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Textile Progress in Safety

By NEIL NELSON

Safety Engineer, American Mutual Liability Insurance Co.

(Paper presented by L. M. Baker)

In the year 1844 a great stride forward was made toward safety in the textile industry. The Factory Act was passed and this legislation applied only to the textile industry. It contained broad and sweeping reforms and also provided for enforcement of regulations. Four factory inspectors were appointed and paid by the Government. Factory surgeons were provided for the purpose of examining workers under sixteen years as to their physical fitness for employment. The employment of children under eight years of age was prohibited in the mills and employment of female labor was restricted. Special provisions were introduced for safeguarding health and preventing accidents. To control accidents arising from clothing of women and children becoming caught in machinery, guarding of machinery was introduced and made compulsory. In addition, no children, young persons or women could be employed to clean machinery while in motion. The act also provided for investigation into causes of accidents and set up penalties for machinery unguarded after notice had been given by an inspector that the condition was deemed to be dangerous.

Thus we go back a period of one hundred years to find in actual legislation some of the important points which we are still trying to get instituted in a well-balanced program of accident control today. Even at that time pre-employment physical examinations were a requirement in the hiring of certain individuals. The added dangers attached to operation by female labor were recognized and safeguards provided. Not many years elapsed from the time of the new inventions by Margreaves and his colleagues to the establishment of mills in the United States.

During the latter part of the 19th century conditions began to improve and some of the more progressive mills saw the advantages of better and safer working conditions. However, progress came slowly until about 1911 when Workmen's Compensation laws were enacted in several states. Today, most if not all states have such legislation. Industry at first was rather

reluctant to accept this new reform but time has proved its value and industrialists are among those who now appreciate most the gains that have been made since its inception. State Labor Departments, the U. S. Department of Labor, casualty insurance companies, the National Safety Council and industry have teamed up in a gigantic effort to stem the tide of accidents and disease resulting from labors. In the short space of thirty years the progress made has been steady and sure.

In all departments of the mill accidents resulting from machine operations have been curtailed. Hazardous machines like cards and pickers have been equipped with mechanical guards over treacherous points of operations, the deadly knives of shearers have been placed safely behind substantial barriers, extractors have been equipped with interlocks, and so on. Driving mechanism has undergone considerable changes for the better, machines individually driven by electric motors are fast displacing the old belt and pulley system operated from overhead line shafting and, while in the older mills there is still room for great improvement, the over-all progress is encouraging. Accidents attributable to these factors have shown considerable decrease during the past years. Hazards produced by the manual lifting of heavy warps and beams have been partially controlled by modern methods. Electric hoists operating on overhead tracks now wind their way through departments, picking up their load at one point and depositing at another with very little human exertion or effort. There are still operations which would benefit from such equipment and I have no doubt but that the well planned weave room of the future will incorporate such equipment to lift the increasingly heavy warps on to the looms.

Better Planning

More thought and planning is being given by management to mill layout. Location of machines is better proportioned to room dimensions, thus bringing about better housekeeping, surely one of the most important contributions for safer working

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conditions. Modern mill construction of concrete and steel has been a boom to maintenance problems. Window area has been increased with more natural light and better ventilation. Good lighting is a definite ally of accident prevention. Many of the older mills with this still a problem may find great assistance in the new combination of modern electric lighting and scientific application of paint. Experiments have proved that even the dingiest corner with its lurking sinister shadows can be brightened like sunshine with paint. Machines painted in two-toned colors bring out the dangerous points of operation and moving parts in such vivid detail that operators no longer strain their eyes and nerves to prevent injury. This same painting has also contributed greatly to better housekeeping. Experiments have shown that when a simple bench vise has been painted a bright color the usual chaos on the bench was transformed into order, and when dingy corners are brought out from under the shadows they no longer become the repository for useless junk.

So far I have discussed mainly the progress made in the control of mechanical hazards, but it should be understood that in the textile industry less than 25% of the accidents recorded are from mechanical causes. The predominance of accidents in the so-called non-mechanical group (which of course means accidents by agencies other than direct machine operation) demands definite attention because no matter what improvements are made in the guarding of machinery, if the factors governing this group are not controlled, then the progress of safety will stall.

I have already mentioned the improvement in mill layout and contributions to better housekeeping, but unfortunately not all mills have fully extended themselves in this respect. There are still too many conditions of poor maintenance that cause unnecessary accidents every day: badly worn floors and stair treads, stairs without adequate handrails, leaky pipes and faucets, dripping oil from overhead motors and shafting, rickety ladders and platforms, unguarded elevator landings and so on. A constant campaign is necessary to control these conditions. Many mills do a splendid job; it is hoped that many more will follow suit.

In the last analysis of safety the most

important condition is the response of the man doing the job. What progress have we made in training and education of the mill hand to do his part in the march of Safety? It has long been recognized that the key man in this training program is the Overseer. To the mill hand the Overseer is the company. Whatever his actions are, whatever he takes, good or poor, to the man under him, that is the position of the company. In safety, as with all matters concerning production, management must lay out a program for the mill hand to follow. It is not sufficient for the personnel director to thrust a printed set of safety rules under the nose of a nervous new employee and expect to send a safe worker into the mill.

Accidents caused by unsafe working practice is just another way of saying accidents caused by bad habits. We all have some, and even for the most intelligent it takes time and practice to overcome them. Training and supervision are definitely the responsibility of the Overseer. Even today when labor conditions are so acute, that responsibility still holds. Any Overseer, together with his second and third hands, can institute a safety interest by good supervision, encouragement and commendation to his help that with no other safeguard will materially improve his accident experience. Add to this the mechanical and maintenance vigilance which I mentioned earlier and the improvement will be even greater.

Supervisors can learn much in the mutual exchange of ideas and information and where meetings are frequently held for frank discussion of problems (with a willingness-to-be-shown attitude evidenced by top officials) the safety program will live and thrive. Another indication of leadership and interest is provision of adequate first-aid and medical facilities. Most of the large mills have very good facilities with registered nurses on full-time duty and periodic visits by medical doctors. Not only does this assure all employees of competent and sympathetic treatment in case of injury, but it plays an important part in assisting them for better health all around. The medical program is bound to expand as we make further progress.

Just recently I read a magazine article entitled, "The Weave Room Is Underground." It described a new textile mill, which is unique and revolutionary in de-

sign. A two-story brick building approximately 120' x 100', windowless, and one complete floor below the ground level. On the ground level is a cotton spinning room and underground is a complete weave room. The idea was to build a weave room underground so that the walls would not be subjected to the wide variance in temperatures from day to day and season to season. Provision was made for humidity and temperature control. For lighting, daylight fluorescent lamps are mounted in continuous troughs in the ceiling which are designed to give maximum illumination at cloth level. The ceiling of the weave room is insulated so that a conversation at slightly louder than ordinary tone can be carried on with

the looms in operation. Floors are standard maple insulated against moisture condensation and the wall interiors are faced with salt-glazed tile which needs no painting and helps to diffuse light. Machines are modern and individually driven with motors. The entire mill is a safety engineer's paradise. After reading the article and viewing the pictures, I tried to visualize their safety activities. A management so progressive must have had safety a part of its program. I could see the firm's outlook on this subject not as an added chore to be indulged in when times are normal, but as part of the broad picture wherein all are protected in a well-ordered and efficient scheme of production.

What the Supervisor Should Know About Accident Prevention

A. C. PHELPS

Personnel Director, Brandon Corporation, Greenville, S. C.

First of all, a supervisor should know enough of the facts concerning accident history, statistics and theory, to know as a matter of conviction, that accidents are in the main, **PREVENTABLE OCCURRENCES**. In one of our plants where the frequency rate had for several years averaged from twenty-eight to thirty-eight we inaugurated a ten minute session devoted to an explanation of accident statistics, theory of occurrence, and education of supervisors on the preventable nature of accidents, as part of the regularly scheduled monthly meetings. Very little else was done at that time, or for several months later. This was started in July of 1943. The plant had its first month of no-lost-time operation in November. It had one lost-time accident in December, 1943, and its next lost-time accident in August. Apparently, it will finish up the current accident accounting year with not more than three such lost-time accidents, a reduction to less than ten per cent. of the five year average. This was not the only measure taken. However, it is my firm opinion that the developed conviction of each and every supervisor that *accidents are preventable*, was mainly responsible for the inauguration of a successful safety movement in that plant. There is not now a single foreman at that plant who will not argue long and loud upon the subject, nor is there one

who has not attained the state of mind so often referred to as "Safety Conscious."

Along with the conviction that **ACCIDENTS ARE PREVENTABLE**, the supervisor should know that he is the key man in the prevention of accidents, and that his is the primary **RESPONSIBILITY**. He must know again, in such fashion as to amount to firm conviction, that the *prevention of accidents is one of the direct obligations of Management in general, and of Supervisors in particular.*

The supervisor must know his place in the scheme of **ORGANIZATION**, and the **ORGANIZATION** itself. Otherwise he cannot know his responsibility or the scope of his authority—for one goes with the other. The very scheme of the organization of his department places him in the position of **AUTHORITY** and **RESPONSIBILITY**. He must know that his entire department depends upon him for its orders and its contacts in the work of the other departments in the plant. He is the leader, and his is the responsibility for the integration of the work of his department with that of the others to form a harmonious and productive whole.

But production alone is not the whole of his responsibility. There must be **SAFETY** along with production. And in order to

attain safe production many things must be done.

1. The method of production—in
2. The human physical sense
3. The process comprising him
4. The plant and various aids it is equipped
5. The care of machinery

Color as a factor through the industry medium to the

Through the amount of light as messages, it

Color can take more than a definite single glance. Engineers have peculiar to a system of ships. When brakes screw sudden stop. The wayward light is on doing, though dangers in

Our ability following

1. The Size
2. Duration
3. Brightness
4. Contrast
5. Condition
6. Appearance

Seventy

attain safe production, the supervisor must know many things. Some of these are:—

1. The mechanics and requirements of production—in other words, the job itself.

2. The limitations of his workers in a physical sense.

3. The psychology of the individuals comprising his working force.

4. The plant safety organization and the various aids to accident prevention which it is equipped to render.

5. The care, guarding, and maintenance of machinery.

6. Knowledge of how to plan for accident prevention.

7. Some knowledge of causal analysis and record keeping.

8. Sufficient knowledge of first aid to enable him to minimize the injury effect of minor accidents.

9. Sufficient general knowledge of modern industrial relations to enable him to imbue the individual worker with "Safety Consciousness."

10. Proper training methods.

A Safety Color Code for the Textile Industry

By **RUSSELL SHEPHEARD**

Technical Service Engineer, The Paint Company, Cleveland

Color as a means of conveying messages through the eyes, to the brain, is not new; but industry has been slow in adapting this medium to its safety program.

Through our eyes, we gain 80 per cent of our knowledge and also control a like amount of our body movement; the sense of sight as a means of conveying safety messages, therefore, is well chosen.

Color can be recognized at a greater distance than the printed word, and when given definite meaning, it tells the story at a single glance. For example, locomotive engineers have a system of colors and symbols peculiar to railroading; the sea captain uses a system of colored flags to signal other ships. When the traffic light flashes red, brakes screech as numerous cars come to a sudden stop. Recognition is instantaneous. The wayward motorist who crashes a red light is quickly conscious of his wrongdoing, though he may not be aware of the dangers involved.

Our ability to see is dependent on the following factors:

1. *The Size of the Object*
2. *Duration of Exposure*
3. *Brightness*
4. *Contrast*
5. *Conditions of the Eye*
6. *Appearance of Colors*

Color Blindness

Seventy-five per cent of the garment

workers have faulty eyes; most of the defects involving visual acuity rather than form and color. Fortunately, most of these defects, thanks to medical and optical sciences, can be cured by proper diagnosis and fitting with glasses. One eye condition which cannot be corrected is color blindness; about 3 per cent of women and 8 per cent of men exhibit color blindness in varying degrees. The more common form involves the confusion of red and green, but there are cases where other colors are confused, and also cases of total color blindness. It is well to note, however, that most color-blind persons have a keen sense of brightness and are able to distinguish differences not noticeable to the normal eye.

The appearance of colors under various lights is an important consideration in the selection of a safety code. The color of any object or surface is due to a selective absorption and reflection phenomenon. When white light, which is composed of the various spectrum colors, reaches any surface, part is absorbed and lost and part is reflected. The particular wave lengths of the reflected light gives the visual sensation we call the color of that object and the amount reflected determines the brightness. A white object reflects nearly all of the light while a blue object, for example, reflects only the blue portion of the white light.

If the lighting in your mill is other than normal, colors suggested should be checked under that light to determine if they still retain their identity. Here also, the use of

symbols is a valuable addition to the color code. There would seldom be a case where both color and design were not distinguishable.

A safety color code satisfying all the requirements and conditions above has been developed and is proving of great value in the field of safety engineering. Faber Birren,¹ one of America's foremost color authorities, in collaboration with H. E. Williams,² chairman of the Safe Practices Pamphlet Committee of the Textile Section of the National Safety Council and other industrial safety engineers, has worked out the details of the code. Six basic standards have been chosen as a useful and practical color code, namely: yellow, orange, green, red, blue, and white (black or gray). These colors were chosen for the following reasons:

Their traditional use, their attraction, for the eye, their ability to provide contrast, and others.

Appropriate symbols were assigned to each color making the system complete and flexible enough to suit the requirements of the safety engineer.

Red has long been associated with fire protection equipment and is so widely accepted that its use is obvious.

Orange, rather than red, was selected as the danger signal because of its higher visibility and to prevent confusion with fire equipment.

Yellow, because of its visibility, is used as a warning signal to mark surfaces or objects one might strike against; also, stumbling, falling or tripping hazards. It is also used for traffic markers for restricted areas where more than usual caution is required.

Green is the traditional safety color and is used to indicate the location of safety and first aid equipment.

Blue has long been used to warn against starting or moving equipment that is being worked on. Its use should be restricted for this purpose and to designate condemned equipment or equipment requiring care in starting. The erection by repair crews of a round blue sign with the words "DO NOT OPERATE" in yellow serves as a warning to indicate repairs are being made.

White has been used to promote sanitation and to direct traffic, also to mark storage areas and aiseways. A white star or

spot indicates the location of waste containers; white corners in stair landings reduce the tendency to discard refuse in these corners; clean white suggests "keep clean."

Too great a use of highly visible colors is to be avoided as they tend to be distracting and a superfluous use lessens their value as a warning for the purpose intended.

Color Uses

RED—Symbol, Square

Red should be associated with fire protection and fire protection equipment.

Suggested Uses

1. Fire buckets should be painted red.
2. Paint a square on the wall or a band on the post to indicate the location of fire equipment. Paint floor area to discourage blocking.
3. Code numbers on sprinkler mains and post indicator valves should be in red.
4. Sprinkler pipe fittings (not spray heads) may be painted red or the whole line may be painted if insurance or fire regulators so require.

ORANGE—Symbol, Triangle or Arrow

Orange should be used to mark machine contact or electrical hazards.

Suggested Uses

1. Interior of switch boxes, panel boards and fuse boxes so that they can be easily spotted if left open.
2. Interior of machinery guards to indicate lack of protection when removed.
3. Exposed pulleys, gears, etc.
4. High voltage areas, etc., by use of symbol to designate such areas.

YELLOW—Symbol, Band or Alternate

Black-Yellow Stripes

Yellow should be used to mark strike against, stumbling or tripping hazards.

Suggested Uses

1. Protruding surfaces or parts.
2. Curbs, edges of floor pans, etc.
3. Low beams.
4. Crane and hoist hooks.
5. Edges of low trucking equipment.
6. To indicate changes in floor level, edges of platforms, and pits.
7. Railings, or ends of hand rails.

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8. Stairway approaches; edges of movable steps; risers and edges of off-standard steps; circular stairs, etc.

9. Conveyor parts at hazardous levels.

10. Aisle marking around hazards.

11. Aisle obstructions, etc.

GREEN—Symbol, Cross

Green is the traditional symbol of safety and should be used as such.

Suggested Uses

1. To indicate first aid rooms (green cross usually).

2. First aid equipment cases and location.

3. Containers for gas masks, goggles, safety suits, etc.

4. Safety showers.

BLUE—Symbol, Circle

Blue is used to suggest precaution.

A blue marker to be placed on equipment for temporary repairs or permanently painted when operating caution is required. The addition of an appropriate legend "DO NOT OPERATE, ETC." in yellow is recommended where suitable.

Suggested Uses

1. Equipment temporarily shut down for repairs.

2. Equipment being worked on as a warning against starting.

3. Condemned equipment.

4. Valves not to be operated.

5. Electrical controls to indicate work on the line or where caution should be observed in starting.

WHITE, BLACK OR GRAY—

Symbol, Star

White is used to direct traffic and to promote good housekeeping.

Use white on dark floors; gray or black on light floors or walls.

Suggested Uses

1. Traffic lanes.

2. Aisle markings (for hazardous areas, use yellow).

3. Location of waste receptacles.

4. Areas around waste receptacles.

5. Corners.

Eye Fatigue

Too great a use of these bright colors will not only be distracting, but may cry "Wolf" too often and so defeat the purpose. Their use should be confined to specific purposes and places.

Aside from their use in promoting safety as warning signals, there are other considerations for the use of colors in promoting safety. Perhaps the greatest single cause of accidents is fatigue, and anything we do to reduce fatigue is beneficial. It has been said that tired eyes make tired workers. Let us consider then what makes eyes tired. Poor light, or poorly directed light can cause eye strain with the resulting fatigue, but even in good light, if the contrast between the seeing task and the background is wrong, vision is poor. Dr. Matthew Luckiesh,⁷ considered one of our greatest authorities on the science of seeing, states that the "brightness contrast between the thing looked at and the immediate background should be as high as possible." "This immediate background area covers only a one degree angle in the field of vision. The brightness of the surroundings, up to a 60 degree solid angle, should be the same or slightly lower (never higher) than the visual task." "A circle, equal in diameter to the distance from the eye to the task, gives roughly a 60 degree solid angle. Beyond this, the brightness ratio can be greater without seriously affecting vision." Paint, because of the wide selection of colors and light reflection factors, is a valuable aid in creating proper brightness and color contrasts.

In most cases, the contrast of the visual task in the one degree circle of critical vision is fixed and cannot be changed; therefore, paint of the same brightness as this area should be selected and used to maintain uniformity out to the periphery or at least to the 60 degree solid angle limit. A complementary color to that of the object may be used if it has the same brightness or light reflection factor, thereby tending to focus the vision to the seeing task and also to give color change which is, in most cases, restful to the eyes. Grayed colors, rather than pure colors, are best suited in this instance.

Glare is another condition which tires the eyes and saps the strength. Workers should never be required to face windows, ex-

posed lights, or contrasting areas. Anything we do to reduce the contrast ratio aids seeing and reduces fatigue. A light will have less glare against a light background than against a dark one. If the walls are light, a window will be less glaring. In many cases, a shield can be erected to cut out troublesome glare, lights can be suitably shaded, and walls can be given the proper color treatment.

A fact which is usually overlooked in seeing problems, is the opening and the closing of the pupil which regulates the amount of light entering the eye. The pupil reacts in four or five one hundredths of a second, going from dark to light, but reacts much slower in going from light to dark. If a worker is working on a dark machine or dark work and then looks up to the window for only a second and then back to his work, it will be a few seconds before he can see clearly due to the slow accommodation. In general, anything we do to lighten surfaces and objects in the line of vision is beneficial.

Much has been said about "Better Light Better Sight," and the good results of increased light have been satisfactorily demonstrated. In the Textile Industry seeing is, in most cases, both very important and difficult and requires good light. The use of mill-white paint to augment the lighting is well established. However, with the advent of fluorescent lighting and better lu-

minaries, the general plant lighting has been brought up to a point where we can now consider the use of color, especially on the walls, thus creating a cheerful, homelike atmosphere and providing a change of pace which is restful to the worker.

In general, plant interiors should be as light and soft as possible, with white on the ceiling and light tints on the walls as the best aid to illumination. A darker dado can be used, providing the reflection factor of the wall color is not more than twice that of the dado. This will look neat and be easy to keep clean. In general, grayed colors are used as they are more restful and more harmonious. In corridors, rest rooms, etc., use colors which provide a change of pace. Cool colors, such as blue and green, are calming. Warm colors, such as tan and coral, are stimulating. Blue, stippled on the windows may reduce the temperature a couple of degrees, but the psychological impression emphasizes the difference, and the worker feels cooler. Wall colors with tints of blue and green have the same effect. In rest rooms, tints of coral and rose seem to please most women, while blue is the choice of most men.

* Faber Birren, Color Consultant, 500 Fifth Avenue, New York City.

* H. E. Williams, Safety Engineer, Marshall Field & Co., Spry, North Carolina.

* Matthew Luckiesh, Director, Lighting Research Laboratory, General Electric Company, Nela Park, Cleveland, Ohio.

WEDNESDAY AFTERNOON SESSION

October 4, 1944

Presiding: JOHN J. BURGER, Sec'y., Safety Committee, W. J. Dickey & Sons, Inc., Oella, Md.

Emphasize the Benefits of Safety

By THOMAS R. SELF

Asst. Div. Engineering Mgr., American Mutual Liability Insurance Co., Atlanta, Ga.

What connection is there between our instinctive desire for self-promotion and our desire to minimize the occurrence of accidental injuries? There is an inescapable connection; failure to recognize it is often the primary reason for our bewildering failures to get a more widespread acceptance of safety principles. It is necessary,

therefore, that we develop our approach on the premise that people more readily accept ideas when those ideas are presented in such a way that the personal benefits are made obvious to the individual. Proper emphasis of the benefits of safety is therefore a most important phase of a safety program.

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In getting action on an organization-wide basis it is necessary that the action be incorporated as one of the company's operating policies, otherwise it may be localized in one or more departments of the organization. It is only logical, therefore, that greater and more lasting results will be achieved if the initial contacts in selling safety ideas are made in the executive group of the organization. This will insure that the safety effort, once it gets underway, will be uniform throughout the organization through top management's desire that accident prevention be made a part of the company's operating policy.

It would be a great relief to all of us if the problem of injecting safety into a business organization were as simple as explaining safety to top management. There is a lot more to it than that. Most of our textile manufacturing firms have been in business for many years. During that time certain procedures have become habitual and in many instances those procedures have included a minimum of attention to accident hazards. Habit and tradition are serious obstacles to a good safety program because most such programs are of necessity contrary to established customs in the plant. We unconsciously resist changes and we are likely to say it can't be done when a change involves interruptions to our established thinking processes. Whether selling vacuum cleaners or something that seems as intangible as safety, we must first, figuratively at least, get our foot into the door before the sale can proceed. What better way is there to ease the resisting pressure on the door than to display the personal benefits that will come to the user of our commodity?

Benefits of Safety to Management

Now what does our safety idea or plan have in the way of benefits for the executive that will arouse interest and enable us to get a fair hearing for our plan? Before answering that question it would seem desirable to develop a mental outline of the available benefits and then carefully select the outstanding one for initial presentation as an interest-creating approach. Assuming that our safety plan has been carefully thought out from the viewpoint of tailoring it to fit the needs and capabilities of the particular organization we are dealing with

(this, incidentally, is a *must* in every instance) what does our plan have to interest the top executive? Will it grow new hair on his rapidly enlarging bald spot, or will it improve his golf game? Hardly anything quite that personal but nevertheless we can show him the extent to which he as an individual will be relieved of much tedious detail work; that his organization as a whole will function more smoothly, and more efficiently; that considerable personal credit will come to him; and that entirely aside from the humanitarian angle which we may normally take for granted, his firm will save many through a well conceived and properly conducted plan of accident prevention.

Let's assume that our organization we are trying to help is an average one in which top management is interested in safety to the extent that quite a bit of wishful thinking has been done about accident prevention plus a few sporadic attempts to get safety work going, these attempts having bogged down as a result of inadequate planning and a lack of proper direction of the effort. After a few such false starts top management usually will throw up their hands and back away from the effort due to the detail work involved and their almost total ignorance of what to do and how to do it. A properly developed plan of accident prevention activities will relieve management of this difficulty. It is seldom that we find that top management is unwilling to go along and actively support safety if we can make things easier for them by giving them proper tools in the form of a workable plan and then showing them how to put the plan in force without confusion and with a minimum of executive time and effort. Emphasis on the latter usually gain attention.

Next, how can a well organized and effectively conducted plan of accident prevention increase the efficiency of an operating organization? It is generally recognized by those industrialists who have experienced the transition from poor to good accident records that labor-management relations have improved, there is better coordination between departments and more cooperation between individuals as the accident record improves. Stating it a bit differently, it is almost a physical impossibility for a poorly run, inefficient business organization to de-

velop an accident record that will compare favorably with the accident record of an efficient organization. And, since the same methods make both production and safety click, smoking out the reasons for poor safety records brings out the reasons for poor production records in many cases.

Who gets his name in the paper, his picture in the trade magazine or is invited to address the local civic organization when a particular plant does an outstanding job of eliminating industrial injuries? It is usually the top man in the company. And, in most cases, top management deserves the primary credit for a good accident record as the accident record in any plant is no better, on a comparative basis, than top management wants it to be. By the same yardstick top management deserves the primary blame for a poor accident record. The opportunity to avoid the stigma of callousness to human suffering reflected by a plant's continued development of poor safety records should be an additional incentive for the executive group to invite and support effective safety work in their organization.

Why should executive management have an economic interest in accident prevention, looking at the matter from a purely cold-blooded dollars and cents viewpoint? Even before industry was faced with an acute labor problem, accidents created problems of replacement of skilled employees whose services were interrupted or terminated by accidental injuries. Also, not all accidents involving potential but no actual injuries to workers can be dismissed with a shrug. Quite often accidents due to the same causes result in serious damage to equipment and protracted work stoppages but through fortuitous circumstances there are no personal injuries.

I have deliberately stressed top management's part on the premise that what management really wants in the way of safety is usually what management goes after and gets. It is only logical that the more we as safety men are able to stimulate executive management's desire to prevent accidents the greater are our contributions to the success of the plant safety work.

Benefits of Safety to Supervisors and Employees

With executive management actively interested in safety we have passed our highest

hurdle as the operating superintendents and other top bracket supervisors usually fall into line. The benefits to these men are in the form of personal recognition by top management for good performance of duty. However, this emphasis should come from the top of the organization through the usual channels as further evidence to the upper bracket supervisors that safety and production are inseparable.

When we reach the supervisor directly responsible for small groups of rank and file employees, it is quite important that the extent that these individuals can benefit from safety be strongly emphasized. This group, being only one step removed from the rank and file worker, thinks along lines quite similar to the thinking of the workers. However, in his supervisory capacity he has definite responsibilities which in no fashion are similar to the responsibilities of the individual workman. If he is possessed of the average man's ambition he will appreciate and make use of every opportunity to improve his chances of promotion. If his performance in matters of accident control is made a part of those opportunities, the benefits of accident-free operations within his jurisdiction are obvious to him. Here again these benefits must be emphasized by management through organization channels, not as a directive but in such a manner that there is left no uncertainty regarding management's interest.

The one person carrying the greatest responsibility for the safety of the individual worker is the worker's immediate supervisor. Hence that supervisor is the logical person to depend upon to get and hold the safety interest of the rank and file workers. If we do a good job of arousing and holding the active interest of the supervisor, that interest will be communicated to the workers if the supervisor is worthy of his title. The benefits of safety to the worker are numerous. His physical well-being, the retention of his earning capacity and his place in the home and community are benefits that accrue to the safe worker and can be contrasted with the physical suffering and the monetary hardships affecting the worker and his family that invariably result from serious injuries. Some plants have seen fit to emphasize safety benefits in a more tangible way through monetary awards or bonuses to all em-

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ployees of a department for each month of accident-free operations. That method might be likened to the Chinese custom of paying the doctor only while the patient is well. But, like the Chinese medical arrangement, it provides a definite incentive for accomplishment and its works where it is properly administered. A good selection of signs and word posters available to industry is another good medium of stressing safety benefits to the worker.

Looking at the matter from a broad point of view we must realize the need for arousing and maintaining active interest in accident prevention from the top to the

bottom of the organization. Without this interest no amount of effort can produce lasting results. This can be accomplished by showing all members of an organization how he or she will personally benefit by doing every job safely. A satisfactory amount of safety interest can be aroused and maintained in any organization if we study the problem carefully, plan our approach logically and make full use of the ideas and material that are ours to use. Safety interest alone will accomplish nothing unless it is properly directed and coordinated in order that the interest may be transformed into directed efforts.

When the Textile Worker Goes Home

E. W. WINKLER

Assistant Professor of Electrical Engineering, North Carolina State College of Agriculture and Engineering of the University of North Carolina, Raleigh, N. C.

The records show that nearly one and one-half times as many workers are killed by off-the-job accidents as are killed by work accidents. When the low frequency and severity rates of the textile industry are taken into account, it is reasonable to assume that the ratio of off-the-job accidents to work accidents is much greater. However, this is not the whole story. An accident in the family usually means time lost by the worker. It always results in decreased production and low efficiency on the part of the worker. In the textile industry the time lost by workers because of accidents in the family is probably greater than the time lost because of accidents in the mill.

The textile industry as a whole has made an enviable record in its attempts to reduce the accident frequency rate. Recently in North Carolina two mills were honored for completing five consecutive years of operation without a lost time accident. Many other mills throughout the industry undoubtedly have equally good records. These records exist because management and supervision have made untiring efforts to prevent accidents, and the worker has cooperated one hundred per cent. It is regrettable that all textile mills cannot boast of such fine records, but it is hoped that continued activity will improve this condition.

It would be interesting to know the number of days lost by these mills having low frequency rates because of off-the-job accidents. Likewise it would be interesting to know how many accidents occurred to members of the families of the workers in these mills. There is no doubt but that an inspirational safety program in the plant will in many cases have a desirable influence on the attitude towards safety in the home. Unfortunately, in many mills the safety program is not inspirational. It is tailored to fit the mill. It is built around machine guarding, a rule book, and specialized activity. There is very little in the program that the worker can apply directly in his home. This point can be emphasized by referring to a certain mill in North Carolina. The training director wanted to include a ten-hour general safety course in his pre-service training. The safety director objected on the grounds that a ten-hour course is entirely too short to give any effective safety instruction and hence it would be a waste of time. A ten-hour course, based on creating interest in safety, would have a very good influence on the worker, both on and off the job.

Management is too often inclined to take the attitude that the company has no responsibility in what happens off the job. If the worker's home is to be safe,

then it is up to the worker to make it safe. This assumes that each worker has the ability and initiative to organize and maintain a miniature safety program in the home. Certainly management should realize that time lost by a skilled worker because of a home accident means financial loss to the company. Management should also realize that very few men have the ability and experience to organize and maintain a safety program, even for the home. Hence there is no justification for the assumption that the average textile worker can make his home safe, particularly when he is away from home most of the day and the safety interest in the community is low.

Fundamentals Are Same

Fundamentally, a safety program for a community or for a school differs very little from a safety program in a mill. The elimination of unsafe conditions and unsafe practices are the primary objectives of each program. Both programs must be built around education, and the same fundamentals of accident prevention will apply in each case. In the mill the program must have the active support of top management if it is to be successful. Likewise the success of a community safety program will depend on the active support of the leaders of the community. Who are these community leaders? In general they are the local business men, the local city or town officials, the school teachers, the ministers and the active church workers. Very few of these have had safety training and hence cannot appreciate the value of safety education. Recently this writer offered to present a safety film and talk at a local church gathering. The leader of the group replied that they had had a safety lecture about a year ago and she did not believe the group would be interested in another. A local Parent-Teacher Association group decided that the ten-dollar fee for the National Safety Council's School Membership was too expensive. These points show that the leaders in the average community are not safety conscious, and that if the worker is to be safe off the job, some outside force must be found to stimulate safety efforts in the home.

The average textile mill has a great

opportunity to promote home and school safety. First, it has a safety organization which can be easily expanded to include home and community safety. Second, it has access to certain forms of safety literature which can be integrated into community safety education. Third, practically all mills have a certain number of supervisors who have completed the ninety-six hour safety engineering course sponsored by the Department of Labor. Many of these men would give enthusiastic support to a community safety program. It is believed that if management of the mill really got behind a home and school safety program, it would not take long for the average man or women in the community to appreciate the value of the program.

The average textile mill can promote off-the-job safety in many ways. Each community will differ from every other community, and hence the plan suggested here may have to be modified in many cases. Geographical, climatic, racial, and population factors will have to be considered in each case. But the fundamental objectives will be the same in all cases and many of the problems of organization and promotion will be the same. If a textile mill has a safety program in operation the following features can be added:

1. Appointment of a committee on home safety:

This committee should consist of men or women who are interested in safety, who own their homes, and who live near the general center of the community. The members of this committee should be interested in civic problems. They should have access to any publications on safety which the company receives and they should feel free to use projectors or other equipment owned by the company.

2. Appointment of a committee on school and playground safety:

This committee should be made up of men or women who have children in school. While the activities of this committee will be very similar to those of the home safety committee, it is felt that the magnitude of the problem will justify separate committees. This committee should have the same access to equipment

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and publications recommended for the home safety committee, and in addition the members should have the opportunity to visit the school during school hours and thus take an active part in the program. To be most effective the committee members should be permitted to make some of their visits on company time.

3. The company would pay the membership fee of the National Safety Council School Membership for the local school. The cost of this membership is only ten dollars and would probably represent a very small percentage of the cost of the company safety program. This membership would serve as a stimulus for both the home safety and school safety committee as its activities deal with safety both in the home and in the school. It is believed that no single expenditure would return greater dividends to the company in the form of reduced time lost than the investment in the school membership.

4. The company could supply homes with safety literature. This could be in the form of publications from the National Safety Council and from the insurance company, and mimeographed material produced by the company. For a very small cost a safety calendar could be provided for every home.

5. The company could promote an annual get-together, probably in the form of a picnic, where accident prevention could be stressed through games and contests. Safety awards could be given at this meeting and the records and activities of the various groups and committees could be presented. It is believed that this type of meeting would do a great deal to create interest in safety.

Problems Always Vary

The five suggestions listed above could

be modified to fit any particular community. In many small towns the textile mills furnish employment for as much as ninety per cent of the working population. In these towns the attempts of the company to promote community safety should find willing cooperation. In the larger towns and cities the problem is more difficult because the homes of the workers are usually scattered throughout the city. Here the community safety program could begin with the school and then work back to the homes. In many cases several textile mills could cooperate in a home safety program. This cooperation should find many opportunities for rivalry and contests.

The war has shown us that we cannot afford to let accidents decrease our production and thus prolong the war. Industrial safety has been improved and accidents to workers reduced by vigorous promotion of safety education. But this emphasis has not been directed to home safety and as a result the past years record shows about 24,500 workers killed in off-the-job accidents, and a much larger number temporarily or permanently disabled. These records alone prove that there is a great need for off-the-job safety promotion. From a national point of view accidents must be prevented to shorten the war; from a humanitarian point of view accidents must be prevented to prevent physical suffering and from a spiritual point of view accidents must be prevented so that no man or woman will have to endure the anguish when accidental death takes a loved one. Promotion of off-the-job safety is both a challenge and a responsibility, and the textile industry can accept the challenge and shoulder the responsibility by expanding its safety program to prevent off-the-job accidents.

Getting Active Participation by Top Executives In an Accident Prevention Program

A Symposium

Discussion Leader: H. E. WILLIAMS, Engineering Dept., Marshall Field & Co., Spray, N. C.

A. LABOR-MANAGEMENT COMMITTEE MEMBER

MARTHA PITTENGER

Avondale Mills, Alexander City, Alabama

Our Labor Management Committee is not a "War Baby." This committee was originated during peacetime by the Chairman of the Board of Avondale Mills, Mr. Donald Comer. We were then thought of as a Mill Committee.

To date the safety record of the Bevelle Plant is three million manhours without a lost time accident. We have not dreamed up this record—we have worked for it—and we are striving to make even a greater record.

Some of the actual benefits resulting from the members' suggestions to prevent accidents are:

1. Safety guards have been put around looms at the end of the alleys. Safety guard has been put at the box platform of the quill stripper. Motors also have safety guards.
2. Unprotected fast motion shafts in the Picker Room have a red safety cap,

which stops when coming in contact with a person's clothing.

3. Self oilers have been established on all line shafting.
4. Holders for lap pins have been put at the back of the cards.
5. Slanting window sills have been put in the Spinning Room.
6. Larger bottle containers have been placed throughout the mill.
7. Fans have been put in several departments.
8. Smaller wheels are to be put on trays holding oil drums. This will prevent the oiler having to stand on the slippery rim of the tray and will save oil.
9. Chains have been put at the runway leading from the mill and are put up when it rains so that the employees will use the steps, thereby, preventing falls.

B. SAFETY DIRECTOR

DAVID Z. WALLEY

Personnel and Safety Dir., Peerless Woolen Mills, Rossville, Ga.

The executives of a plant are definitely sold on safety when they employ a Safety Director to design, systematize and stimulate a workable and effective safety program. The responsibility of management, however, does not end there. They, too, must have a designated share in the program if it is to be truly adequate.

Ways to Arouse Management's Interest

Since executives are most easily influenced by what they can see in *black and white*, an appeal to the eye or through the printed word will be the Safety Director's

best method in gaining their interest. First of all, use attractively prepared graphs and charts which explain as briefly and concisely as possible the plant accident reports and waste records. Secondly, use selected slide film and movies which illustrate and put over in a very few minutes more than the average person can in a lengthy conversation. Thirdly, use selected short topics from safety periodicals; and finally, use State and Federal laws which were made to help protect the working man. The Safety Director should be well versed in both types of law in order to interpret them intelligently to management.

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"The black and white method," however, is not the only one which the Safety Director can use advantageously. There is not a single top executive in the United States who is not really sincere in wanting his employees to have a safe place in which to work, or in wanting their families to avoid needless suffering because the bread winner had an accident in his plant. Thus the humanitarian standpoint is often effective in enlisting the interest of management.

If the morale of the employees is affected by the high frequency or severity of accidents and needs a boost from a psychological viewpoint, management is always glad to lend a helping hand to reassure them.

Training Within Industry, the insurance agent and Safety Engineer, as well as other outside agencies, are often a big help to the Safety Director in arousing management's enthusiastic cooperation.

Ways Management Actively Participates

One of the most common ways to gain the active participation of management in a Safety Program is to invite the executives to the safety meetings. Their presence proves to be a great asset, arousing the interest of all present.

Many companies have committees to make regular tours of inspection throughout the plant. Needless to say, an executive adds much prestige when he accompanies the committee on its rounds.

A number of plants have schools for safety instructions. The attendance of these classes by management will not only encourage and reassure the other participants but will also transmit this feeling of enthusiasm to their fellow workers.

A safety contest announced by a signed letter from a top executive arouses a spontaneous, contagious interest. He will enjoy tremendously serving on the committee to choose the winners. And think of the

"kick" the employees will get when the management personally awards the prizes, either publicly or privately, in his office! For continued results, such presentations should be publicized with pictures in the house organ.

As for the house organ, one cannot place too much emphasis on the safety articles which it contains and which are signed by a plant executive.

Benefits Gained

If the executives actively participate in the accident prevention program, the employees will have a much safer place in which to work, as an executive will see and suggest immediate improvements that possibly the Safety Director was just hoping for in the near future. The supervision of employees will be much improved and their instructions will be more thorough with regard to safety. The first aid and medical facilities should improve in the same ratio; the morale of the employees will be higher; and the fear from financial loss due to accidents will decrease.

When top management participates, the foreman will also benefit, as he will have a more regular work force; his operating costs will be lower; in all possibility his production will increase; and he will have more pride in his department.

The rewards to management will be greater cooperation from the employees and foremen and a lower cost per manufactured unit.

The success of the Safety Director's program is assured when management and labor, with a unity of purpose, fight for a common cause—the war against accidents.

Other speakers presented the points of view of superintendents and foremen. The symposium closed with a discussion led by Mr. H. E. Williams.