CHAPTER - VIII

1. Observations and Findings.

2. Conclusions and Suggestions.

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I] OBSERVATIONS AND FINDINGS:

155 Reportable Accidents which occured in the Mills in the year 1984 were considered and further segregated and analysed in detail for locating accident-prone agencies and making observations accordingly.

Distribution of Reportable accidents according to Agencies in the year 1984 , were shown in the following table.

Table No.1. Agency-wise distribution of Reportable accidents in the year 1984.

Sr. No.	Agency	Total No.of Accidents.	Percentage
1.	Machinery	67	43.23
2.	Material handling	32	20.64
3.	Stepping or striking against objects.	29	18.71
4.	Struck by falling body	16	10.32
5.	Use of Hand Tools	5	3.23
6.	Miscellaneous agencies	6	3.87
	Total	155	100.00

From the above table it seems that Machinery contributed the largest number of accidents accounting for 43.2 % of the total accidents, the next largest agencies were Material handling and third agency was stepping and striking against objects.

Most of the Machinery accidents were due to improper training given to the workers, some of them were due to over confidence, also. Most of the workers had their education below 8th Std. and none of the workers were trained for I.T.I. or safety work programms. Thus all these are resulted in poor performance of workers as they know little about their job and safe methods of doing it.

Most of the workers tried to put their hands when the machine was in motion to remove cotton jammed in the gear wheels or trying to adjust the setting while the machine was in motion.

Another most common accident in spinning is due to broken metallic edge pirn or bobbins. The ring frames in which the spindle rotates at a speed of about 10,000 to 15,000 rpm the worker has to stop the bobbin by hand for the purpose of piecing the broken end, the sharp edge of broken metal shield of bobbin injures the finger of the piecer and the doffer while doffing the bobbins.

The method adopted in the mills to minimise these accidents is by inspection of bobbins by indetifying and

rejecting the bobbins with damaged shields.

Driving belts of Ring frames, draw frames, carding and other spinning and weaving machinery are other source of hazards. The worker while mounting the belt, some time gets his fingures caught between the belt and the pulley.

In order to minimise such hazards in the mill there are some workers in each department who are trained specially to mount belts only and if others found by the safety personnels the workers are fined thus to keep a check on unsafe acts.

WEAVING DEPARTMENT:

In weaving section 'Loom' is the main machinery which causes injuries to workers (for e.g. 26 accidents out of 155 were caused by hand getting trapped or struck by loom part) while the loom is in motion. The slay beam which moves towards and away from the worker is potential source of accident, the injuries due to which could be very severe. Mainly, hand and fingers get trapped between the moving slay and the fixed part of the loom such as weft fork, front rest, heald frame, temples,loose and katter etc.

Many of these accidents could have been avoided if the workmen did minor adjustments often stopping the loom.

Most of these accidents happen while oiling the loom, joining ends, cleaning weft fork and hammer, releasing looms take up motion and other such operations were carried out without putting the loom in off position. Another very common accident in Weaving Department is hand injuries due to cloth rolls and emery roll of the loom.

The cloth roll, which forms a nip with emery roll positioned immediately above it is supported on two spring loaded brackets on either side of the loom.

While the cloth roll is fully loaded, the weaver removes the cloth roll by depressing the release bracket on each end in succession, causing the roll to drop down slowly on the floor. Injuries most of the times due to cloth roll falling on the worker's leg or his finger getting trapped between the cloth roll and emery roll. The cloth release bracket sometimes springs back from its depressed position, before the weavers could unload the cloth roll.

Most of the weavers are aware of the above hazards on the loom, however, there is a need for their caution during such operation. Any unsafe condition such as mal - functioning of the brackets or worned out brackets should be brought to the super visor's notice and promptly rectified. In the mills recently metal pipes are provided to doff the cloth rolls, so that the worker gets a proper grip on the cloth release bracket and minimising the hazards of finger getting trapped between the cloth roll and emery roll. Not taking assistance of another worker to off load

a very heavy cloth roll or a bim results in an accident.

SHUTTLE FLYING:

Shuttle flying is another agency which is common in weaving accidents, many of these accidents have been reduced by converting plain looms to auto looms. There were 16 cases of shuttle flying injuries in the accidents occurred and investigated in the year 1984.

There are many reasons by which the shuttle flies, and to avoid shuttle flights, the supervisor and the jobbers should check the following at beam fall :

1] Shuttle which should be perfect in its specified weight and dimensions. Principally the shuttle should be fitted back a little by its own weight.

2] The piching timing and force should be accurate.

3] The condition of the sley.

4] Shedding and

5] Let up motion.

all these should be checked and lastly correct setting of spindle stud is very important.

The shuttle guard on sley cap should cover 3/4" of the height of the shuttle front or else it should be 1/2" above the temple plate.This will stop the shuttle coming out during the flight.

PROCESSING DEPTT:

In processing section various machines are used for developing and finishing of the cloth. These are, shearing croping, Jigger Machine, Drying Range, Kier Boiler, Hot Air Stenter and Calender Machine, etc. Particularly in case of shearing croping while cleaning of the blades and in running nips of cylinders and rollers are potential hazards in processing department even though nip guards are provided, the worker temper with the nip guards making a wide gap; some times these guards are not replaced after maintenance work. Thus the workman trying to remove the creases of the cloth gets his finger caught between the rollers and cylinder.

MATERIAL HANDLING:

The movement of material is very frequent as the cotton has to go through various processes till the final product is achieved. These movements are made by trolleys cans, tin boxes etc. Due to over-loading the trolleys with or cloth piles many times the vision gets blocked.

The maintenance of trolley is neglected. A number of trolleys have been found with worn out bearings, broken wheels of different sizes, and to add to all this the flooring is improper, obstructed and that deteriorates the movement of trolleys inviting accidents.

In this way, after considering the hazards by process and machinery in Shri Shahu Chhatrapati Mills I have made the following observations:

II] OBSERVATIONS:

1] House-Keeping:

It can be seen that the company has taken adquate measures for providing space for aisles, machinery and product movement. But subsequent expansion of machinery in spinning, weaving departments has made the place very conjested. Particularly in case of carding section space provided between two machines is too small and the same situation is found in Ring frame dept. This gives lot of hindrance to the safe movement of hand carts and trolleys and even to workers also.

It is also observed that lot of scrap material mainly spare parts of machinery are lying between spaces of two machines against which the worker stumbles and suffers from accidents injures.

Considering the nature of work the general cleanliness is found satisfactory. The Mill has provided vaccum cleaning machines to clean the cotton fluff in the departments.

Considering the different ways of materials to be handled, the management is trying to implement better ways and methods for material handling.

2] Material Handling:

The problems of material handling are a serious one in the mills. The space problem in spinning and weaving departments gives a lot of hindrance to the safe movement of hand trucks ,trolleys etc. The movement is very frequent as the cotton has to undergo many processes to have the final product the cloth.

In Spinning, the hazards start from card cans, which are in plenty about 4000 to 5000 cans are used in Carding, Drawframes,Speed frames, combing etc. The cans are usually of tin or plastic with metallic bottom and top, which get worn out easily with the circular movement of draw frames and cards, making sharpedges which are harmful to the workers hand. Every three months a survey for damage card cans is taken and damaged cans are removed from operation to minimise accidents.

Next in lines is the trolley which carries inter bobbins to the ring frames, these trolleys are over filled and some of the trolley sizes are bigger. Many times the vision gets blocked and the trolleys are not maintained properly. It seems to be neglected that a number of trolley have been found with worn out bearing, broken wheels of different sizes.

In Ring Spinning tin boxes are used to collect bobbins, which are then sent to winding to be wound on cones or spools. These tin boxes get damaged very easily

due to rough handling of workers. and these tins have sharp edges which are hazardous to workers while transporting from one departments to other.

The management after going through the accident reports found that many accidents were occured due to tin boxes. So the mgt. has decided to replace the tin boxes by boxes made from bamboos and introduced it in one of the spinning section by which there is a slight decrease in accidents caused due to tin boxes.

b) In weaving department the weavers beam from sizing department are transported on a two wheel trolley. Each beam weight is about 150 Kgs. to 200 Kgs. and most of the accidents here are caused due to tilting of the trolley due to unevenness of the flooring.

Another mode of material handling in weaving is transporting cloth rolls to processing and grey folding departments. Here the main fault in plant layout is that process and folding sections are not closer to weaving deptt. The distance is about 500 meters and cloth is transported by hand trolleys,which causes ,pains in the chest of the concern workers. In addition to this the condition of flooring is bad and that deteriorates the movement inviting accidents.

3] Adequacy of aisles,space and working place :

The aisles are well marked and all machinery is properly fenced. But the conjection problem due to

expansion in ring frame and loom shed which result in production increase is creating unsafe conditions especially in Spinning and Weaving units. It gives a lot of hindrance to safe movement of hand carts and trolleys.

It is also observed that a lot of scrap material mainly spare parts of machinery are lying in between spaces of two machines.

4) Guarding of transmission Machinery and Interlooking of Machinery :

Proper guards for chain drive, pulley drives, gear drives were found suitably guarded. But in some cases, in Auto sheds and Spinning depts., the guards were not maintained properly. It was observed that guards were kept aside after repairs.

In processing dept. operations are carried out by passing cloth through two rollers. Proper nip guards are provided to rollers in every place. The clearance in some places was formed more.

5) Maintenance :

Unsafe practices were observed by maintenance staff. They include lubrication of gears by hands leaving the safety guard open. Working on height without safety belts, not using gloves, personal protective equipments, like goggles, face shield, while grinding, welding or other repair jobs.

6) Floors, Stiarcase Railing:

The flooring in Spinning, Sizing, Winding, Warping is not satisfactory as many of these departments are having cobolt flooring which can not sustain the heavy type of work. But gardually the management is trying a new type of flooring at the passage which can withstand the wear and tear caused by hand carts and trolleys.

7) General illumination level in this mills is satisfactory. The localised lighting is provided on machinery. A good illumination is achieved by providing large size roof glass windows in north south direction. General electrical fittings with new machines are good and metallic cover and flame proof wiring is provided. A lot of temporary and discarded wiring is still existing. In case of sizing section, steam pipes are laid barely without their heat proof covering, which sometimes causes accidents. It was also observed that some combastible material like ,cotton fluffs and waste was found lying near such naked wiring.

8) Personal Protective Equipment:

Protective equipment suitable for the work involved is issued by the Mills. The equipments can be got from the stores dept. by approval of the safety department. Gum boots, hand gloves, rubber aprons, goggles and allied equipment for acid handling in processing, is provided. But the general tendency of the workers was observed that they knew the hazards, but neglected to wear the protective equipments.

9) Inspection and Testing of Pressure Vessels:

It observed that regular check strictly as per Factories Act are carried out . Accordingly :---

(a) Ultra-sonic testing of each cylinder is carried out to check the reduction in well thickness. Depending on the thickness a certificate is used to specify operating pressure.

To avoid bursting of above mentioned cylinders a visual inspection of steam pressure regulating valve is carried out.

(b) Safety valves are tested for operation at specified pressure. All the above tests are carried out by an authorised outside agency (recognised by inspectorate of factories).

10) Others:

(a) It was observed that safety posters, boards were very few in number and not indicating precautionery measures while operating the machine. They were not displayed at proper and accident-rpone places.

(b) It was also found that overall house keeping of the mills was said to be not

satisfactory. Most of the depts. were too crowded and a lot of unnecessary material was to be found there.

(c) Proper ventilation was not provided and exhausting fans were also few in number.

(d) It was also observed that each accident, minor or major was entered in the ESI Register, because of this the total no. of accidents in the mills seemed to be higher. Further investigation into the increased no.of accidents of the mills reveals that, it is mainly because of the intention of workers to acquire ESI benefit, they purposely get injured.

And other reason is the increased coverage of workers by recent amendment in the ESI Act. The ESI Amendment Act of 1984 was brought into force with effect from January, 1985 and it has covered all employees receiving a monthly remuneration of upto Rs.1,600/-.

2) CONCLUSIONS AND SUGGESTIONS:

After the detailed study of unsafe conditions and unsafe practices, here are some of the suggestions to improve the working conditions, avoid accident occurence and create a safe environment; these should be strictly implemented.

1) In the Mills under study the ' SAFETY POLICY ' is not declared in writing. If the company's management wants acceptable Safety Performance it must first write a safety policy. The safety policy should be brief to the point and define managements' policy. Therefore the mills should immediately issue a written safety policy, indicating the responsibility of each level. It may be printed in a form of hand bill and in languages understood by majority of the workers, good publicity should be given to declaration of policy.

Because, it is only through a written safety policy that the workmen and the supervisors of the departments will know managements desire in the matter of safety.

2) Assignment of Responsibility:

(a) Senior Management : The responsibility or the setting up the frame-work of the safety orgn.,planning and policy and controlling its operation throughout the mills as a

whole rest with the top management i.e. in the mills General Manager and Production Manager. Thus I would like to suggest that, the regular report of the company's safety performance and the accident report should daily looked into by the production Manager and then he should notify the safety department to investigate the causes of the accidents and to minimise the accident trends.

(b) Departmental Heads: all departmental heads should be made responsible for the safety performance in their respective depts and they should be instructed to conduct departmental safety committee meetings regularly. They should attempt to encourage the supervisors, jobbers to treat safety as an essential part of their duty.

(c) Supervisors: The Supervisor should see that Safety Rules are followed at all times and all operations should be carefully directed. He should also check all guards and safety devices and make certain that they must be in good working conditions.

3) Every employee should be asked to accept safety

as an integral part of his duty. Departmental heads and supervisors should accept that the safety of the employees working under them is their responsibility.

A survey should be conducted to find out accident prone workers and try to give psychological safety for them. If it is not possible, it will be better, if workers are shifted to other section of departments.

4) In the mills there is already a Safety Committee established. It should contribute to mutual understanding and good team work between management and employees to improve safe working conditions and safe work practices.

It was also observed that the recommendations which were put forward by the safety committee were not put into practice. Hence the management should see that these recommendations are put into practice without much delay.

5) There is a basic need for starting 3 tier safety programmes, training should be given to every new employee and for new machines, process etc., Job instruction training for hazardous jobs. Lectures, Film shows, practical training, demonstrations etc., regarding the operation of machines and using safety devices should be conducted very often.

6) All kinds of material resources should be governed by sound engineering practice and work methods integrated with safety. It should be subjected to periodical testing, examination and maintenance by competent agency.

7) The main cause of accident is 'overconfidence and failure to use safety equipment' so the management must compel the workers to use the available safety equipments. In case this is not followed, the management should take proper action.

8) As per Industrial safety is concerned, it can be implemented by strict enforcement of rules and regulations and training each and every worker about the fast changing technicalities of modern mechinaries and ask him to modify his skill and habits in the interest of safety and accident prevention.

9) Since both a physical hazards and an unsafe act are present in the great majority of accidents, both should be investigated fully. Every effort should be made to find ways of eliminating the physical hazards. Similarly appropriate means of correcting the unsafe practices should be sought, no investigation is satisfactorial complete, unless definate recommendations are made for corrective action.

10) Usually accidents are caused by many factors like personal, mechanical and environmental causes. The social and economic as well as mental conditions of the workers have a great bearing on accidents. So the Socio-Economic study of the workers should be conducted by the Personnel Dept., especially by the welfare department.

11) To reduce accidents due to broken metallic shield the ring frames should be provided with knee brakes for each spindle and by substituting wooden bobbins with plastic bobbins.

12) Constant maintenance of flooring will be necessary to keep it levelled. This will also improve the life of hand trolleys, their bearing and wheels.

Knuckle guards for some of the manually operated trolleys should be provided to prevent injuries to the fingures and hands.

13) House-Keeping:

The overall house keeping seems to be unsatisfactory, so measures should be taken for improvement:

(a) Removal and quick disposal of un-wanted scrap is essential.

(b) For better house-keeping standard, a house keeping competition amongst various - departments is suggested. A check-list covering all details should be prepared.

A house keeping committee will have to be formed from various departments.

They will have a snap check up at any time of the month and note down the merits and demerit points. They will award marks. And to give justice to the department

where the nature of work, arrangement of machinery etc., hinders the house-keeping performance. ' A work consideration factor ' should be prepared and considered while evaluating the performance of the department. This will help in improving the house-keeping and reduce the accidents in the concern departments. This will also add to the health maintenance of workers which will reduce fatigue, increase efficiency and raise overall productivity.

14) Guarding of Machinery :

(a) In Auto Weaving Shed V.Belt pulley guards gets worn out quickly, the guards should design in a proper way to resist the vibrations of the looms.

(b) Some nip guards in processing machinery need proper adjustment to the required clearance.

The machines once opened for repairs must not be allowed to start unless all Safety Guards are refitted. All chain drive, gears drives which are partly guarded must be completely checked and then fitted.This is recommended for safety condition which will then reduce machine injuries.

15) Electrical Equipment: In this area,protective metallic covers (conduit pipe) should be provided to all electric cables upto certain height (3' to 4') above the floor level so as to avoid damages to line cables. It is

also advisable theat inflamable material like cotton waste, oily rags, polythene papers should not be allowed to store on or near the switch board.

16) Motivation for Safety:

(a) Safety Competition: Inter departmental safety competition should be held for maintaining the safety tempo and creating interest in worker regarding safety.

(b) Safety Slogan : Safety slogan contest should be held every year on 4th March which is the safety day. The management should receive and appreciate slogans from their employees and prises should be given for the best slogans and these slogans should be displayed on the notice board as well as,publicity for it should be given in the Mills 'Shahu Mill Patrika.'

(c) Suggestion Scheme : In order to develop safety consciousness among the workers. Suggestion scheme should be initiated by which suggestion from workers will be received. The suggestions should cover wide range as process improvement,material saving,safe conditions and welfare etc. For collection of it,boxes should be provided and keept outside the major

Departments.The management should scruitinise and implement them if found suitable.

17) Working Conditions:

(a) About 23.33 % and 40.00 % of the interviewed workers were not satisfied regarding canteen services, rest room facility etc., which has the direct impact on accidents. So the management should take precautions in providing prescribed no.of seats on the floor which will help to reduce fatigue as it enables a worker to sit down occasionally. They should also improve the canteen services.

(b) Improper lighting is one of the causes of higher rate of accidents in spinning dept., And research has proved that the improved lighting has profound effect on accidents. Hence the management has to take measures for improving lighting.

(c) Spitoons: Chewing tobacco and pan is a common sight of in the Mills. So provision of spitoons will keep the surroundings clean and also it will be safe from health point of view.These spintoons should be

provided all over the premises of the Mills and workers spitting elsewhere should be taken to task.

(d) Ventilation: Good and proper ventilation provides light, fresh air, removes heat and increases air circulation. But in the Mills under study natural ventilation is not effective therefore natural ventilation is highly suggested. Proper exhaust is necessary, particularly in Carding and Spinning Dept.

The temperature of the Weaving and Spinning departments is very high, because humidity has to be maintained by use of steams. Therefore temperature, humidity control and air circulation all these must be tailored to the needs of production and the effective exhaust will bring down the temperature and increase the efficiency of the workmen.

18) Safety Officers should be completely made incharge of safety works and be given full power to provide and proceed with the safety activities with the help of the people concerned at various levels.

19) Safety Training : It was observed that the age group between 26 to 35 years was more prone to accidents. Hence it is suggested to impart safety training to this age

group within the organization or sending them to safety programmes.

Suggested Training Scheme : For the overall safety education and good safety performance, the mill should immediately follow the following training scheme.

(a) Propaganda: Good quality and eye catching safety posters must be displayed throughout the mill in English as well as in vernacular languages.

(b) Lectures: To inculcate the safety awareness amongst the supervisors and workers, the experts should be called to deliver lectures.

(c) Outside Agencies: The Company should send their supervisory personnel to outside safety courses and seminars. For that, the Company should select workers from different jobs having sufficient educational background and send them for safety courses conducted by ' Central Labour Institute', Bombay and by 'National Safety Council.'

It is also suggested that the Safety Officer should conduct safety training classes for specific durations according to the need, on general safety and safe job practices.

Further I would like to suggest that, the company

should subscribe various afety manazines, like Safe Act, Safety News, etc. and they should be circulated among the supervisory staff.

20) Generally efficiency, productivity and progress of the company lies collectively in the hands of the personnel involved in the company. Hence it may be suggested, while selecting the workers, preference should be given to the persons having skill, experience and educational qualification which help in avoiding and minimising the accidents.