.e., changes in behavior. From this philosophy flows the concept of Behavior Based Safety. Behavioral Based Safety is a process that reduces unsafe behaviors that can lead to incidents occurring in the workplace. The process works by reinforcing safe behavior and identifying the causes of unsafe behavior.

### The Six Pillars of Behavioral Safety

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

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

### Three generic type of behavior safety process:

**Top Down:** A management driven process that typically has supervisors measuring behavior and providing one to one feedback and relaying recommendations for improvement to the management team.

**Bottom Up:** The Employee driven process which encourages front line participation in safety. This works on the basis of using peer-to-peer observations which

are fed back to a workforce run behavioral safety team who then conduct analysis to develop recommendations for managers to implement.

**Collective:** A collective approach is where both managers and front line personnel conduct observations. Analysis is then conducted by a behavioral safety team (represented by both managers and front line personnel) to identify the root causes of unsafe practices. Recommendations are then identified and implemented to improve safety performance.

### **The Seven principles of Behavior Based Safety Management:**

1. Fully engage employees to the significance of behavioral safety. Set standards for all employees at all levels for participation in safe behavior.
2. Careless small behaviors lead to the magnitude of accidents and injuries. Targeting specific behaviors and creating a checklist approved by all employees for input creates workplace involvement in safe behaviors.
3. Training employees to lead as safety monitors and active observation and reporting promotes employee engagement and compliance.
4. Historical review of previous injuries and accidents provide data-driven results for decision making for change implementation.
5. Improvement intervention through a systematic observation by employees with regular meetings and brainstorming will incorporate continuity of safety based behavior.
6. Provide evaluations to employees on individual practices and safety behavior.
7. Key leadership commitment is important to provide mentoring and examples for employees to commit to the idea of working in an environment dedicated to safe behavior.

### **Behavior Based Safety**

Behavior Based Safety is a proactive process that helps to get changes in a work group's safe behavior levels before incidents happen. All incidents are preceded by some kind of behavior, e.g. a worker falls off a ladder because he was over-reaching or the ladder was not secure. Both of these are individual behaviors. Behavior Based Safety seeks to change the person's

mindset, habits and behaviors so that these "at risk" behaviors will no longer be performed.

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

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

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

Behavior Based Safety emphasizes that employees need to take ownership of their safe and unsafe behaviors. If they behave unsafely, they are not to be punished but, rather, told repeatedly to correct such behavior. When they behave safely, they are encouraged (Kaila, 2010). The secret of the success of Behavior Based Safety is that it puts safety control into the hands of each employee, enabling him or her to feel empowered and responsible (Kaila, 2010). Behavior Based Safety makes workers aware of their unsafe and safe behaviors and helps to maintain an accounting of these behaviors on a monthly basis (Kaila, 2010).

### **Behavior Based Safety Management in Indian Industries**

With the inclusion of behavior aspects in the OHSAS 18001:2007 as safety compliances, Indian organizations have taken Behavior Based Safety seriously in its training applications. In India, industrial groups such



as ESSAR, ITC, Reliance, CFCL, Colortex, Sandoz, and ultratech, GAIL, ICC, NPC, Jindal, Suzlon, BHEL, GE, ONGC, M&M and Tata Motors have implemented BBS in different ways. Behavior Based Safety Workshops have been conducted for ITC, ESSAR, Reliance Industries, ColourTex, Reliance Energy, Ultratech, GAIL, Sandoz, Chambal Fertilizers, RKHS, TATA Motors, JINDAL, and NPC for various locations in INDIA. Many Indian companies viz. Tata Chemicals Limited (TCL), Mithapur, Tata Steel Ltd (construction), Hindustan Uniliver Ltd and Dr. Reddy's Laboratory etc. have gone for implementation of Behavior Based Safety in their organization.

## **HEALTH & SAFETY POLICY**

Shasun Chemicals and Drugs Limited (SCDL) have adopted integrated Quality, Environment, Occupational Health and Safety, policy that is given below. The policy is displayed at prominent locations across all departments.

### **Safety and Health Organisation**

The HOD of the (SCDL) designated as DGM (Safety) is assisted by number of Safety Officers. In addition each department is having one safety coordinator. The occupational health of the employees and contract workers is periodically monitored as per the established procedure and frequency at the OHRC which has three qualified physicians and support nursing staff.

### **Safety Committee**

A Two-Tier safety committee system is established. Each department has a safety committee having equal representation of workers and management level personnel. The committee meets at monthly interval and a record of the proceedings is maintained. The safety coordinator of the department is responsible for organizing the meetings. There is a Central Safety Committee having equal representation from workers and management. It meets at quarterly intervals and the minutes of the meeting are recorded. The DGM (Safety) is responsible to organize the meeting and circulate the report.

### **Safety Budget**

Annual safety budget is prepared and utilization is monitored on regular basis. Budget is arrived at through budget meetings.

## **Accident Reporting, Investigation and Analysis**

Every department maintains incident register, which includes accidents, near-miss, close call and dangerous occurrences. In case of accidents, joint investigation is carried out by a committee consisting of the concerned departmental person, Zonal personnel in-charge and the Zonal safety Officer. The identified actions are implemented which are reviewed in the monthly departmental safety committee meeting and in the plant level central safety committee meetings. Over a period of time there is reduction in fatal and reportable accidents. The target for accident rate for the year is identified and monitored.

### **Safety Inspections**

Monthly safety inspection of all departments is carried out by Safety Engineering Department. Additionally, half-yearly Safety Audit is performed including all aspects of Occupational Health & Safety for all the areas.

### **Safety Education and Training**

One day training is provided to contractor employees on emergency preparedness, safety precautions, use of personnel protective equipment and plant related information etc. and a photo identity pass is issued for entry at the gate. Separate pass is issued for work at height after training and medical examination. Audio visual aids are used to impart training. Once in six months retraining is given to plant personnel and the training records are maintained.

### **Safety Communication**

Shasun Chemicals and Drugs Limited (SCDL) is provided with both intercoms (called "Max") and external P&T telephones in all the departments/sections. All the Control Rooms and the Main Emergency Control Center are provided with Hot Lines, Public Address System, Dispatcher System, Wireless Sets, Internal & External telephones. Telex and Fax facilities are also provided for external communications. Emergency telephone numbers like fire, first aid/medical post, gas safety, water supply and safety engineering departments are clearly marked in control rooms. Wireless sets are provided to the personnel working in critical zones.

Depending on the situation the concerned personnel will communicate the incident to fire department and gas safety or others.

### **Safe Operating Procedures and Work Permit System**

Appropriate procedures, work instructions, operation control procedures are established and issued to all concerned for safe and effective operation. Training to contractor employee is given before deputing on day to day activities. Work Permit system is implemented for hot work, Electrical isolation and Non-Isolation works.

### **Personal Protective Equipment (PPE)**

Personal protective equipment is defined as equipment designed to be worn or held by the worker to protect him or her against hazards likely to endanger their health and safety at work. Personal Protective Equipment should be used when the risks cannot be avoided. Personal Protective Equipment supplied to the employees by the organization should meet ISI standards. Personal protective equipment is of two types, i.e. i) General Personal Protective Equipment ii) Specific Type. Personal protective equipment which are common to all are called general type Personal Protective Equipment. Safety helmet and safety shoe comes in this category. Anybody before entering into the shop floor has to wear these personal gadgets. Specific types of personal protective equipments are those which are used to get protection for a specific type of hazard.

### **Accidents and Safety Measures**

Work accident is an unintended occurrence arising out of and in the course of employment of a person. All accidents, however, need not result in injuries. If a person slips and falls, an injury may or may not result. They further assert that if the accident caused did not culminate in an injury this time, it may result in to a serious injury next time and hence action to prevent such accidents shall not be neglected. Although accidents are to be recorded in the accident record register as per Rule of The A.P Factories Rule, 1950 in the Form No: 26 as "Accident Book and Register of Accident and Dangerous Occurrences". Accidents are categorized as follows: Accident Non- Reportable, Reportable Dangerous, Fatal Accidents Occurrences

### **Non-Reportable**

If the injured person is prevented from working for a period of less than forty-eight hours, is a non-reportable accident.

### **Reportable Accident**

Any accident which causes any bodily injury, by reason of which the person injured is prevented from working for a period of forty-eight hours or more, is a reportable accident.

### **Fatal Accidents**

Accident which involves fatalities (death) is called fatal accidents. According to Sec 88 of The A.P Factories Rules, 1950 all these accidents (reportable or fatal) are to be reported to state government authorities by Form No: 18 by the manager and occupier of the factory shall send a report thereof within 24 hours after the expire or 48 hours from the time of the accident or the dangerous occurrence.

### **Dangerous Occurrences**

Any dangerous occurrence is incident like explosion, fall of EOT cranes, gas leakages, collapse of building and equipment and structures, etc. in which there is no bodily injury, disability or death. As per Sec 88-A of The A.P Factories Rules, all these incidents are to be reported to state government authorities by Form No: 18A.

### **Various Safety Measures against the hazards**

Noise safety measures, Vibration safety measures, Chemical safety measures, Electrical safety measures, Gasses safety measures, Confined Space safety measures, safety measures while working at Heights, Work-to- Permit system, Written protocols, etc. Unsafe acts and unsafe conditions are the major causes to provoke the accidents in the industry. For this reason the safety inspections covers these two causes as major points.

### **Safety Audits**

The safety audits are conducted internally and externally by the qualified and competent authorities. Internal audits of Occupational Health and Safety

Management Systems are carried out in all the areas, to determine whether the Occupational Health and Safety Management Systems is effectively implemented and maintained as per the standards of Occupational Health and Safety Management Systems 18001:2007. Qualified executives are identified from various departments and they are trained by M/s. BVC I to carry out these audits. Each department is audited at least four times a year by the internal Occupational Health and Safety Management Systems auditors. The audit result is recorded in the respective internal Occupational Health and Safety Management Systems audit reports. These reports are distributed to the audited Head of the Department of the area audited and the chief Management Representative. The auditee, in consultation with the Head of the Department takes the corrective actions on the non-conformities observations found during the audit. Follow up audit is carried out to verify and record the implementation and effectiveness of the corrective actions taken.

### **Training on Safety Measures**

Knowledge alone is not sufficient to perform the job in industries, but sufficient training is also necessary to perform the job efficiently and effectively. 'Knowledge gives guidance whereas training gives perfection'. Thereby the training improves the skills of an employee. Training in various aspects of safety, firefighting and occupational health, are organized by SED, T&DC, CISF (Fire wing), and Occupational Health Safety and Research Centre (OHS&RC).

### **Procedures of Safety Management System**

- Publication of the responsibility and duties of the personal involved in the safety management system.
- Investigation of safety incidents and the implementation of corrective measures.
- Registration and control of safety standards including a register of the significant incidents.
- Internal and external publication of the safety investigation results and the obtained experiences.
- To establish regular audits and revisions to ensure that the corrective actions are executed.

- Early detection of the deviations and/or procedures that can degrade or deteriorate the safety levels.
- Detection of the equipment deterioration used in the safety management system.

### **SCOPE OF THE STUDY**

1. Safety measures are on general attitude towards their measures.
2. Safety measures should be major determinant of any employee organizational behaviors.
3. A satisfied employer will be having positive attitude towards employee safety measures and would go beyond the normal expectation in safety measures.

### **Statement of the Problem**

This present study made to understand the level of safety measures of employee and to what extent these Factors have been reducing the accident in safety measures employees and motivate them to work for the organization.

### **OBJECTIVES OF THE STUDY**

1. To analyze the basic facilities and safety measures provided in the Chemical and Drugs Ltd in Cuddalore.
2. To study the influence of demographic variables like age, education qualification, salary, designation, experience, marital status, on the factors of safety measures.
3. To study the relation within demographic variables like age, education qualification, salary, designation, experience, marital status, on the factors of safety measures.

### **Hypothesis**

1. The influence of demographic variable on the factors of safety measures is not significant.
2. There is no association between demographic variable and safety measures.
3. The difference between the average scores of respondents regarding the safety measures is not significant.

**METHODOLOGY**

The study has been proposed be carried out with the primary data collected from the employee through the issue of a questionnaire and the secondary data collected from the company record.

**Primary Data**

The primary data is gathered with the help of five point scale based exclusive Questionnaire. The primary data were collected from the employees through a survey method.

**Secondary Data**

The researcher has also collected the Secondary data from Books, Journals, Magazines, Publications, Reports, Previous thesis work and from the company profiles.

**Sampling**

The study sample constitutes 200 respondents. The study was conducted on employees of a Chemicals and Drugs Ltd., Simple Random sampling was used.

**Period of the Study**

The Research Period of the study was between May 2015 to July 2015.

**Area of the Study**

The study was conducted in a Shasun Chemicals and Drugs Limited (SCDL) Located in Cuddalore, Dist.

**Tools and Techniques**

- Percentage analysis
- ANOVA
- Chi-square test
- t-Test (Difference of Means-Independent samples)

**INFLUENCE OF AGE OF THE EMPLOYEES ON FACTORS OF SAFETY MEASURES**

The employee working for Shasun Chemicals and Drugs Limited (SCDL) have different ages, there may be difference in the opinion regarding the safety

measure provided by company according to their age level. So we can test this by using ANOVA.

**Hypothesis:** There is no significant difference between the age of the employees on factors of safety measures.

**TABLE 1**

Variables	Sources of variation	Sum of Squares	Degrees of freedom	Mean Sum of Squares	F	Sig.
Safety Commitment	Between Groups	1.309	3	0.436	1.161	0.326
	Within Groups	73.652	196	0.376		
	Total	74.961	199			
Safety Compliance	Between Groups	1.157	3	0.386	1.405	0.243
	Within Groups	53.798	196	0.274		
	Total	54.955	199			
Safety Awareness	Between Groups	0.251	3	0.084	0.235	0.872
	Within Groups	69.799	196	0.356		
	Total	70.05	199			
Safety Behavior	Between Groups	1.53	3	0.51	1.29	0.279
	Within Groups	77.444	196	0.395		
	Total	78.974	199			
Stress Recognition	Between Groups	4.168	3	1.389	2.713	0.046
	Within Groups	100.385	196	0.512		
	Total	104.553	199			

Source: primary data

**Inference:**

The influence of the variable age of the employees on safety commitment, safety compliance, safety awareness and safety behavior are not significant. But the influence of the variable age of the employees on stress recognition is significant.

**INFLUENCE OF EDUCATIONAL QUALIFICATION OF THE EMPLOYEES ON FACTORS OF SAFETY MEASURES**

Employees working in the Shasun Chemicals and Drugs Limited (SCDL), have different Educational



Qualification. There may be difference in the opinion regarding safety measures provided by company according to their Educational level. So we can test this by using ANOVA.

**Hypothesis:** There is no significant difference between the educational qualification of the employees on factors of safety measures.

**TABLE 2**

Variables	Sources of variation	Sum of Squares	Degrees of freedom	Mean Sum of Squares	F	Sig.
Safety Commitment	Between Groups	1.138	3	0.379	1.008	0.391
	Within Groups	73.823	196	0.377		
	Total	74.961	199			
Safety Compliance	Between Groups	2.483	3	0.828	3.092	0.028
	Within Groups	52.472	196	0.268		
	Total	54.955	199			
Safety Awareness	Between Groups	0.753	3	0.251	0.71	0.547
	Within Groups	69.296	196	0.354		
	Total	70.05	199			
Safety Behavior	Between Groups	0.231	3	0.077	0.192	0.902
	Within Groups	78.743	196	0.402		
	Total	78.974	199			
Stress Recognition	Between Groups	5.287	3	1.762	3.48	0.017
	Within Groups	99.266	196	0.506		
	Total	104.553	199			

**Inference:**

The influence of the variable educational qualification of the employees on safety commitment, safety awareness and safety behavior are not significant. But the influence of the variable educational qualification of the employees on safety compliance and stress recognition is significant.

**INFLUENCE OF NATURE OF JOB OF THE EMPLOYEES ON FACTORS OF SAFETY MEASURES**

The Employee working for Shasun Chemicals and Drugs Limited (SCDL) have difference jobs, There may be difference in the opinion regarding safety measures provided by company according to their job level. So we can test this by using ANOVA.

**Hypothesis:** There is no significant difference between the job of the employees on factors of safety measures.

**TABLE 3**

Variables	Sources of variation	Sum of Squares	Degrees of freedom	Mean Sum of Squares	F	Sig.
Safety Commitment	Between Groups	0.536	2	0.268	0.71	0.493
	Within Groups	74.425	197	0.378		
	Total	74.961	199			
Safety Compliance	Between Groups	0.984	2	0.492	1.796	0.169
	Within Groups	53.971	197	0.274		
	Total	54.955	199			
Safety Awareness	Between Groups	0.115	2	0.057	0.162	0.851
	Within Groups	69.935	197	0.355		
	Total	70.05	199			
Safety Behavior	Between Groups	0.802	2	0.401	1.011	0.366
	Within Groups	78.172	197	0.397		
	Total	78.974	199			
Stress Recognition	Between Groups	1.869	2	0.935	1.793	0.169
	Within Groups	102.684	197	0.521		
	Total	104.553	199			

**Inference:**

The influence of the variable nature of job of the employees on safety commitment, safety compliance, safety awareness, safety behavior and stress recognition are not significant.

**INFLUENCE OF WORKING EXPERIENCE OF THE EMPLOYEES ON FACTORS OF SAFETY MEASURES**

The employees working for Shasun Chemicals and Drugs Limited (SCDL) have different working experience, There may be difference in the opinion regarding safety measures provided by company according to their experience level. So we can test this by using ANOVA.

**Hypothesis:** There is no significant difference between the work experience of the employees on factors of safety measures.

**TABLE 4**

Variables	Sources of variation	Sum of Squares	Degrees of freedom	Mean Sum of Squares	F	Sig.
Safety Commitment	Between Groups	0.89	3	0.297	0.785	0.504
	Within Groups	74.071	196	0.378		
	Total	74.961	199			
Safety Compliance	Between Groups	1.046	3	0.349	1.268	0.287
	Within Groups	53.909	196	0.275		
	Total	54.955	199			
Safety Awareness	Between Groups	0.359	3	0.12	0.337	0.799
	Within Groups	69.69	196	0.356		
	Total	70.05	199			
Safety Behavior	Between Groups	2.118	3	0.706	1.8	0.148
	Within Groups	76.856	196	0.392		
	Total	78.974	199			
Stress Recognition	Between Groups	1.163	3	0.388	0.735	0.532
	Within Groups	103.39	196	0.527		
	Total	104.553	199			

**Inference:**

The influence of the variable working experience of the employees on safety commitment, safety compliance, safety awareness, safety behavior and stress recognition are not significant.

**CHI – SQUARE TEST FOR TESTING THE ASSOCIATION BETWEEN THE VARIABLES**

**“Educational Qualification” vs “Your content with the Housekeeping and cleaning in your work area”**

**Hypothesis:**

There is no association within educational qualification, housekeeping and cleaning in your work area.

**TABLE 5**

Educational Qualification	Your content with the housekeeping/ cleaning in your work area			Total
	DISAGREE	NEUTRAL	AGREE	
< SSLC	4	11	40	55
HSC/Intermediate	7	8	37	52
Degree	4	10	34	48
PG & More	8	14	23	45
Total	23	43	134	200

Source: Primary Data

**Chi-Square**

	Value	Degrees of freedom	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.0988	6	0.2309
Likelihood Ratio	8.0471	6	0.2347
Linear-by-Linear Association	4.0861	1	0.04324

**0 cells (.0%) have expected count less than 5. The minimum expected count is 5.18.**

From the above table the p-value 0.2309 for chi-square is not significant. Therefore there is no association between Educational qualifications of employees and the scores obtained regarding our content with the Housekeeping and cleaning in your work area.

## ONE SAMPLE T – TEST FOR THE COMPONENTS UNDER THE FACTOR OF SAFETY BEHAVIOR

**TABLE 6**

Component	N	Mean	Std. Deviation	Std. Error Mean	t	p Value
In your department, safety and health issues / hazards identified are corrected in a timely manner	200	4.0250	0.7120	0.0503	20.3598	0.0000
Safety and health is a high priority when you're performing your job responsibilities.	200	3.9250	0.8079	0.0571	16.1927	0.0000
Rewards for safe behavior are a good way to increase safety awareness levels.	200	3.8550	0.8647	0.0611	13.9834	0.0000
A safety incentive program would cause employee to work safely.	200	3.8050	0.8369	0.0592	13.6023	0.0000

From the above table the t - values are positive, we can say that the employees have the positive attitude towards the components In your department, safety and health issues / hazards identified are corrected in a timely manner, Rewards for safe behavior are a good way to increase safety awareness levels, safety and health is a high priority when they're performing their job responsibilities and A safety incentive program would cause employee to work safely. The p value for all components is 0.0000 and is highly significant, hence they assure that employee's attitudes towards the components said above is good.

### SUGGESTIONS AND CONCLUSION

Suggestions and recommendations are also given with a view to correct the prevailing situations and to further improve the existing safety management practices in the organization in order to minimize the unsafe behavior

of the employees for the prevention of accidents to a great extent in Shasun Chemicals and Drugs Limited (SCDL).

Accident prevention does not lie on devising safe machines alone but also on improving the knowledge, skill, attitude, behavior and morale of the industrial workers. Hence this research studies on safety management to identify the need for implementation of Behavior Based Safety to enhance total safety culture at Shasun Chemicals and Drugs Limited (SCDL).

### SUGGESTION

- Safety measures required to do the job safely can be provided adequately so that they do not need to work on limited source so productivity may be affected.
- Employees can be encouraged to present new ideas and innovative techniques to improve their work so that they feel as a part of organization.
- Work environment must be comfortable with respect to safety measures of high level.
- Management should motivate the employees to interact with their superior for any clarification regarding their safety measures.
- The Behavior Based Safety Measures program should be implemented in a holistic manner such as to cover all the employees including contract workers.
- Every employee of the organization should be motivated for Behavior Based Safety Measures system thus emphasizing the concept with its requirements.
- The Behavior Based Safety Measures team at Shasun Chemicals and Drugs Limited (SCDL) should be trained for successful completion of the Behavior Based Safety Measures implementation.
- The management should ensure that the above are available for a successful Behavior Based Safety Measures Program.

### CONCLUSION

The study of Behavior Based Safety Measures among the employees were carried out as a task undertaken

due to significance in demand creativity. But when compared to non significant, the significant are satisfied about the safety measures. The relationship between superiors, subordinates and co-workers are in a satisfactory way. The teams between the work group is expressed in terms of high satisfaction, for which the management is extending its support in full scale for reaching the objectives of the employees as well as the organization.

The safety measures of the safety committee and the role of safety officer are well implemented. The employees are respected at work in Shasun Chemicals and Drugs Limited (SCDL) and the workers participation in management is a welcome gesture. If this study provokes the employee concerned to take some positive measures in order to improve their safety measures the researcher will feel amply rewarded.

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