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**1959**

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# PULP & PAPER

## REPORT OF THE GENERAL CHAIRMAN

By ROBERT G. BELKNAP

Personnel Mgr., Bemis Bro. Bag Co., East Pepperell, Mass.

In case there is a question in anyone's mind, we did make progress this year. In fact, the Section has so many projects under way, it is difficult to compile a report. About the time you pinpoint a project you find out it has been forwarded to the next step. This can be disconcerting when you are trying to meet a deadline for a report to the Industrial Conference.

I can tell you people that the Pulp and Paper Section has the most dedicated group of men on the executive committee of any section in the Council. But what can we look forward to in the future?

I think this coming year will see the completion of the Pulp and Paper manual. We have waited a long time for this manual but its value to our industry will be worth all the time and effort.

We will also see several new data sheets issued (there are twelve in the works), new safety instruction cards plus older material brought up to date.

More companies will participate in off-the-job safety, largely as a result of our off the job committee's work.

The target program of safest industry in business is being adopted by both companies

and unions. This is a real goal we all want to reach and more effort should be given to this program.

Membership continues to be a problem; however, the section is actively working with the Council to obtain new members and keep present members. Two or three of the companies which had decided to cancel their membership have reconsidered. Our new membership committee should show positive results this coming year.

You will also see some changes in our Congress program. A study is being made to see if we can not streamline our sessions in order to make the Congress more valuable to ourselves and our companies.

These are just some of the general projects requiring the attention of the Section. There are many more being carried forward by individual committees and time does not permit me to mention all of them.

To all the members of the Section, the executive committee and particularly the other general officers and the staff representative, thank you for your cooperation and your work this year. It has been a real privilege and pleasure to have been your General Chairman.

## BLOOD AND TEARS

By HARRY H. SAUNDERS

Vice Pres., St. Joe Paper Co., Port St. Joe, Fla.

The high degree of civilization that we enjoy today, and through all the ages of advancement, has been built on blood and tears. Christianity started with blood and tears when Christ was crucified on the Cross, and has survived and grown on the same formula. Let us not forget that our religious freedom was bought with blood and

tears, and that peace, shaky as it is, was bought with blood and tears.

We should never forget that our American heritage was bought with blood. We are a careless, easy-forgetting people, but we should never forget that the wonderful way of life called Americanism was forged in a crucible of blood and tears.

History does not tell us how many lives were lost in the building of the pyramids, the building of the great wall of China or the many other outstanding projects which were constructed in ancient times, a majority of which had their places in building the foundation for our present civilization. But we can be assured that they were built on blood and tears.

We do not know how many lives it cost per mile to build the first railroad linking the Atlantic Ocean with the Pacific, the building of which advanced our civilization so rapidly. We do know that the cost in lives was tremendous.

We do know that in our generation during this century we built the Hoover Dam at a cost of 110 lives and the Colorado River Aqueduct at a cost of 80 lives. The Key West Extension—built across the Keys from Homestead to Key West, Florida, by the Florida East Coast Railway—was constructed at a cost of  $1\frac{1}{2}$  lives per mile. The Panama Canal cost 1,219 lives—a cost of 24 lives per mile.

All of these things contributed to civilization as we now have it.

But just because our civilization was built on blood and tears is no reason why we have to operate it on blood and tears. We are shedding blood and tears every hour—on our highways, our manufacturing plants, our everyday life—all without adding one iota of progress to our civilization.

True, some blood and tears are being shed for the advancement of civilization—some being shed in some parts of the world for the advancement of Christianity. But most of it is being wasted by our idolatrous worship of speed—carelessness—thoughtlessness—over indulgence—or by the “I know it all, don’t tell me anything” type of individual.

If blood must be shed, let it be done for the building of civilization or Christianity, and not for their operation.

When I was invited to make this talk, it was suggested that I might want to tell you something about what we had done, were doing and expect to do at St. Joe.

After completing our expansion program we really got started on a safety program in 1954. We hired a competent Safety Director. First came the work of correcting

conditions which had existed for years or which had been created during the expansion program. We started selling safety to the employees through effective communications and action. We feel that the most outstanding feature of our program is the method of communication. Each month the safety department develops a new theme, stressing one or two subjects that apply to the majority of mill personnel. We try to present these subjects in an interesting way. A plan of the meeting is developed, typed and presented to the vice president in charge of operations and to the production manager.

A general safety meeting is held each month, and all department heads and assistants are required to attend. This meeting is conducted by our vice president in charge of operations. Minutes are written in such a manner that they are used by the department heads when holding meetings with their foremen. Minutes are taken at the department head meetings and sent to the foremen to use in conducting his meetings with the employees. Minutes are made at these meetings and distributed to all supervisors throughout the mill. This method of communication tells top management and all supervisors the problems that exist among the rank and file. We try to act on all good safety suggestions. Top management—from our president on down—gives our safety director and his safety program their 100 per cent cooperation. All of this is paying off—in 1953 our frequency rate was 18.66. In 1958 this rate had dropped to 2.54.

Up until this year we have not published a company magazine. One of the deciding factors in making our decision to start such a publication was our feeling that it would offer additional means of selling safety, not only to the worker, but to his entire family.

We sponsor the noon radio news broadcast each day. So much of the sponsorship time is devoted to safety, and the National Safety Council is quoted so frequently that I am confident if you asked the radio audience who sponsors the daily news broadcast that a majority of them would tell you that it was sponsored by the National Safety Council instead of by the St. Joe Paper Company.

It would seem that when you, as the safety director, have made sure that your

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mill is mechanically safe; when you have installed all possible safety equipment; when you have patiently pointed out all the possible danger points, that you could rear back, place your feet on the desk and have less to do than anyone else in the mill. Unfortunately, it does not work that way. If you are going to have a good safety record, you have to be the busiest person on the job. You are not like a tour boss who, at the end of his shift, can forget the job until the start of his next shift—you can never forget your job. You have to be an expert in first aid—you have to be a teacher—you have to be a counsellor—you have to be a diplomat—you have to be a father confessor—you have to be a psychologist—and above all, you have to be human. Sometimes you have to have the courage to argue with management. Brother, you have a job.

In an effort to make our employees safety conscious, most of us have employed all kinds of gimmicks and gadgets. We have employed friendly rivalry between departments. We have offered prizes, dinners and what have you. Certainly most of us are willing to try most anything to improve our safety record. I am wondering where this is leading us. How long will these methods continue to be of value? Is it time that we were turning our thinking to things along more fundamental lines?

When an employee is injured, all of us want to do everything that we possibly can for him. There is hardly a session of any state legislature that a bill is not introduced to increase the compensation rate of pay and to increase the number of weeks compensation is to be paid, even though the employee may have been injured by his willful negligence. Some of these are justified and are not objected to by industry. For example, at the last session the Florida Legislature increased the compensation rate from \$30.00 to \$36.00, and from 16 weeks to 26 weeks without objections being raised by the pulp and paper industry in Florida. It was not because we were not interested or that we did not know what was going on. We did.

The pulp and paper industry takes a very active interest in all legislative matters and I am proud of our record in the legislature. But I do want to sound a word of warning. Let's not wake up some day and find ourselves in the position, whether from our own

company policy or from legislative acts, where we will have to say to an employee, "Now, please don't get hurt" on one hand, and on the other hand we will say, "But if you do get hurt, look what you get." And I am not so sure but that we are beginning to approach this point.

From 1940 until 1954 I was directly responsible for safety at St. Joe. I had a few other responsibilities, such as the operation of the mill—costs—purchasing. During the war I had at times such added responsibilities as wood procurement and dealing with WPB and OPA. I am proud of the accomplishments made during those years in all phases of the operation except safety.

It's not easy for me to stand here before you this afternoon and tell you some of the things that I am going to tell you. Blood and Tears! Our safety record during those years was far from good, and I was directly responsible. How I wish now that I had spent more time—more effort on safety.

Have you ever had an employee drawn between an empty reel and reel drum, a space of not over 4 to 6 inches, and have that crushed body dropped to the basement?

Have you ever had an employee cleaning ashes from a 250 foot smoke stack and have him covered up by hot ashes falling on him?

Have you ever had an employee caught between the shear point of the counterweight and the bed of a crane?

Have you ever had an employee get knocked into the woodyard flume, go up the conveyor and pass through the barking drum?

Have you ever had a girl friend? I mean one of the six or seven year old variety? The kind that your wife would approve of? Her Daddy worked in one of the local stores—you were impressed by his willingness to work and apparent desire to better himself, so you gave him a job in the mill. Due to his inexperience you start him out as a painter. He makes good on that and you transfer him to the meter department and find that he is a natural for that department. Your own daughters have married and moved away, so you and your wife sorter adopt this little girl friend. At Christmas time you make an effort to give her

something special. You remember her birthday. When you go on a trip you always try to bring her some little something. You grow to love her and she has a very special place in your heart. And then, have you had to go to her and tell her that through no fault of his own that daddy was killed in your mill?

Blood and tears—I have sweat the blood and I have shed the tears.

If any of these or similar things have happened to you, then you know what I mean. If they haven't happened to you, use everything at your command to see that they don't. It could happen to you—don't let it. When you move on ahead to other duties, and safety is no longer your responsibility, you will be far happier if they haven't happened.

Safety in the Sixties—what a wonderful challenge. What a challenge to management. What a challenge to you. True, we will have many new problems, and we will still have all of the old ones. But it can be done—Let's accept the challenge. Let's operate our civilization in the Sixties without blood and without tears.

I am sure that all of you have heard many times the slogan, "It's what's up front that counts." That is not applicable when it comes to safety. If we are going to accept the challenge and have Safety in the Sixties, it's going to be what's on top, and how we use it, that counts. I cannot tell you how to prevent accidents, but I can ask, "Are you using what's on top to prevent the blood and avoid the tears?"

## THE PERSONAL TOUCH

By ROBERT D. GIDEL  
Chief, Division of Safety Standards and Services  
U. S. Department of Labor, Washington, D. C.

Reason and logic fly out the window when a human is personally involved with a situation. Yet, to make the most impression on one you must personalize your pitch to his interest. "What's in it for me?" is the first thing you'll be asked.

If his reason and logic have flown you'll somehow have to attempt to supply him with some of your own making. If it hasn't flown, then you still have to compete with all the diversionary elements our modern civilization provides in order to get through to him.

Our ancestors, not so far removed, would be sure some evil influences were taking over if they could see what is being done at Cape Canaveral, and at our jet accommodating airfields these days.

The men who pioneered in the safety field a scant 45 or so years ago, and those who got in the business when it got it's first pair of long pants, some 27 years ago, should flip at the concepts and responsibilities of a safety man now as compared with then.

Even the terminology used now is out of this world. Yet, who could be considered other than an illiterate lout who did not comprehend a missile, an anti-missile missile, an astronaut, a Sputnik, blast-off, count-down, Vanguard, Jupiter, Thor and an ICBM.

We can't pick up the paper without reading about radiation fallout, mutations, and H-bombs. We initiate geophysical research years to learn more about the world in which we live and wind up knowing less comparatively than we did before in many areas since we discover there is tremendously more to a subject than we thought existed previously.

We aren't sure what to do with our money. The cost of living index makes us cuss out the farmer, or the grocer, or the landlord, or others responsible when it climbs. If we wind up with an extra dollar we're afraid to save it since we may stand to lose 50 cents due to inflation.

The buy now, pay later phobia has us all living years beyond our means. We're

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using up and enjoying today things we  
won't pay for for months or years. And,  
we conduct ourselves in the meantime as  
if we don't care whether we'll be around  
to pick up the tab.

We must accept or condition ourselves  
to the philosophies of the do-gooders, the  
joiners, the a-ginners, the conformists, the  
beatniks and various other ideologies and  
cults.

We are in an era of the big bore and  
the goof-off. We are snowed under by  
repairmen who can't repair, executives  
whose minds are executing maneuvers on  
the golf course, school systems full of  
cinch courses for students, and mothers  
who spend their time in clubs saving the  
world while letting their kids run wild.  
We are hep to three day weekends, two  
hour lunches and half day coffee breaks.

The typical philosophy of the age is  
that of the young mother who was over-  
heard in a department store elevator the  
other day. She was telling her husband,  
"If we miss two payments on the washing  
machine, and one on the refrigerator, we  
will have enough money for a down pay-  
ment on a television set."

Even teachers are passing the buck in  
their report cards on the students' per-  
formance at school. Instead of saying the  
kid is lazy, they note, "he needs super-  
vision to work well." Instead of saying  
the kid is a bully, they note, "he needs  
help in learning to use qualities of leader-  
ship democratically." Instead of saying  
the kid stinks, they note, "he needs guid-  
ance in development of good habits of  
hygiene." When they note, "he seems to  
feel secure only in group situations, needs  
to develop a sense of independence," It  
means he roams in gangs.

We have been so busy worrying about  
whether the kid has a pleasing personality  
and can perform graciously in the parlor  
that we have forgotten to teach them how  
to think beyond social chitchat, and the  
second martini.

It's also an era of double standards.

We preach the evils of alcoholism, and  
are 40 pounds overweight.

We rave about high auto insurance  
rates, then conspire with the repairman to  
fix a fender not covered by the policy.

We go on strike to prevent a buddy

from being fired, then run him down in  
our car while he is crossing the street.

We report someone who mistreats an  
animal, yet give those we supervise the  
hose treatment.

We spend our time sterilizing the baby's  
food, then leave aspirin and other haz-  
ardous items lying around for him to  
snack on.

We complain about retirement benefits  
being too low, then take no pains to keep  
from getting killed before we get a chance  
to use them.

We're against gambling for money, yet  
put our lives up for grabs everytime we  
take the car out of the garage.

Experts on human behavior say we also  
share a dangerous tendency toward pat-  
tern thinking. That is, we base our judg-  
ments on past facts that may no longer  
be accurate.

A man's judgment sometimes gets  
warped when he faces comparable situa-  
tions repeatedly. For example: we pass  
a railroad crossing every day for years  
and never see a train so we don't bother  
to slow down and look any more. One  
day, whamo, and we've had it.

We drive through a certain intersection  
with a stop sign every day for years.  
Practically never see another car so get  
in the habit of merely making a rolling  
stop and taking off without looking. One  
day, whamo, and we've had it.

We work on a machine for years with-  
out a guard. We get our reflexes tuned to  
the cycle so everything is fine. One day,  
being human, our timing is off a little, or  
something unexpected happens. Whamo!  
Look ma, no hands!

We grind tools periodically and regu-  
larly for years. Never use goggles or a  
window guard because in all these years  
not one particle has gone into our eyes.  
One day, whamo, the 10 millionth sliver  
finally hits an eyeball and puts it out of  
commission.

To put it in a little different vein, we  
make time with a redhead, from this we  
think we're a whiz with all redheads, and,  
whamo, we get knocked on our can by  
the next one.

This is the story of accident prevention,  
we can't base our judgment on past facts

that may no longer be accurate. Now, how can we get people interested in safety when they have such current philosophies and as such, feel there are much more involved and important things to worry about than some dull, monotonous, routine such as "Look out or you will hurt yourself."

We have to reach "The thinking man" as he reaches for his filter cigarette. They said it couldn't be done, but we have to do it.

We have to learn to count down, and learn when to blast off. We have to get into orbit and make sure our transmitters work on a receptive wave length. We must have the energy and bounce that the "Playtex" people build into their product.

Our problem these days isn't that we don't know how to prevent accidents. We have all the technical know how, the systems for recording injuries, investigating injuries, methods of training and supervision, means for providing mechanical safeguarding and all sorts of personal protective equipment and devices. We have ways of finding out the toxic limits for hazardous materials and we know how to set up controls to cover any situation. These are easy.

Our main problem these days is getting the workers to want to prevent accidents. The problem is how we can plant a spark of self-discipline in every worker.

If we expect to do this, we must compete with every other media; radio, TV, movies, the newspapers, and imagination, in order to get through to the individual and personalize to him the need for looking out for his well-being. We must convince him that he must be safe as well as use a deodorant each day. He should protect his fingers and eyes as he does his teeth, by brushing them with a certain toothpaste every morning, which will protect him even if he can't brush again during the day and keep his breath kissing sweet.

I noted the other day where an aspiring author sent a manuscript to an editor with a note, "The characters in this story are purely fictional and bear no resemblance to any person living or dead."

A few days later he received his manu-

script back with the pencil note "That's what's wrong with it!"

Too many safety programs are like this story; they bear no resemblance to the people they are dealing with.

Our industrial injury frequencies have been dropping over the years but the total number of deaths and the total number of injuries has been reduced very, very slowly. Apparently, we must take a fresh look at the situation, our efforts and our colleagues, to see if we can change our techniques or enlist other forces to help us reduce this yearly toll.

New problems due to technological advances must be considered.

A new dimension has been added to our manpower problem: the quality of our labor force. Brawn in a worker is no longer enough. Technological developments in the years ahead will demand a labor force possessing a high degree of skill and creativeness.

Industrial change, whether increasing output, a shifting labor force, or new production methods, usually means increased work injuries. This was vividly demonstrated during World War II when greater production meant the employment of less experienced people, of older and younger workers, and women.

During the next decade, we will have a similar situation, though we have no war. By 1965 the deficits in births arising out of the depression of the 1930s will cause a relative shortage of men in the prime working ages.

As a consequence, our increased labor force requirements will have to come from the same groups from which it came during the last war.

That labor force will rise by some 10,000,000 workers to about 79,000,000. There will be practically no increase in men workers in the 25 to 44 age group. About 4½ million of the 10,000,000 increase will be younger men and women, 14 to 24. These future workers are in the nation's schools today. The rest of the increase, 5 million, will be men 45 and over and women over 35.

If our economy continues to expand at recent rates, the gross national product must increase more than 40 per cent, with

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the per capita share of this product to increase some 25 per cent.

These figures all boil down to the fact that our most productive population will be decreasing while our less productive population and the overall demand for goods and services are increasing.

To keep pace with such a situation there are three essentials. We must: 1. conserve the manpower we have, 2. upgrade its skill, and 3. increase its productivity.

The techniques of a good accident prevention program will help achieve all three. The safety profession must be prepared to help develop and conserve such a force.

As I see it, we have at least three basic personalizing problems to keep us from ending up in the unemployment insurance lineup: 1. we can personalize ourselves, to the times, 2. we can compete with diversionary elements by personalizing our message to our audiences, and 3. we can personalize to the boss and convince him we're not merely a luxury he can afford in a boom but can get along without when things slow down.

Keeping in tune with the times is essential to success in competing with diversionary elements to get the safety message through to its audience.

It isn't easy to get through to people these days. You wouldn't try to sell a modern young girl a pair of high button shoes. You wouldn't try to sell a young hot-rodder on the benefits of his owning an old Essex. You wouldn't give your supervisors a five minute safety talk in Latin. Yet, in effect, you're trying to do all three of these things unless you bring safety to the immediate personal level of every worker by relating it to current events, current problems, current interests, personal objectives and benefits.

In other words, we've got to get our techniques out of this world, up with the stars, because that is where people are looking or their minds are functioning. We've got to make safety, for each individual worker, as intimate to him as anything else he owns, uses or covets. It has to fit like an old shoe to any and all occasions he faces hour by hour, day by day, on or off the job.

Specialists thrive in many industries and occupational fields, but a safety man cuts his own throat if he specializes.

Yet, I've seen countless "so-called" safety men who had one or two specialties and based their whole activities on these alone. Then, they wondered why they didn't get results, or were fired. Some of these guys are: the safety shoe fitters, the goggle prescribers, the inspectors, the 5 minute talkers, the poster paster uppers, the film showers, the report writers and keepers, the frequency and severity figures, the committee setter uppers, the investigators, the job analyzers, the trainers, the cost figurers, the guard putter-oners, the blame placers, the chewer outers, and the paper shufflers.

Just enumerating all these types indicates how foolish it is to think anyone could rely on only a few of them to conduct an effective safety program.

Another point: I think we are really on very thin ground in our work as safety men. If management would ever really get smart and make: 1. their personnel staffs select and place on the basis of job requirements, matching personal qualifications and abilities; 2. their supervisors train and supervise on the basis of the individual elements and problems of the job; 3. their purchasers purchase on the basis of specifications considering hazards of materials, machines and equipment as well as operating specs; 4. their schedulers develop realistic due dates based on human as well as operational factors; 5. their layout, planning, and design men allow for the effective functioning of the human in the maze of the physical, mechanical and chemical environment; 6. their maintenance men set up procedures to keep machines, equipment and physical facilities operating safely and effectively; and 7. an effort to keep the physical, mental and emotional capabilities of the human at a high level.

If management did all these, the safety profession could fold up and fade away like the old harness manufacturers did. To make it more modern, the way the demand for unmanned missiles is making manned aircraft obsolete.

Fortunately, industrial management has not yet become so proficient that it

doesn't, at least, need a coordinator, or bird dog, to see that these things are actually accomplished. That's where we come in.

But to keep pace, many safety men must revise their philosophy and approach to accident prevention. If safety men are to convince production minded, cost-conscious management that they are more than ersatz professionals, they must display at least a working knowledge of the most modern production techniques and principles of management. These include: human psychology, personnel selection and placement, job analysis, supervisory techniques, the physical sciences, training techniques, scheduling and planning, quality control, cost analysis, physical inspection and evaluation, records and reports, investigative procedures and techniques, maintenance schedules and procedures, technical research and analysis, layout and arrangement of production facilities, specifications and standards, material and process flow, and materials, handling, and others.

How much do you know about each of these subject areas? Are you up to date on them? Are they important to you?

Our bosses are production and efficiency minded. Certain things impress them; others do not. We can't expect them to see everything our way and to spend \$10,000 on an item just because of the remote possibility someone might be hurt.

To help them appreciate the need for safety measures we must translate the results of our safety programs into their language. "If you can't beat them, join them," the old adage goes. We have to conform to management policies, so if we learn to relate benefits from our safety programs to operations benefits, we'll be talking their language.

We must personalize the benefits of safety to management's interests as well as personalize the need for the worker to look out for his own well-being.

How can we relate safety program activities to operations benefits?

How did your safety program aid in attaining production benefits?

The sheets I have distributed list some of the many operations benefits that can

result from safety activities. Some of these apply to personnel and others to production. In each case, the activity is printed in small type beneath the operations benefit in large type. This might be a guide for showing up better for your boss.

Modern technology has even complicated our traditional concept of accident causation; namely, unsafe acts and unsafe conditions. Improvement of human behavior is a great problem now, that is, attitudes, incentives, motivation and the like. But modern technology is creating added risks which cannot be completely offset by improving human behavior. More and better engineering will be needed to offset human physical and mental limitations. This requires research into the extent of man's physical and mental capabilities and the adaptation of these capabilities and limitations to new concepts and ideas. Human engineering some call it.

Man needs time and help in accommodating himself to new machines, new environments and to new ideas. Not only physically but psychologically.

The experts on weapons have coined a phrase, "if it works, its obsolescent." We can adapt this, "if we don't work at safety," many of us will be obsolete. I have discussed some of the areas in which we have made progress, and some of the areas important to future progress.

I mention the following things we know, as a guide for future accomplishments:

1. We know that the accident problem is no longer predominately a physical one, that it has to do with people; how they act, react, what motivates them, how to maintain their interest and support in working, for all things, their own welfare.

2. We know that safety doesn't stop at the plant gate. The safety training and education the worker gets on the job carries over to the home, at play, and on the road. That is why it is so important that they get some safety education on the job. If a man is hurt on the road or in his bathtub, he is just as absent from work as if he were hurt on the job.

3. We know that we must get safety into the schools, colleges, apprenticeship

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programs, vocational education to educate and preserve our youth, since our youth are our future.

4. We know that you can't legislate safety. You can force compliance with certain bare minimums, with continuous policing, but we need codes and regulations to establish minimum standards. To do an effective job the employer and the employee must both be sold on its worth. There must be set up in every working establishment in the nation a continuing day-by-day safety program participated in by every employee. You cannot establish that by legislation alone.

5. We know that trade unions must take up their responsibility to promote the safety of their members. Locals should have safety committees, internationals should have safety directors to provide assistance and guidance to the locals. The unions should cooperate with management in seeing that every job is accomplished in the safest way possible.

6. We know that even though more glamorous and dynamic developments occur, scientifically and productively, the same old horse and buggy causes of injuries will still be killing and hurting most of the people. We'll trip over something, fall off something, be struck by something, take chances, not read instructions, go too fast for conditions or take short cuts. For example one thousand years from now they'll read of the joker who knocked himself off because he didn't know his rocket gun was loaded.

7. We know that you don't sell a businessman the idea of initiating a safety program just because someone might get hurt, or did get hurt on the job. They have to be convinced that it is good business; and there are plenty of statistics showing this.

In a survey by the National Association of Manufacturers in 1954, of companies

having accident prevention programs, it was found: 1. compensation insurance premiums were reduced, 2. absenteeism was reduced—better place to work, 3. labor turnover was reduced—better place to work, 4. there was an improved efficiency in operations, 5. there was a higher regard for the company in the community—better public relations, and 6. 90 per cent of these companies had employee representatives on their safety committees.

From our past experience we can show that: 1. it pays to prevent accidents, 2. accident prevention is within the ability of any reasonably competent management, 3. the investment required is well within the means of any going business, and 4. the great majority of work connected injuries are practicably preventable.

We have been using a lot of ideas and techniques in the safety field that we have not evaluated completely. We use films, posters, meetings, warnings, but we don't know the exact effect on individuals.

We know that some individuals are affected by films or posters, but we don't know for how long a period. We have to develop better means of evaluating the effectiveness of various techniques.

We must also learn if it is possible to detect beforehand how people will react to different environmental media such as noises, tension, temperatures, light, radiation, automation, speed and the like.

Industrial accident prevention is a dynamic business. It cuts across all lines: research, engineering, production, promotion, and personnel. It must keep one jump ahead of industrial development—and that's a little like trying to say how many children you'll have before you get married.

Whether we continue to make progress will depend upon how we adapt to the present and prepare for the future.

## LABOR LOOKS AT SAFETY

By JOHN W. SHANK, JR.

International Representative, International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Sartell, Minn.

It is needless for me to tell you that the International Brotherhood of Pulp, Sulphite and Paper Mill Workers has a great interest in safety. Not to be conceited, but we have often supplied the initiative in sparking the industry to take initial steps in commencing a plant safety program. Also, we have offered assistance from time to time in cooperative effort to reduce accidents.

I believe both management and labor, on occasion, have to take another look at all phases of safety to make sure that neither falls into a state of complacency. These meetings do serve, in part, as a method of creating and maintaining interest. The practical aspect of putting safety into practice still remains on the home front and at the plant level.

The basic aim of labor in safety does not change nor do the basic methods of approach to accomplish this aim. This is why the subject matter of safety sometimes is and must remain repetitious. There are, however, enough new developments in paper-making equipment and processing to necessitate a new approach to some of the problems of safety. These new methods can create new challenges and new interest. There are also changes in social and economic conditions of workers brought about by labor-management negotiations that sometimes require a new look at our safety programs.

It is interesting to note some of the progress made jointly by labor and management in the area of industrial safety. In the early days of industrial development in the United States, it was almost taken for granted that workers would be injured and sometimes killed as a result of accidents. Little attention was paid to the safety, health, and welfare of the workers.

In the early days of union organization, labor was as much interested in the safety, health and welfare of its members and their families as it is today. It was not always possible, in the early days, to reach these goals. Labor was engaged in a struggle for recognition and upon winning recognition had to be first concerned with shortening the

hours of work and raising the living standards of the workers. Had either party at that time suggested working together for safety, both would have been a bit wary of the motives of the other.

It was much later, after labor-management relations had been well established and both sides had begun to accept one another as equals, that real progress has been made in establishing good sound safety programs.

I believe that not only do good labor relations pay off in developing good direct safety programs, but that good labor relations contribute to safety in other ways. Where labor contracts provide shorter hours, good wages and better working conditions, then we can say that we have contributed to safety. Where labor contracts provide hospitalization and other group insurance benefits, there again we can say we have contributed to safety. Where we have been able to develop greater recognition of mutual interest and respect and help promote better relations, then too, we have gained in the field of safety.

We believe enlightened management, generally, has many of the same interests in safety programs that has labor. Forrest E. Kimmell, safety and medical director of the Sutherland Paper Company, Kalamazoo, Michigan, in 1954, outlined what he felt was needed to organize and administer a good safety program. Among other things, one of the basic needs he felt, was a good foundation.

He listed as the first component of the foundation: "Moral Obligation," with the following sub-headings: Employee relation—public relations—company reputation—community responsibility. Labor can subscribe to all of these. In addition, we would like to add and elaborate on one more—human relations. We feel that the most compelling need for safety is the prevention of loss of life. We feel that loss of a member of the body or any crippling or painful injury is needless and should be eliminated. We feel that elimination of hu

man suffering and misery to a worker and his family are all-important.

Mr. Kimmell listed as another element in the building of this foundation—"legal responsibility" and under this heading listed the following: state safety laws—state compensation laws—state health laws. Again we can subscribe to all of these and just add a note or two. Labor has been instrumental, to a great degree, in obtaining such laws. We have been attempting to improve the existing laws and to increase coverages and benefits under the laws. We believe in strict enforcement so that workers who do not have labor union security will be adequately protected.

We know that in many states today the difference in workmen's compensation benefits and the wages an employee would normally earn is too great. We have in the past, and will continue in the future, to work toward the elimination of the great economic loss of a worker who may be injured on the job. The loss to a man's family in income is great enough when an employee is only injured, but the economic loss sustained by the family when an employee is killed is terrific. The death benefit payable under workmen's compensation laws is no substitute for the earning ability of a living and able bodied workman.

I might also add that the State of Wisconsin was the first to pass a realistic and far reaching law regulating the field of health and safety of employees in industry. I believe that it might also be of interest to know that there were, until very recently, only 17 states out of 49 that provided weekly compensation benefits of \$40 or more, based on a percentage of a worker's wages. Included in this group of 17 are the three (3) states comprising our tri-state area of Minnesota, Wisconsin and upper Michigan.

The third ingredient of that foundation, according to Mr. Kimmell, was labeled—"economic necessity" and under this heading had the following: compensation and medical cost—lost production—high insurance cost. We have to agree that we, too, are interested in reduction of unnecessary costs. We know that high cost operations are not conducive to good wages and working conditions, and, therefore, from a strictly selfish point of view, we want these costs eliminated. We do feel, however, that work-

men's compensation laws and the resultant insurance costs have given impetus to some employers' recognition of the value of safety programs.

In this connection, I find one complaint that is registered quite often. I do not know if it stems from a cost standpoint or from a desire to establish a new record or break old records. The complaint I refer to is the intense desire to prevent a lost-time accident from appearing on the record. Some employers are quite insistent that an injured employee should return immediately to the plant after receiving medical attention and to continue to report for work for long periods, even though unable to perform his job.

We are just as anxious to maintain a good record and to eliminate as much as possible the reduction in pay, but in some instances it would be better for the employee involved to remain at home during the healing period. The payoff, in my estimation, was a company official who asked an employee to turn over his disability compensation check (for the loss of the tip of his finger) because the company had allowed him to report for work regularly with no lost-time.

We, of course, hope that our members will rarely ever have to be the recipient of an insurance check in place of their regular pay check, and if the employers' insurance costs decrease we know that we are reaching our objective.

You can, I believe, readily see that management and labor do not differ too greatly on what constitutes a good foundation for a safety program. The ingredients that we have added and the greater emphasis that we place on some of the component parts of the foundation can be subscribed to by everyone concerned.

We do have good safety programs in our area producing some fine results. It is my feeling that a safety program must contain union participation at all levels. If this is done, I have seen good end results, in elimination of accidents and most important of all, complete acceptance of the responsibility of safety by all of the employees. I have seen a member of the safety committee speak at length at a union meeting on matters of safety and receive applause when he had finished his report. To me it indicates that the program is a success in every way

when the rank and file accept their responsibility and show it in this manner.

We have, on the other hand, employers who want only partial union participation. For some reason, they feel that safety is solely management's responsibility and that the employee or union participation should be only when and to what extent management thinks it is desirable. This type of approach sometimes leads to a safety program that is less effective than one that is unilaterally administered by the employer.

Employees desire to be fulltime participants in any program or to be left out entirely. They do not wish to be used as scapegoats. Under a safety program of limited union participation, employees are critical of any safety effort made by the employer, regardless of merit. They tend to become lax, both in respect to safety and performance on the job. Where this type of safety program exists, the subject of safety is rarely mentioned at union meetings and, if it should be, it would not be applauded but would be referred to in a critical manner.

I know of one instance where the local union was critical of management because so many of the accident reports were labeled "personal cause." The practice had been for company safety personnel to review all reported accidents and then make a decision as to the cause. During negotiations that year, the whole safety program was aired and this particular method of accident determination was put on a joint participation basis. The number of personal cause accidents remained about the same but instead of the union being critical of the company, they became an ally. The union took an active part in educating its members and reprimanding the workers, when needed, for unsafe work habits.

I believe such incidents should be proof that labor wants to be a full partner in the matter of safety but must be given the opportunity to work in close cooperation with management. Given this opportunity, it then becomes our job to share our responsibility in the fullest development of any safety program. We do not want to be critical of the shortcomings of management without acknowledging our own shortcomings. We know that, even where management is completely cooperative, we have workers who are careless and negligent and must be

trained and educated. We recognize this to be a big problem that requires diligence and perseverance and we are willing to do our part. In this part of the program we can be helpful through our contact with the workers in the union halls and through a good active steward program.

Naturally, the greatest emphasis in labor-management safety programs deals with on-the-job or occupational safety. In this area, of course, lies the greatest direct responsibility. We have the other area of safety to concern ourselves with—the off-duty accidents. As labor and management through negotiations provide greater leisure time due to vacations, holidays, and shorter hours of work, the problem becomes more acute. We are sure we all can agree that suffering and economic loss is just as great, regardless of the cause of an accident or the place it happens.

The terrific highway death and injury toll is particularly offensive. This particular fact was brought close to home in our area not too long ago. Two delegates to a union district council meeting met violent death as a result of a highway accident as they were returning home. In this instance, the union lost two leaders. These same men were respected highly by management and had been responsible for sound labor-management relations in their plant. The loss was felt by both sides. The company had the problem of training new workers to replace these two and the union had to seek new leadership.

This helps to pinpoint the value of good safety education and good safety programs at all levels, if it will help to prevent loss of life and bodily injury.

I am quite sure that what I have spoken to you about today is nothing new. It may serve as a reminder that there can be areas of weakness in any safety program. We know that after years of progress and fine results, the pace of continued improvement slackens. This, then, is the time that we must remain doubly alert to avoid the pitfalls of human frailty. This I know you will do. You have contributed much toward the security and the health and welfare of the employees in the paper industry.

I wish you continued success in the year to come in making further progress along this line of endeavor.

## TRAINING MECHANICAL SAW OPERATORS

By E. N. DENISON

Manager, The Quebec Pulp & Paper Ass'n. Inc., Quebec, P. Q., Canada

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It might be well for me to give you a few details of the average bush employee's background, education and conditions under which he works. The worker of horse and buck-saw days was instructed in the basic working methods of bush operations by friends, close family relatives or even his father. The introduction of the piece work, mechanized hauling equipment and the mechanical saw have completely revolutionized the operations, which in turn have affected his working habits.

If we consider the particular circumstances under which injuries occur, we find that the relationship which exists between the four common elements: work, tools, nature and labor, takes a very different significance on the logging operations when compared to other industries. Opportunities for instruction or training on the job are somewhat limited. The fact that he is a piece worker generally leaves a man practically alone to solve his ordinary safety and production problems and lack of formal education makes him less receptive to new ideas, new methods and new sets of rules. He also believes that while someone else gets hurt, he can go on doing the same thing which brought grief to his fellow workers and still escape penalty himself.

Statistics are very useful and tell a very interesting story. They can also be used as a yardstick, providing we do not allow them to deceive us. Of the total logging injuries reported to the association in 1958, approximately 70 per cent occurred to workers over 22 years of age, which indicates that this group requires training as well as the younger men who are coming into the camps with practically no background of woods cutting methods.

It is an accepted fact that training and safety are essentially the immediate supervisor's responsibility and to say that it is a new idea is somewhat misleading for, in essence, it parallels very closely the most basic principle of employer-employee relation—that of personal contact between foreman and their workers. In modern trade

language, it is known as "a line of communication."

As a rule a jobber or foreman starts from the bottom of the ladder and is an experienced bushman before he gets a post of responsibility. However, additional problems largely due to the previously mentioned mechanized hauling, piece workers and the mechanical saw demand more and more of his time and on many operations some of his responsibility is delegated to a staff man, known as an instructor or demonstrator, who is usually selected because he is a good cutter and, above all, has the ability to instruct.

The following is a sample outline of training programs used by our member companies:

Before the camps reopen each season, a weekly training period is conducted. The agenda includes instruction in the "J" courses, St. John's Ambulance first aid course, discussion on basic working methods related to jobs done during the cutting, skidding, hauling and driving operations. Field representatives of the manufacturers of the most popular mechanical saws, mechanized equipment and explosives are invited to give courses.

The Lateiner Method—Accident Control for Supervision course is also used extensively in the industry. I had the pleasure of attending one of these courses conducted by Mr. Alfred Lateiner at Quebec, Canada in 1958 and I do not hesitate to endorse it. Any foreman following it cannot help but benefit.

While a number of training aids such as posters, camp competitions, radio, T.V. programs, movies, etc. are helpful, I believe that slides, filmed in the actual camp area, have resulted in stimulating the interest of foremen and workers in production with safety beyond expectation.

In one area, the slides are shown with a stop film projector which synchronizes the picture and recorded comments. The remarks, limited to ten minutes, are purposely incomplete and, after the showing, the con-

ference leader calls upon the audience to discuss the slides, which are shown a second time. It is a pleasure to report that the workers are keen to participate, and it was found that they continued to talk about the slides for sometime following the discussion period.

In another district, the conference leader informed me that the guided conference and slides proved so popular in their camps that it became necessary to draw up a definite time-table because some of the men insisted on talking too freely.

The slides are not the work of specialists and some programs are made to cover each phase of the woods operations. The camera man is an employee of the company who has a flair for photography and usually uses his own camera. A very good projector can be purchased from any local dealer for as little as \$50. In camps where a tape recorder is not available, I would suggest that a pick-up and some popular record such as "Aupres de ma Blonde" be used for opening and closing the meeting.

The conference method has unquestionably given the experienced and inexperienced workers the opportunity to discuss their problems and exchange ideas. It also leads to a breakdown of existing barriers among men. In other words, it creates a "camp atmosphere in which the efficient worker will offer advice and guidance to the in-

experienced one, and as time goes on and we become more accustomed to using this method of spreading information, more benefits should result, such as:

1. There should be a greater realization by our jobbers and foremen of their responsibility towards both men and management.
2. The fact that jobbers and foremen are required to take an active part in the discussions should increase their capabilities and their value to themselves and the company.
3. Because the supervisory personnel is called upon to voice company policies and rules, its status as a group will undoubtedly increase in the eyes of the workers.
4. Both foremen and workers should be better informed regarding management's thoughts and ideas.
5. The return of the "personal touch" should produce a more satisfied work force.

I am convinced that "supervisory training" is fundamental to any safety program, and my faith in visual slides as a means of furthering it might seem somewhat too high to those who have never had any personal experience with the subject. However, if you had the opportunity to follow the results of the conference method and home-made slides on bush operations, as I have, I feel you would agree that my enthusiasm for the method is justified.

## THE USE OF BRAINSTORMING IN YOUR SAFETY PROGRAM

By WILLIAM H. STUBBS

Training Director, American Box Board Co., Grand Rapids, Mich.

The better part of this week will be spent by many thousands of people actively engaged in safety work assembling here in Chicago for the purpose of acquiring new ideas and techniques which will improve their safety programs. They hope to be able to reduce substantially the number of accidents and resulting injuries to the people in their respective organizations by applying these new ideas.

These people who have safety work as part of their jobs carry on their campaigns in their plants from day to day, and in most cases this activity falls in two areas: (1) the physical, (2) the mental, or psychological area.

The physical area includes the obvious attempts to eliminate the causes of accidents, such as the installation of guards and other protective devices, furnishing and using pro-

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tions to guide the behavior of the people,  
posters to illustrate accident hazards, and  
various other ways of pointing out hazardous  
areas.

Some of these ideas are pointed, of course,  
at the second and most important area—the  
psychological side of safety, or safety con-  
sciousness. If you can't impress the impor-  
tance of safety upon each individual, your  
safety program is doomed to failure. For  
example, a man who has not been mentally  
sold on safety will walk by or work around  
a hazardous condition many times a day  
without seeing it, because he is not safety  
conscious.

Safety consciousness on the part of an  
individual is a state of mind and will vary  
with each person. One of the important  
parts of our job in safety work is to develop  
a favorable state of mind in each individual,  
and one way to do this is to sell each person  
on safety. Selling safety is no different from  
selling any product, as far as selling prin-  
ciples and techniques are concerned. Peo-  
ple will buy safety for the same reasons they  
will buy a washing machine, an automobile,  
or a fur coat. All of us have common de-  
sires or needs. It is up to the salesman or  
safety engineer to find the basic drive which  
will motivate each of us, and then present  
his material in such a way as to motivate us  
in the right direction.

For example, most people have a desire to  
live and be healthy, so we point out the  
gruesome results of injuries to sell them  
on working safely. People also need recog-  
nition, so we have awards, dinners, pictures  
posted, etc. to bring their good safety results  
to the attention of others. People also like  
to compete, so we have contests of various  
kinds so that they may demonstrate their  
ability to others.

There are many other approaches which  
will satisfy the individual needs, but the  
same appeal doesn't necessarily motivate  
everyone in the same way. For example,  
some people are extremely proud and their  
ego is inflated when they are given a hard  
hat to wear; while on the other hand, some  
bitterly resent them and complain that they  
hurt their heads, they are too drafty and  
cause them to catch cold, and even that they  
cause headaches. This latter type of reac-  
tion, of course, presents a problem which we  
must overcome.

When we analyze our safety program to  
decide on the best approach to use, we must  
also consider the many barriers we en-  
counter in trying to motivate each individual.  
Probably one of the greatest barriers we  
face, not just from the worker in the plant,  
but also, I am sorry to say, from many  
management people, is their negative atti-  
tude toward safety. For example, I am  
sure you have all heard remarks like these,  
indicating this attitude:

"My safety glasses fog up."

"Safety shoes hurt my feet."

"The guard slows me down."

"Safety is a responsibility of the person-  
nel department."

"I told him a good many times not to do  
that or he might get hurt."

I am sure you could add many more to  
the list, all indicating the person isn't sold  
on safety and is offering excuses for his  
actions.

Another barrier we face is the "it can't  
happen to me" attitude. Still another is the  
fact that some people like to take chances,  
gamble, whether it is for fun, money, or  
even with their lives. If you don't think  
that is true, look at the accidents on our  
highways today.

If we can agree that we are faced with  
these and many other barriers to the accept-  
ance of ideas to get people to work more  
safely, what can we do to overcome these  
barriers? How can we generate new ideas  
to make people more safety conscious? How  
can we think up new gimmicks, stunts, con-  
tests, and other ideas to make working  
safely more attractive? Brainstorming can  
be used successfully in this area because it  
is a method of generating more ideas for  
the solution to a problem than most other  
methods.

Brainstorming is a title of an organized  
approach to securing as many ideas as pos-  
sible. The father of this approach to prob-  
lem-solving is Alex Osborn, co-founder of  
the firm of Batten, Barton, Durstine, and  
Osborn, who found the technique very help-  
ful in the advertising business. Brainstorm-  
ing, or creative thinking, is an organized ap-  
proach which forces us to use our ability  
to come up with new ideas. The notion once  
persisted that if you weren't born with this  
creative ability you would never acquire it—

something like the ability to wiggle your ears. Some had it and some didn't, but there is plenty of evidence today to the contrary.

It is generally agreed today that most people have, to some degree, the ability to be creative, but most of us, unfortunately, have buried this ability under layer upon layer of judgment. We have a tendency to bury our creative ability because society has placed a definite value on judgment and we want to be rewarded for our ability to make decisions. The ability to analyze and make decisions is very necessary, but we have a tendency to forget that in order to analyze and judge we must first have ideas. There is an opportunity on any job or in any situation for us to be creative.

If we are going to be creative and come up with new ideas, how do we go about it? There are two approaches to creative thinking—the organized approach and the free-wheeling approach. In the organized approach, a program of development aimed at improvement in a particular area is spelled out. Small, but important changes are made, step by step, toward those specific goals. Rules and procedures can be applied such as "state the problem creatively" and "get a multitude of ideas." From these ideas, get solutions by the use of check lists and our best judgment. This approach can be trained.

In the second approach, free-wheeling, we dream big and we think big. It is a thinking process which uses unknowns and then works back to reality. It requires a very free imagination. We also must use careful control over our censoring attitudes and judgment. This approach can also be trained.

For example, let's suppose this group represents an organization manufacturing appliances such as stoves, refrigerators, coffee makers, and toasters. Our competition is causing us some difficulty in our sales of toasters and we have the problem of how to make a better toaster to improve our sales position. We can state the question in this manner, "What can we do to make a better toaster?" A question stated in this way limits ideas, since it confines us to thinking about improving the present product. We would all be thinking of ideas that would make the toaster look better, possibly have a better shape or better design. In some way we would improve the present toaster.

Now let's suppose that we stated the ques-

tion in a more creative manner. We might say it this way, "As one of the improvements, how can we improve our toaster to keep toast warm?" We have pointed out a particular area for improvement, not in the present toaster, but an addition to the present toaster. This idea, of course, has been done and we now have the warming drawer in some toasters. This is an example of the organized approach.

Now let's take an example of the free-wheeling approach. Let's re-state our question in this way, "What are some ways that we can think of to brown and dehydrate bread?" After all, that is what we are doing in the present method of toasting. This brings to mind an entirely different field of thought. For example, we may think of some ideas like this:

Some other type of heat treatment (infra-red, or some other means).

Some radiation device.

Possibly a knife coated with a material that oxidizes bread after cutting it.

Possibly an additive that we can put in the butter which would oxidize bread when it was spread on it.

An additive to put in the bread which would oxidize it on the surface and brown it when we cut and expose it to air.

Now this is free imagination. No judgment is used at this point. Ideas should flow freely and we would not stop and judge each idea as it was presented.

Another example of the free-wheeling approach to a problem is illustrated by the match. In olden days we started out with the old sulphur match, went to the kitchen match, then because of the danger involved, we did some creative thinking and invented the safety match. Not being satisfied with this new product, someone did some free-wheeling and thought of the paper book match. But now another problem presented itself. Many people have had some extremely painful burns resulting from an explosion of the matches. Many companies have tried the organized approach to improve their book matches to eliminate this hazard. They have put the abrasive on the back and have always printed on it "Close Cover Before Striking." I have two examples of the free-wheeling approach which have a tendency to reduce the hazard from

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burning. On the first packet of matches the cover is stapled shut at the bottom. The cover has two small half circles on side which, when removed, allow you to remove the matches from the side and protects the heads of the rest of the matches when you strike one on the cover. The second example, which is a more recent one, has a cover which opens at the top and snaps shut after you have taken the match out so that the book of matches is completely closed when you strike it. In both of these instances, someone used some very free-wheeling imagination to arrive at this new paper book.

When we are looking for new ideas, as in these examples, we should create, not judge. Judgment is important, but it has its place. That is after, not during the time that ideas are being sought. Although judgment must eventually play a vital role in the creative process, it is best not to apply judgment simultaneously with the generation of possible ideas. Free-wheeling is desired, then judgment comes later.

Why do some people have difficulty in being creative? In most people there are three types of mental blocks that stand in the way of their being creative: the perceptual blocks, the cultural blocks, and the emotional blocks. First, some of the perceptual blocks are those that include the thoughts, impressions, and ideas we have that prevent creative thinking, such as the difficulty in isolating the problem (we can't see the forest for the trees), or the difficulty in not investigating the obvious, or over-emphasis on past experience ("it won't work; we tried it before," and that type of negative thinking).

Second, in cultural blocks most people have a desire to conform and don't like to be different from others. It is not polite to be too inquisitive; let's not ask embarrassing questions. We place too much faith in statistics and we have a tendency to achieve perfection, or nothing at all. Also, some of us believe that fantasy is a waste of time.

The third, or emotional blocks, reflect our

individual personality traits. For example, the lack of drive in putting a solution to work, the fear of making a mistake or fool of oneself, we are not flexible in our thinking, we hold biased opinions, and we sometimes have the inability to relax.

Now assume we understand these mental blocks that may stand in our way, we have the incentive and the need for new ideas, and the climate is right, how do we get ideas started? Brainstorming is one of the many techniques. You may have a method of your own, but in any case, a prepared or planned program for approaching a problem will be better than a hit-and-miss method of thinking. There are many advantages to having a planned program, one being that you don't jump for the first idea that comes to mind. Sometimes the 50th idea is much better than the first.

To brainstorm, a panel of not more than 12 members is selected and presented with a carefully worded problem. Then the panel, following certain rules, suggests solutions to that problem.

The rules the panel will follow are:

1. Judicial judgment is out. Don't be reluctant to give your ideas because you may feel someone may laugh at you. Give only ideas, not criticisms of what may be wrong with the ideas. Don't try to evaluate the ideas at this point.

2. Free-wheeling is desired. The wilder the idea, the better. It is easier to tame down than think up.

3. Quantity is wanted. The greater the number of ideas, the better the chance of getting good ones.

4. Combinations and improvements are sought. In addition to contributing your own ideas, try to improve on the ideas that others give. This we call hitch-hiking.

Today we have twelve volunteers who will brainstorm as a panel a problem that I think we are all faced with in safety work. The problem is this, "What ideas can we think of which should be a part of a safety program?"

## I AM SICK OF THE THREE E's

By CHARLES R. ZESKEY, JR.  
Vice President, T. H. Mastin & Co., Kansas City, Mo.

The question which seems to have been responsible for the invitation I received to visit with you here is whether or not we safety engineers are *engineers*. Those of you who read NATIONAL SAFETY NEWS six or eight years ago possibly observed that the line between canonization and castigation is very thin—and also that a series of statements, some of them exaggerated, by means of which I honestly attempted to suggest a means of improving our standard of living, were interpreted pretty much as the emotions and prejudices of the reader dictated.

—Somebody once said that a man should never be ashamed of changing his mind, because that is only saying that he's smarter today than he was yesterday. Another man said, "No sadder proof can be given by a man of his own littleness than a disbelief in great men."

Just to keep things straight, let me point out that I'm not opposed to changing my mind. On this particular subject, though, I don't see that it's necessary. In the second place, my philosophy—that safety engineers should primarily be engineers (and I don't mean "Human Engineers") was not intended to belittle the "greats" in our profession in case there are any "greats."

Essentially, everything I have said before on the subject was simply an elaboration on the criticism of an anonymous plant manager who accused us of being impractical and meeting-happy.

As you'll recall, this man wrote an article which was published in *Occupational Hazards* magazine. I think the man was right in many cases, and I simply attempted to prove it and to suggest a means of eliminating this criticism in the future.

By "impractical," this plant manager said he meant this: we are frequently so enthusiastic about our own prejudices toward saving human life and preventing human suffering that we can't answer these five questions which any industrial executive is bound to ask if he's worth his salt:

1. How much will it cost?

2. Is there another way of doing the same thing which is cheaper or better?
3. Will it pay off?
4. How do you know?
5. What are the things that have to be done to get this brainstorm into action?

Now the plant manager didn't say that the conditions to which the safety engineer objected *did not* require correction. He *didn't* say that he wouldn't comply with these recommendations. He *did* say that he wanted to know if the recommendations would correct this condition as economically as possible with proper regard to effectiveness, permanency and the efficiency of his operations.

Here are a few typical examples of safety engineers' recommendations. Let's see how they stack up against the plant manager's requirements:

1. An extra clean-up man because housekeeping is bad—or a meeting to discuss housekeeping.
2. Hard-toed shoes because men have been dropping material or products on their feet—or a meeting to discuss material handling.
3. A cage around a sawyer in a sawmill because he was hit by a piece of metal the other day when the saw cut into a horseshoe that the tree had grown around.

I've been in this business for over twenty-two years now—and I'm sorry to admit that these recommendations have been made by men who work for me. I've seen the same, or equally silly, recommendations made by other insurance company safety engineers as well as safety engineers in private industry, but I'm on firmer ground when I can criticize myself and my own organization.

I say that these recommendations are typical and impractical, and that they don't come close to measuring up to the type of suggestion which we should be expected to submit to a half-way intelligent superintendent or plant manager. I also believe that if we're to be recognized and compensated on

the basis of our *abilities* as safety engineers and the *results of our work* as safety engineers, we're going to have to *act and think and perform* like engineers.

What are the alternatives to these three recommendations:

1. An exhaust system which will eliminate the extra clean-up man, maybe even a second clean-up man; keep the atmosphere cleaner, improve illumination indirectly, assist in guarding points of operation, and pay for itself over a period of time.
2. A mechanical handling device of some sort which will not only protect toes, but insteps and hands and fingers as well; it will probably speed up production, reduce confusion and perhaps eliminate an employee or two.
3. A tramp-mental detector, interlocked with the conveyor system which will not only eliminate this particular hazard to the sawyer and other employees, but will save saw blades.

Please understand me: I'm not considering myself any great shakes as an engineer just because these suggestions seem somewhat more practical than the original ones. It seems to me they should be obvious to any safety engineer who thinks, who wants to do more than wander through a plant and hold meetings and then go home and work in his garden. These alternative recommendations will come closer to making sense with a practical, conscientious plant manager. With these recommendations we can answer the questions he asks. And with these, we can do more than simply keep our people from falling down and straining their backs and smashing their toes and being splattered with flying bits of metal.

We can be instrumental in improving the efficiency of the plant we service or the employer who pays our salary. We can gain the boss's respect. We can improve our own reputation as an individual, the reputation of the group which we represent; we can increase our own professional stature; we can raise our standard of living to the level it deserves.

So about meetings and the second "E," education?

The plant manager said we're often "meeting-happy," and I have often tried to point out that the solution to strained backs

isn't a meeting. The solution to eye injuries isn't necessarily a meeting. The solution to guards left off gears and belts and points of operation isn't a meeting. The solution to these problems isn't education, nor is it enforcement.

Let me digress for a minute and mention something which was called to my attention after the "Three E's" thing was published. The good old Three E's were originally dreamed up by a safety engineer who was concerned with *traffic* accidents.

Engineering, Education and Enforcement were—and still are—the complete outline of a successful *traffic* accident control program. Engineering of roads, vehicles, traffic-flow control devices; education of drivers, pedestrians and law-enforcement officials; enforcement of traffic laws. But, somewhere back in our line of professional ancestry there was a black sheep who adopted this idea in toto for an industrial safety program. And a lot of his fuzzy-thinking progeny have continued to accept it as Gospel ever since.

Let's be realistic about this: enforcement may have had a place in industrial relations many years ago. But, you know as well as I do that the things you can enforce on employees today are precious few. For all practical purposes, there just ain't any such animal. And this is all to the good, because as far as accident control measures are concerned, we must—if we are to be successful—make employees *want* to cooperate with us. Enforced cooperation just doesn't work, and probably doesn't even exist because unless cooperation is voluntary, it isn't cooperation.

Well, so much for Enforcement as it applies—or doesn't apply—to industrial safety. Let's bury it and be glad it's dead.

Getting back to meetings and Education, I did not say and I shall never say that I'm opposed to meetings or that every meeting is a waste of time. I did say that I agreed that many of us are "meeting-happy"—that we use meetings and educational methods in many cases where simple engineering would be the logical solution.

Take a horrible example which I have used before: a man strains his back in our plant while he's lifting a casting or a piece of millwork. To start with, maybe we go out in the plant—for a change—and lecture

him on how to lift. But then he, or someone else, strains his back again on the same job.

So what's next? We become a big, bad policeman and grab down our out-of-date handbook on enforcement, go out into the plant and raise merry Ned with the poor guy with the sprung back. Maybe even give him a three-day layoff and call his foreman on the carpet (That's really a way to get co-operation!). Or, if we lean toward the old-maid schoolteacher philosophy, we pull out our little file with the "Education" label on it and dream up plans for a big poster-and-lecture campaign. If we're lucky that day, we wheedle the boss into closing down the plant for fifteen minutes and we give a lecture (complete with pictures and charts we didn't draw and a text we didn't write) on "How To Lift"—all of which provides, in effect, an additional rest period for the lucky employees at a cost of several hundred dollars to the poor, unenlightened, reactionary plant manager who had the temerity to call us "impractical."

Well, I've already suggested means by which I feel that many material handling accidents can be prevented, but if you feel that I implied that *all* of them can be prevented by applied engineering, then I failed to make myself clear. I did say that I hoped to see the day when education would no longer be the crutch upon which we rely for our negligible professional progress. Rather, that Education should be a useful adjunct to true Safety Engineering. I have also repeated many times that everyone in my audience can undoubtedly pose problems which I cannot solve by engineering means. One reason for this is that I'm not a very good engineer. But I hope to become a better one, and only by limiting my use of the education "crutch" will I ever succeed.

I have also been challenged frequently to design one single process or guard by means of which an individual *cannot possibly* get hurt. Of course I can't do it. Let's not be childish. We're not in accident *prevention* work; we're in accident *control* work. We're trying to *control* accidents—to reduce them to a bare minimum.

Certainly we cannot keep people from getting hurt willfully. But that's an excuse only a seriously incompetent safety engineer would use for not exerting his best efforts, using his ingenuity and technical training

to the utmost, to design equipment and guards, to schedule material and work flow, and to control waste products in such a manner that the "human failure" factor would be reduced to a minimum. Certainly we shall need educational assistance after we've done all this. But it will be *assistance*, and the proportion of assistance we shall need will be in inverse ratio to our previous success as an engineer.

Another old ghost arises too frequently and haunts me in letters of complaint and consolation. It's the alleged 80-20 or 70-30 or 90-10 ratio. Depends on who uses who's figures. Rather, who uses them incorrectly. Most frequently I receive some such statement as this; "The National Safety Council says that 85 per cent of accidents result from unsafe acts and, only 15 per cent from unsafe conditions." And the next paragraph or two of the letter go on to the general effect that I sure am a dope not to know this, and Oh boy I'll bet this shuts you up.

Well, it's entirely possible that I'm a dope for expressing my opinion, making enemies and not influencing people, when I could just as easily be sitting at a comfortable desk in Kansas City. But it's just such silly letters as this and such silly catch-phrases as "The Three E's" and such silly recommendations as I've already mentioned that makes us members of a profession that rides around in Chevrys and Plymouths instead of Cadillacs and Lincolns. And, as I have said, good food and nice living have a great appeal to me.

The Safety Council never said any such thing as "85 per cent of all accidents are caused by unsafe acts and only 15 per cent by unsafe conditions."

What the National Safety Council does say is this—usually on about page 40 of the current issue of "Accident Facts:" In about 80 per cent of all accidents there is an *unsafe act* and in about 80 per cent of all accidents there is an *unsafe condition*. In about two-thirds of all accidents there is a *combination of unsafe acts and conditions*. In other words, the statistics show that about 20 per cent of all accidents result *solely from unsafe acts*; another 20 per cent result *solely from unsafe conditions*; and about 60 per cent result from unsafe acts *and* unsafe conditions. So this means obviously that about 80 per cent of all accidents can be prevented by some kind of engineering

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action. To be completely fair about this, it also means that 80 per cent of all accidents could be prevented by educational means—by influencing the acts of people.

So the question resolves itself into whether it's better business to make engineering corrections or to try to influence people to act differently.

I'm obliged to say that I think that the answer to that question is obvious. Essentially, the correct answer is that one which provides the most durable, the most efficient solution. What happens if you depend on correcting the acts of employees? They forget what they've been taught, they disregard instructions, they have emotional upsets which make them temporarily irresponsible, they suffer from fatigue. For this philosophy, I'm indebted to the man who should know most about it; the director of Industrial Training of the National Safety Council, Glenn F. Griffin. Another thing, remember that the teaching you do today becomes wasted effort when the employees you've taught move to different jobs.

But what about an engineering revision? Here's what Bill Andrews who writes "The Diary of a Safety Engineer" had to say about it several years ago:

"A guard is, compared with most things connected with safety, a definite, clean-cut, straightforward sort of problem.

"It's downright relaxing to get down to a matter of design—to think about the properties of metals, to study a process with a stop watch and visualize a revision based on a difference in guarding arrangements.

"A guard, too, is a definite good. A speech may be or may not be useful. A poster's the same. A committee meeting may be a total waste of time. But a good guard is always a plus."

Well, I could continue for a long time answering criticisms to which I am subjected every time I open my mouth on this subject. And it's easy to speak interminably—and exhaustingly—on a subject in which one is interested. But only one thing more, I think, deserves comment: What about non-repetitive jobs?

For example, what about such outdoor occupations as land-clearing, logging, public utilities work, operation of earth-moving

equipment, mining? Should we bow our heads and say, no, these are not subject to engineering control; we have to train, we have to educate. Surely this isn't true. As far as I'm concerned, the "repetitive—non-repetitive" job distinction is just another catch-phrase and cannot be a sound basis for any long-range philosophy by any of us.

What is now non-repetitive will become repetitive just as soon as the ingenuity and imagination of engineers can make it so. The coal-mole and the log gang saw are examples of this. If engineers had been stymied by this particular catch-phrase, there would never have been an Industrial Revolution. Slowly, but very surely, the engineering profession is going to be responsible for eliminating non-repetitive jobs.

But isn't it a pity that safety engineers have had to rely so heavily in the past on other branches of engineering to solve their problems for them. Look at what we've had tossed in our laps:

1. The use of live rolls and other conveying systems as well as the increase in palletizing and the use of fork-lift trucks have added immeasurably to human safety. They were the brain children of industrial engineers.
2. Safer and more efficient roads and bridges have been given to us by civil engineers.
3. Electrical engineers have given us the National Electrical Code which protects us on the job and at home and even while we're here; they have given us explosion-proof motors and individual motor drives.
4. Chemical engineers have been responsible for safer cleaning and degreasing compounds, solvents and surface coatings; and for lightweight, tough plastics.
5. Noise and fume control, automatic feeding devices, passenger and freight elevators, and factors of safety in all types of construction originated with mechanical engineers.
7. The architects have given us improved illumination and ventilation, more unobstructed floor space in our plants.
7. And the metallurgists have developed the lighter, stronger metals on which we depend so heavily these days.

So we're pretty much in the debt of our cousins; we've depended on them to solve our problems with the ingenuity and research which we might have provided ourselves.

So isn't it high time we started thinking for ourselves, using our own imagination, digging our way out of the rut which is likely to become our grave, breaking our bad habits before they break us; using our good sense and good judgment to provide durable, efficient means of preventing the

human suffering and the economic loss which is the reason for our being together today?

I like to think of our problem this way and perhaps it will appeal to some of you as much as it does to me:

The man who built the first bridge undoubtedly wasn't a safety engineer, but he did realize that the most efficient means of keeping people from falling off the bridge was to install handrails—not to station a man at either end to warn those who were about to pass over.

## HEARING CONSERVATION IN INDUSTRY

By DR. ROGER B. MAAS

Hearing Consultant, Employers Mutual of Wausau, Wis.

In the very well known and beautiful hymn, "For the Beauty of the Earth," is a stanza with the words, "For the sense of sight and sound." The author of the hymn is reminding us to appreciate the great gifts of vision and hearing, something which is most easy to take for granted. Hearing is only second to sight in its importance to happiness and well being; yet, the conservation of hearing or concern for the protection of the hearing mechanism is almost completely neglected.

Although we have *always* had the problem of deafness, it is only *recently* that the attention and concern of industry has been focussed upon it. The reason? *Noise!* The Twentieth Century has been called among other things, a *century* of noise, and *noise deafness*, lately, has become a member of the ever-growing family of occupational diseases for which exposed workers may be compensated as a result of *noise-induced* hearing losses.

Medical authorities now tell us that noise levels in excess of 85 decibels may destroy the delicate nerve endings in the inner ear. Once this damage occurs, it is irreversible. Medicine or surgery cannot put the mechanism back in order.

The majority of state legislatures are now studying and providing for some form of compensation for noise-induced hearing loss, but it isn't necessary to *wait* until this

legislation is actually a reality in *your* state. Hearing loss claims are being paid in *most* states on one basis or another.

In spite of recent nation-wide attention given to the noise problem during the past months and the great economic significance that noise will play by adding to the cost of materials or products made in noisy environments, it should be remembered that factory noise contributes only a very *small* part of the total hearing loss and deafness in the United States.

Previous to my work with Employers Mutual Insurance Company, I was in charge of hearing conservation in the Wisconsin Public Schools, sponsored by the Maternal and Child Health Section of the Wisconsin State Board of Health. Our audiometric survey starting in 1946 showed that between 5 and 10 per cent of the school children in Wisconsin had hearing losses. Three out of every 100 children were in need of medical care for their hearing. Communicable diseases, tonsils, adenoids, ear wax, accidents and injuries were found to be responsible for many of these childhood hearing losses.

It is also a well known fact that there are over 100,000 children attending day schools for the deaf and 47 states have these training institutions.

The Veterans' Administration recently reported that it was spending \$60,000,000 per year for approximately 90,000 war veterans

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with service connected hearing disabilities.  
You and I are presently helping to pay for  
this.

A conservative estimate by health spe-  
cialists indicates that between 10,000,000 and  
15,000,000 people in the United States need  
hearing aids.

These facts illustrate to some extent the  
magnitude of the problem of deafness, re-  
gardless of cause.

It should be added that all of these per-  
sons are potential workers who will knock  
at the gates of our factories for jobs. In-  
dustry will assume its responsibility and  
pay for damages caused to workers' hearing  
due to noise, just as it has by compensating  
workers for injuries to eyes, arms, legs, or  
life itself, but industry cannot be expected  
to bear the expense of the multitude of pre-  
existing ear conditions not attributed to  
them.

It is now estimated that 27 out of 100  
newly-hired workers have hearing losses. It  
is for this reason that some of the laws gov-  
erning compensation for noise-induced deaf-  
ness contain the following provision: Pre-  
testing hearing loss when recorded at the  
time of employment does not have to be  
paid for.

"Hearing protection should begin first with  
audiometry," according to Doctor J. W.  
McLaurin, Baton Rouge, Louisiana, Otolo-  
gist, and goes on to say, "Employers by this  
time should have learned their lesson. In the  
future pre-employment audiograms should  
be an integral part of the pre-employment  
processing just as a chest x-ray or blood  
test. If the environment is noisy the exami-  
nation should be repeated at intervals until  
the workers' status of hearing is deter-  
mined."

This has been responsible for the impetus  
for audiometric measurement programs in  
industry, throughout the United States in the  
past five years. The audiogram serves as  
important economic protection for the em-  
ployer as well as the employee. However,  
the audiometer makes another most valuable  
contribution to a total program of hearing  
conservation. It is a method by which we  
gauge the effectiveness of our noise reduc-  
tion or engineering control efforts. It be-  
comes the final test of the effectiveness of  
personal hearing protection devices because

the audiogram indicates just what the work-  
ers' status of hearing is at any time.

Furthermore, audiometric examinations are  
the only way we presently have to detect an  
individual's susceptibility to noise. By com-  
paring the audiogram charts taken at inter-  
vals we know just how well a person is  
bearing up under the strain of a noisy work-  
ing environment. If hearing acuity continues  
to decrease in spite of noise reduction mea-  
sures and personal hearing protection devices,  
the audiometric record could tell us that the  
worker should be taken out of this noisy  
atmosphere, but this would be the exception  
rather than the rule.

It is well for us that the early noise-in-  
duced hearing losses are indicated at about  
the 3,000-4,000 frequency level long before  
it is noticed by the individual and long be-  
fore it may cause disablement. By showing  
the worker his personal record of hearing  
acuity we have a most effective device for  
ear protection.

"Temporary deafness varies from one in-  
dividual to another. Different individuals do  
not react equally to the same noise exposure.  
Some people are more susceptible to noise  
than others," says Doctor Raymond Carhart  
of Northwestern University, "noise suscep-  
tible workers are those persons who suffer  
handicapping hearing losses more quickly  
than do their companions under equivalent  
noise exposures. These workers constitute  
the groups in which claims for compensation  
are most likely to arise and for whom words  
are likely to be greatest. It will take several  
years until field validation of a number of  
experimental approaches to a location of  
sensitive ears before some method can be  
recommended for our use. The only present  
method of accomplishing this, of course, is  
to conduct periodical audiometric examina-  
tions."

A sound and practical hearing conserva-  
tion effort, then, in addition to audiometric  
measurement would include the following:

1. *Assessment of noise exposure.* Obtain  
noise level surveys from your insurance car-  
rier, State Industrial Hygiene Division, or  
consulting firm. Find the processes and areas  
where the noise exposure exceeds the dam-  
age risk criterion. It was Lord Kelvin who  
stated, "I often say that when you can meas-  
ure what you are speaking about, and ex-  
press it in numbers, you know something

about it. But when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind."

2. *Study the noise makers* with the object of reducing noise. Most large plants are conducting some type of noise engineering control activity. Usually this is done by appointing some interested and qualified individual to be responsible directly to top management for seeing to it that activities for the reduction of noise are planned and carried out.

3. Hearing protection through the use of personal protective equipment. A recent article appearing in one of the safety journals stated the attitude of one writer toward ear protection as follows, "The use of ear protectors will reduce the noise problem to an absolute minimum."

Unfortunately, the problem is not this easy. The problem is "How to get ear protection on each worker exposed to industrial noise" just as it is with many other safety devices. There is a general attitude among nurses and safety directors that this is a task even *more* difficult than all the other protective devices combined. We should remember at the onset what we are up against. The average worker accepts noise as a normal part of his job. In my many visits to the noisy working environments, noise levels exceed 90 db. I have asked the workers if the noise bothered them. In almost every case the employee responded with an answer something like this, "This isn't noisy. Do you think it is? If it is, I suppose one gets used to it." Until *each* worker is presented with the idea that *continued* exposure to noise without protection is damaging to hearing, he will not be very much concerned about hearing protection. Even if he is informed through long range educational activities, why worry about something that does not materialize until 15 or 20 years from now.

Workers don't seem to be satisfied or won't continue to wear ear protection unless noise levels are excessively high or very annoying. It is very much the same attitude that people have towards Civil Defense. What do we care about what happens tomorrow? Many safety directors and plant physicians express disappointment noting the reluctance of workers to wear ear protection

once it is introduced and encouraged. Some of the best records that I have found of compliance in our more health and safety-minded plants indicate that only 35 to 50 per cent of the workers in hazardous noise levels are wearing protective equipment. This is certainly not enough and perhaps the answer is mandatory protection, just as we have finally found necessary to obtain adequate eye protection.

I believe this is a coming trend, you either wear ear protection or you are subject to some form of disciplinary action. Many employers claim that insert ear protection is doomed to failure because there are too many complaints of discomfort, forgetting and losing, and the basic difficulty in the fitting process. Some doctors tell us that the education from childhood "Not to put anything else in the ears smaller than the elbow" is responsible for much of this attitude. Others say it is just a matter of time and long-range educational activities, improved equipment, stricter enforcement of rules, once the program is established, will be the answer.

New economical earmuffs, and there are some that are now selling for \$12, are providing the answer for many plants and it does solve the fitting problem and the check on compliance. We should not give up on this phase of hearing conservation. Instead, we should think and plan new activities which will possibly succeed in getting each man protected.

The alternative is to allow this "sneak thief," injury mechanism destroy *slowly*, but surely, the *delicate* hearing sense organs. Doing nothing as so many plants are, ears are being ruined or destroyed, decibel after decibel, each day, each month and each year. If I were a safety director or nurse I would like to have the feeling that some day the workers in my plant will not be coming back to me saying, "Why didn't you tell us about earplugs or why didn't you do something to help us?" If our plants set up the necessary effective hearing conservation controls *now* and stick with them in spite of discouragement, they wouldn't ever be able to do this.

I know there are many of you here who have been active participants in the establishment of hearing conservation efforts in your plants. For those of you who have been trying and wondering whether you have

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made much progress, I have some comments  
that I feel should be encouraging.

Let's take stock of the present situation.  
Remember, some plants have been engaged  
in some phase of hearing conservation activ-  
ity for approximately ten years. Do we  
know where we are going? Is hearing con-  
servation a practical and workable venture?

Doctor James H. Sterner, medical director  
of Eastman Kodak Company, Rochester,  
New York, recently made the following  
statements at the meeting of the Associated  
Industries of New York Conference on Con-  
trolling Noise and its Effects. He says, "In  
the ten-year interval the decision by the New  
York Court of Appeals sustaining the award  
for occupational loss of hearing, so much  
research and investigation has been carried  
out, so many meetings and symposia con-  
ducted, so many papers corrected, proceed-  
ings, journals, monographs published on the  
subject of industrial noise and its effect on  
hearing, that even these individuals devoting  
full time to the subject have had difficulty  
in keeping oriented. . . ."

An important quality which distinguishes  
the present status of our attitude and knowl-  
edge concerning the relations between noise  
and hearing loss cannot be gauged from any  
individual paper or monograph. It consists  
of a much greater clarity with which we  
view our objectives, of a quiet increasing  
confidence that ways have been and will be  
found to control our noise hazards, of a bet-  
ter organized and more purposeful attack on  
all aspects of a problem which once seemed  
only elusive and confusing.

We should take some satisfaction that we  
have progressed thus far along the path,  
but then must return to cold reality that we  
have a much longer distance still to go.

What are some of the known vital facts  
that you and I should have that will help  
us in our task? First of all, *what is hazard-  
ous noise?* "It will, no doubt, be an impos-  
sibility to ever *satisfactorily* establish a dam-  
age risk criteria that will help devise prac-  
tical controls that will protect *all* workers  
exposed to noise." (Damage risk criterion  
is the level which noise should not exceed if  
permanent hearing loss is to be prevented.)  
Doctor Raymond Carhart, Professor of  
Audiology, Northwestern University stated,  
"All we can do is establish *target* goals to  
attempt to protect the most people we can;

but we know from the outset that we can't  
possibly protect them all. There's too much  
difference among people. Also, there are  
many practical limitations imposed in the  
average industrial setting which includes  
sufficiently trained personnel. The money  
necessary to employ them which will impose  
a limiting factor on hearing conservation  
activity. The least we can pinpoint the high-  
est areas of exposure and start there; later  
we can go down the latter to areas of less  
exposure."

I think this is a good point. Let's pinpoint,  
first of all, the most hazardous areas to see  
what success we might find in these places,  
which in most plants would amount to only  
a few. Let's not worry about trying to pro-  
tect everybody at once. It just can't be done.

Floyd Frazier, in an article published in  
the American Medical Association's Archives  
of Industrial Health, March 1959, had the  
following to say, "Although there may be  
differences of opinion in the light of present  
scarcity of exact information, it is essential  
that industrial hygienists and engineers base  
noise control recommendations upon view-  
points which will receive support from re-  
cognized medical and scientific authorities.  
The facts which I have discussed indicate  
clearly the desirable goal which will be sup-  
ported by age groups with the noise level not  
exceeding 85 db in any of the three octave  
bands of 300-600 cps., 600-1200 cps., 1200-  
2400 cps., and not to be confused with an  
over-all noise level. Thus, with any standard  
there must be a certain element of *calculated*  
risk. Deviations of these recommended  
points, therefore, do not necessarily mean  
the difference between an absolute safe and  
unsafe level, but that the element of risk is  
increased to the degree that these limits are  
exceeded. We must also remember these  
criteria are based upon *steady* state noise.  
When noise is broken up or intermittent,  
depending upon its length or duration in fre-  
quency characteristics, ear life is possibly  
doubled or even tripled even when the  
acoustic insult is of high intensity. The fact  
that we do not have more hearing losses in  
our heavier or noisy industries is no doubt  
due to the fact that much of the noise is  
broken up, it is *not* steady state noise."

Doctor Paul S. Veneklasen, director of  
the Western Electro-Acoustic Laboratory in  
Los Angeles, California, in an address be-  
fore the governor's industrial safety confer-

ence stated, "It takes a long time for noise to cause a *great* and *permanent* hearing loss. Reaction to noise varies greatly among different individuals, both as to magnitude of hearing loss and the time involved, whereupon it is difficult in any given case to prove that noise has been a major factor in hearing loss."

The complicated formula that gives us somewhat of a yardstick to measure exposure would include intensity, and frequency, (high frequencies are more damaging than low frequencies), I have already discussed intensity, individual susceptibility, (which can only be measured by serial or periodical audiograms), intermittency, acoustic characteristics of the working environments and age of the worker. All these factors must be considered in attempting to describe the potential effect of the acoustic insult.

Next, once noise-induced deafness makes its initial destructive impact on the hearing mechanism, it tends to level out and the increments are less as the age of the worker increases until age 50. *Is it good to hire a person with a hearing loss?* Certainly, if he has the *required* occupational skills and you have a *record* of his initial hearing level at the time of employment. It is better if you make the wearing of hearing protection *mandatory* to save the hearing sensitivity which remains. By wearing of ear protectors, you may be able to maintain hearing acuity which keeps one a "hearing" individual.

What about the nonauditory effects of noise on people? What about work performance, fatigue, annoyance, safety performance, etc.? Let's review for a moment what the authorities have to say. Of course, we know these factors are very hard to define and very hard to study and measure. We have some statements, however, that are encouraging and which lead us to believe that for the most part the greatest effect of noise on human tissue is the destruction of the hearing mechanism.

Doctor Aram Glorig, director of the Subcommittee on Noise in Industry of the American Academy of Ophthalmology and Otolaryngology says, "Efficiency and performance of mental and motor tasks in industrial settings is only *temporary* in effect by exposure to unfamiliar or intermittent noise. Physiological changes resulting from noise exposure lessens with repetition, of the

exposure. At typical industrial noise levels it appears that no *unhealthy* physiological reaction results even from prolonged exposures.

"The nonauditory effects produced by typical industrial noise exposures, speech interference, annoyance, dangers in efficiency, physiological changes, do not constitute a health hazard. Whether the nonauditory effects of the extremely high noise levels generated by jet engines and rocket engines will constitute such a hazard remains to be seen. The auditory effects of noise exposure are a serious threat to a large segment of the industrial population. Permanent handicapping hearing loss can be produced by extended exposure to many industrial noises."

Paul Veneklasen, director of the Western Electro-Acoustic Laboratory also said, "Take the matter of fatigue from noise for example, any of us would claim that it is fatiguing to work in noise, but controlled tests do *not* confirm this. What they actually seem to prove, is that *fatigue* is a byproduct of annoyance. If high motivation counteracts annoyance there is no fatigue. Yet, statistics do tend to indicate greater absenteeism and turnover in noisy industries."

Work performance has been studied in a number of field and laboratory situations. Investigation of such factors as reaction time, learning ability, performance, or intelligence tests and performance of psychomotor tasks such as typing, aiming of guns and operations of machinery in which some motor skills were involved. In general the majority of experiments have shown only slight, if any, damaging effects of noise with performance. Indeed, some tasks showed improvement in performance under noisy conditions.

Authorities hasten to caution against the drawing of far-reaching conclusions in the latter case until further substantiation of evidence is produced.

In regard to the effect of noise on an intellectual task, Doctor B. E. Broadbent in an article published by the Journal of the Acoustical Society of America, September 1958, suggested that intellectual work is impaired by noise under appropriate conditions.

Doctor Glorig says, "In many respects it seems the effects of noise depends largely on the individual differences of the people, what is music for one may be disturbing for

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another. There appears to be a place of commonality that exists for controlling the harmful and annoying effects of noise. When the speech interference levels, damage risk criteria and annoyance values are considered, it is seen that noise levels which approximate 90 db become critical. The maintenance of an environment control sound pressures for one of these factories should bring improvements in the others as well. The fact that a noise produces annoyance does not, contrary to popular belief, mean that exposure to that noise will necessarily produce a hearing loss and that it is *bad* for health."

We have learned that the problem of hearing conservation is not confined to the United States. In fact, it would appear to many of us that the Russians, Germans, French and Japanese are doing a *better* job, especially in the control of noise, than we are. Perhaps the results so far would indicate an extreme difference in governmental philosophy than ours, which might account for some of the mandatory requirements established by government bureaus. However, we might learn something from our foreign neighbors that will make our efforts more effective.

Last year, an international conference in acoustics was held in Stockholm, Sweden. The U.S.S.R. reported studies in industrial hearing loss, noise measurement, noise control and ear protection. Russia has adopted the following maximum permissible levels for industrial noise: low frequency, non-percussive noises, (60-350 cycles per second), 90-100 db., medium frequency and non-percussive noises; (350-800 cps.) 85-95 db., high frequency noises; 800-1200 cps., 75-85 db. This adherence to standards of noise control procedures is mandatory. If noise reduction at the source is technically impossible, arrangements *must* be made for changes in work schedule in the use of protective equipment. If hearing loss still progresses in some workers after these precautions have been taken, the men must be transferred to non-noisy occupations.

The *impossibility* of lowering noise levels must be established by commissions consisting of representatives of the industry, trade union, and the department of sanitation. Each company must establish these programs in co-operation with the above committee. All noise-making machines must be subject

to regular inspections to insure proper noise control. From information received, it is apparent that Russia has conducted considerable research in noise control and noise measurement.

It will be interesting to follow subsequent reports on noise induced hearing loss in Russian employees. It appears that Russian industry has gone a long way towards eliminating noise induced hearing loss, if these controlling measures are indeed in effect.

Austria and other European countries mentioned have similar rigid programs of inspection and control. In some instances the plant can be closed down after warning notices are not followed and improvements made.

Japan reports studies on the incidence of noise-induced hearing loss in industrial employees. They are compiling data on the relation of hearing loss to low frequency and high frequency noise exposure. Of particular interest is the study reporting the number of employees whose hearing loss exceeds 45 db average in the speech range as a function of job classification. Japan has proposed permissible sound pressure level designed to prevent hearing loss greater than 25 db in the speech range after 20 years of service. The levels at 95 are 100-200 cycles per second; 90 db at 100-2000 cycles per second, 90 db at 2000 to 3200 cps; 85 db at 3200-6400 cps.

In conclusion, because the real rewards of hearing conservation efforts like other human conservation activities in which you and I are engaged, lag behind our interest in natural resources, which lie far in the future as well, it is too much to expect great fervor or excitement on the part of workers or even management, to do all of the things which should be included in any effective hearing conservation effort. Yet, I think all of us take some comfort from the fact that we are *trying*. Something can be done to keep our workers' hearing intact.

One writer recently expressed his views this way, "Noise control will not spread like television, but it is not impossible that it will constitute a flourishing and widely recognized department of industry in 20 years time." I know it is easier to count the number of workers who resist for example, ear protection, probably because they make *more* noise, than it is possible to count the number

who are accepting and receiving help, but the road ahead still looks promising and seems to cover more people each year. Through the establishment of functional hearing conservation programs we are not only guarding our economic welfare and

keeping costs down, but we shall also be contributing to the *health, welfare*, and happiness of our fellow workers. As one authority recently stated, "There is no unknown aspect to the noise problem which justifies delayed action."

## THE RELATIONSHIP OF TRAINING TO SAFETY

By J. E. MONAGHAN

Training Consultant, Bemis Bro. Bag Co., St. Louis, Mo.

I would like to state some fundamentals I consider important and applicable to both training and safety. I will elaborate on each of these later:

1. It is important that there exists a wide range of interest within an organization. Enthusiasm, action, and examples must start with management and systematically carried through the ranks to each employee.

2. There should be an early assessment of attitudes. If they need to be changed, it is important that they be changed quickly.

3. Eradicate undesirable habits at an early stage. This is important because bad habits may be unconsciously performed and repetition only reinforces them. Habits can be changed, influenced, or corrected through proper training.

4. Placement of employees must be on the basis of previous experience, ability, and aptitude.

To develop my first point, all levels of management need accident prevention training so that they in turn may train those working for them. They must set the example by working safely, if they are going to teach others to work safely. A question often asked me is: "How do we get supervisors and employees to work safely?" I reply: "by attaching more importance to safety and making it equal to quality and cost." In other words by making safety a coordinate part of production.

Give the supervisor a working knowledge of how accidents are caused and an insight into some of the more common reasons for accidents. These are attitudes, habits, home problems, even heavy traffic enroute to work.

Teach employees that accidents do not just

happen; that they are caused. Until this fact is established and accepted, any further safety training is on insecure ground.

The supervisor should know what to do when an accident happens; how to handle the injured; and what to do about other employees in the area. He must know how to fill out accident reports. The last step, but a very important one is to do the planning necessary to prevent repetition.

Some companies have developed and are using a four-step method of investigation as a part of their supervisory training:

**Step 1—Getting the Facts**—Review the accident and determine whether the blame should be placed on personnel, mechanical, or material failure. Find out if the worker knew the safety rules for the job. Also, talk to all witnesses of the accident including the individual involved. Get the entire story!

**Step 2—Question All Details**—List all the details and from these determine how the accident happened, what specifically caused it. Determine if the accident was avoidable.

**Step 3—Check to Avoid Recurrence**—Check the work and material handling areas, the tools and machines, clothing and safety equipment. Plan corrective action.

**Step 4—Follow Up Procedure**—Make reports of all accidents, even minor scratches. Make requisitions for repairs, safety guards and safety equipment. Finally, make sure all employees know safety rules.

Teach each employee what to do in case of fire—to sound an alarm, shut off machinery, carry out assignments if any, use the fire extinguisher, take the proper exit.

Encourage supervisors to take first aid training (some companies require this) and

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take first aid  
quire this) and

to attend occasional safety council meetings  
with the safety director or plant safety  
supervisor.

Give supervisors "Job Instructor Train-  
ing." This is necessary in order for him  
to do a good job of training employees.

When supervisors are preparing their  
training programs, particularly the job  
breakdowns, they must make certain that  
they have included the necessary safety  
points to be covered. They cannot develop  
efficient workers, if they overlook the safety  
factors for each operation. Before training  
is started the work area and equipment  
should be in the condition in which the  
employee is expected to keep it.

The supervisor cannot expect an employee  
to help keep things clean if he is introduced  
to an untidy area in the beginning. This  
point needs constant emphasis. As our safety  
men say, "In training a sidewise bottomer  
operator, safety should be planned as a  
part of the training procedure and put  
across with each step and not a hit or miss  
basis. In doing this safety becomes a part  
of doing the job and is not something that  
is tacked on later. Lack of knowledge or  
skill is a major cause of unsafe acts  
leading to injuries."

Do people have to be trained to do every-  
thing? To this I reply "Yes." Training is  
needed even for employees to perform the  
most elementary jobs. It has been proven  
that without training we do not naturally  
know how to properly lift, bundle, or handle  
simple tools. Most people do not know the  
right way or the safe way. This applies  
to driving nails as well as to driving a fork  
lift truck; the only difference is the amount  
of training time required.

Sometimes our training programs break  
down because we stop at too high a level.  
We train the pressmen, the sewers, the bot-  
tomer operators, the tandem men, and main-  
tenance men; but we are too apt to overlook  
the handlers, the balers, and the janitors.  
We do this because we think that the job  
is simple and assume that the employees  
know how. How often have you seen em-  
ployees at this level being taken to a job  
assignment and given the tools and told to  
go to work? Some of these people may  
have been hired because they had had similar  
experience at some other place. But do they  
do it your way? Are the job requirements  
the same? Is the equipment the same as

they have been using? Quite often it is the  
employees at this level who are most subject  
to injuries and no small part of this may  
be due to poor induction and training.

Why is there at times a rash of minor  
injuries the first few days on the job? Is it  
a lack of training or induction? Is the  
worker trying too hard? Is he keyed up  
because of the new job?

Although the more serious disabling in-  
juries occur on the more complicated ma-  
chines or equipment, we do have a rash of  
minor injuries which are a problem. Work-  
ers often do not report them or get first  
aid treatment and they sometimes develop  
into lost time or difficult compensation cases.  
This must be covered thoroughly during the  
induction and training period, but will also  
require good alert supervision after the  
training is completed.

We must realize that each employee is  
different; therefore, we must adjust our  
training program to them. If people are  
new to a type of work or new to a work-  
ing situation, we must be prepared to be  
more thorough in giving them information  
than if we were instructing one who is  
merely changing jobs within an organiza-  
tion. When a person seems to be trying  
too hard, a change of the training plan  
may be in order. We may need, also, to  
find out what is causing the tension.

We should remove all unsafe "standard  
practices" that have existed over the years.  
Many of these are employee developed; lax  
supervision has allowed them to carry on.  
Examples are such things as running the  
machine with one or more of the safety  
guards removed, or removing choke ups  
without shutting the machine down. It goes  
without saying that the supervisor should  
not select operators of this type to act as  
instructors.

We should include in our induction the  
proper clothing for the job.

Guide the employee of long service. He  
may have reached the point where he thinks  
he can beat the machine or he feels that  
his crew knows just what he is going to do  
next. He should be brought in for safety  
talks, be given a review of the machine  
operation, or be placed on the safety com-  
mittee.

Review job procedures for those who  
transfer from one operation to another. Even  
though they may have done the job before,

we must again cover operating and safety procedures. This can be brief but must be done.

Eliminate the trial and error method. The trial and error method is not fair to the new or transferred employee directly affected and to the others in the work group who are indirectly affected.

At the beginning of this presentation I referred to the fundamentals which I consider important in safety training. The second point was attitudes. The supervisor's attitude toward safety and training penetrates through the ranks. And in learning how to do a job well, the proper attitude is fully as important as aptitude. If a new employee's attitude does not seem right to the supervisor, then he must try to determine what is basically wrong and seek help in developing a corrective program.

If the supervisor overlooks problems of attitude, they are apt to affect others in the department. Also if the supervisor is merely giving lip service on safety, the employees soon sense it and are apt to look upon any safety comment as a big joke. The supervisor must conduct himself in a safe manner. His example, be it good or bad, is more impressive than safety posters or other gimmicks. We must train the supervisors to realize it is disturbing to walk through a plant and see them teaching unsafe methods or overlooking machines in operation without safety guards.

Let me cite two cases—one of poor leadership and training and one of good leadership and training. One of our printing foremen was seen teaching a most dangerous method of washing plates to a new pressman. The superintendent did not know that this was going on. When the foreman was asked about it, he said he had been washing plates in that manner and teaching other pressmen to do it that way for twenty-four years. This took place about three weeks after the printing foreman had received a safety circular concerning a young pressman who had lost an arm when using the method in question.

The foreman I refer to was careless in other ways when he was around a press. Continual followup by the superintendent and discussions with him did not correct the situation. He was discharged. Six months later he lost an arm in a press because of his carelessness.

In contrast, we have a young officer of the company who believes that good example is one of the best ways to instill safe practices in people; not only on the job, but at home, as well. He practices his belief. When driving his car he keeps within the speed limits and in his lane on the highway, as it is his idea that his family will follow his good example. He states quite positively that he feels instruction and supervision will succeed only if leadership establishes proper attitudes.

In my opening remarks I mentioned people's habits. These should be observed in the early employment period, particularly those that have been acquired elsewhere. There are many personal habits that can be quite hazardous to the individual and a distraction to others. Employees may also have acquired bad work habits. These, as you all know, whether they be personal, or work habits, will take many hours to correct.

The supervisor and trainer must be prepared to correct them and know whether they are making progress or not. If there are no signs of improvement in a fair period of time then the employee should be transferred to another job, if one exists, where the bad habits are less likely to cause accidents or he should be discharged.

As I indicated proper selection and placement has a very definite bearing on the effectiveness of any training and safety program. When we place a person of small stature on a job that primarily requires brawn, I think we are by-passing all good safety procedures and are asking for back injuries, hernias, etc. Quite often we forget to make any changes in methods or training for such misplaced individuals. This, of course, can be best corrected by good job specifications and hiring procedures. This is something that needs to be called to the attention of the management when discovered by the safety or training men.

There is a special finesse that is invaluable to any trainer that I would like to mention. It is the ability to know an employee understands well enough that he can do a job without error, and can teach another worker what he has learned.

Even though most companies are doing something with regard to training for safety, there is always more that needs

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doing. My company conducts a two week central supervisors school three times a year, primarily for new supervisors. In this program the fundamentals of supervision and safety are brought into each discussion of training methods, costs, supervisor responsibilities, production, and personnel practices. Our safety engineer also has the opportunity to alert the participants of the school and acquaint them with our safety problems.

This is just a beginning and it is our hope that each plant will keep this education going in their safety committee and their management meetings. There is a need in most organizations for safety programs and for showing the men how to get together and coordinate this program. This also may include home safety if we are going to keep people on the job. Statistics show that people are twelve times more likely to be injured off the job.

Because I have not referred to movies, posters, gimmicks, etc. does not mean that I do not favor them. I believe these to be additional aids to both training and safety. The use of our good company magazines or papers are also helpful, as reminders. If we are going to succeed we must use every tool available. And if all workers are properly trained in the safe performance of their jobs, isn't it reasonable to assume that there will be a decided reduction in the number of accidents and the resulting by-products of these accidents?

In closing let us all remember that the best training and safety programs will succeed only if we have the wholehearted support of an alert management team. This I am sure will be forthcoming when management is fully aware that the efficiency of all departments (office, engineering, research, production, maintenance, handling, sales) depends on training and safety.

## INJURY CASE STUDIES

By A. B. BARNES

Safety and Fire Prevention Engineer, Fibreboard Paper Products Corp.  
Oakland, Calif.

The case study approach is not an original idea. The credit for conference use perhaps best belongs to Bob Gilmore, whom many of you know. Bob is a member of the Pulp & Paper executive committee and is general safety supervisor for Rayonier. Bob suggested the case study idea for use at the safety conferences held on the coast each year. As a result of his suggestion he volunteered to coordinate the efforts for all three state conferences. A moderator or chairman was chosen for each state who in turn, selected four panelists to present an injury case from their own mill. I am indebted to Dan Adair, safety coordinator for the Pacific Coast Assn. of Pulp & Paper Manufacturers, for collecting the slides and case information for this presentation.

Most of these case studies will follow an all too familiar pattern. Unfortunately, I suspect you will also see some of the problems facing "Safety in the Sixties."

In this first case which we'll call the *Case of the Waving Plate*, we have a fairly typi-

cal material handling situation. Finished rolls from the machine are taken directly to rail cars by a clamp or grab truck. Better than 90 per cent of the activity on the loading dock is outgoing material. Occasionally cars of raw materials are unloaded at the same dock by yard crews using a fork truck. Although both yard and loading crews must share the dock, with only two trucks involved, there has been no particular problem of congestion.

The yard crews had nearly finished unloading the rail car when the grab truck operator walked to the car to inspect it for possible use as a shipping car for finished rolls. The grab truck operator walked closely behind the truck.

When the truck entered the rail car and its rear wheels were about to roll off the trailing edge of the dock plate, the edge of the plate resting on the dock was suddenly lifted. The grab truck driver, whose timing was too perfect in this instance, stepped for-

ward and his foot was caught under the dock plate as it fell back.

He was not wearing safety shoes; however, there were no fractures or complications, his foot was badly bruised. What was the cause of this accident? How could it have been prevented?

The edge of the bridge or dock plate had been bent downwards and reinforced to remain in this position so that differences in elevation between the dock and the rail car would make no difference in relation to bearing points. The plate would not lift up as the truck moves across it. A good preventive in this situation, safety shoes.

We can call this next one the *Case of the Footloose Wrench*. In our industry operational adjustments to machinery are routine. We certainly have learned by now that in most cases the machinery should be shut down and locked or tagged out before adjustments are made. We know (or do we?) that proper and safe procedure is or should be an automatic habit. How important are safety habits?

A routine operational adjustment was necessary on the second press. The machine tender used the usual tools and procedures. He then climbed down from the ladder, leaving his tools in place. The tour boss crossed the catwalk over the press and was looking toward the wire when his foot dislodged the wrench. The wrench fell, striking a glancing blow to the side of the machine tender's head resulting in a slight bruise, a raised temper and a good scare.

This is a fairly simple case. This mill determined the basic solution to be on-the-job housekeeping. Basic rules direct workers to keep aisles, walkways and stairways clear; and to put tools back in the racks. The machine tender was a driving force in reemphasizing these basic rules. The safety committee followed up by day to day checks.

Another basic rule which we must continue to expand, develop and enforce in the future is the lock-out or tag-out requirement.

The *Case of Button, Button, Who Pushed the Button?* is a case in point. The lead millwright instructed the mechanic and his helper to replace the rubber seal strips on the edges of the blades of the feeder at the bottom of the cyclone located on the top of the chip silo. The lead man also instructed them to be sure to pull and tag out the

switch for the chip feeder. The control panel was located on the ground level of the silo.

The millwrights, in looking for the feeder switch, were told by the silo operator that the feeder circuit was interlocked with the exhaust switch and would not start if the exhaust switch was pulled. (The circuits are interlocked but in reverse sequence from that stated by the operator. The feeder can be started if the exhaust switch is pulled.)

Established procedure required that the start button be pushed to check if the proper switch had been pulled. The mechanic did not try to start the feeder.

The stop button on the feeder motor was to be locked in before starting repairs. This was not done. Investigation of the injury disclosed the fact that although the stop button was effective, the start button was a dummy. The contractor apparently did not have the right type of switch when the equipment was installed.

The man's was in an unsafe position when the chip car unloader pushed the start button at his station not knowing the feeder was being repaired. The feeder started pulling the mechanic's hand into the nip between the blades and the hopper. He received a badly lacerated hand. Switches that are interlocked should be identified properly.

When any equipment is to be worked upon, the mechanics or workmen must call an electrician. The workman obtains the motor number, the name of the drive, the type of work involved and enters this information on the new warning tag. The workman then signs the tag and enters the date, time and reason for tagging out.

The electrician checks the circuit number on the equipment to see that it is correct and notes the circuit number on the tag. The workman accompanies the electrician to the load center as a double check to see that the right breaker is opened and tagged out. The workmen involved, in addition to signing the record tag, are to use their individual warning tags.

The electrician will check the circuit with a tester at the motor control below the breaker to insure that the manual trip handle has actually tripped the breaker. The electrician then observes the workman test the equipment by pushing the start button to again check that the right switch is pulled.

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The workman depresses and locks the stop button as an extra precaution.

When work is completed on the tagged out equipment, the workman returns to the load center to sign the warning record tag that the equipment is clear. He also removes his individual tag. The workman signing the last clearance notifies the electrical department. The electrician may then remove the tag after checking clearance signatures. He then closes the breaker, enters the date,

time and his signature. The tags are saved for a few days.

You have read an example of the case presentation we have used in safety conferences on the coast. You undoubtedly have ideas for improvement and for adapting the idea for local use. When based upon real cases, as these were, the presentation is dramatic and different and is a forceful way of using the only advantage of an accident—the lessons learned.

## EDWARD BENTON FRITZ MEMORIAL AWARD

By A. SCOTT DOWD  
Pres., Fritz Publications, Inc., Chicago

Among the forty industries reporting their accident experience to the National Safety Council for the year 1958, Pulp and Paper ranked 21st with a frequency of 6.97—slightly higher than the average 6.17 for all industries.

Six hundred fifty-four participants in the Paper Industry Safety Contest finished the 1958 competition with ranking positions, consisting of 321 pulp and paper mills, 317 converting plants, and 16 pulpwood logging units. The total exposure was 574,822,000 man-hours. There were 4,390 reported injuries—a decrease of 19 per cent.

The final combined frequency rate—excluding pulpwood logging was 7.01; one per cent lower than in 1957, again the lowest combined frequency rate that has been reached in this industry in its record of 34 annual contests.

The cumulative rate of Pulpwood Logging was 35.84—a decrease by identical units of 54 per cent compared with 1957.

One hundred twenty-six plants in the Pulp and Paper Section received Special Safety Awards from the National Safety Council.

*Award of Honor* for the "Best all-time no-injury record" known to the National Safety Council in all classifications of the industry is held by Buckeye Cellulose Corporation, Cellulose and Specialties Div., Memphis, Tennessee. Last year, this company attained the best no-injury record for pulp manufacturing. The year, Buckeye has

surpassed the no-injury record for all classifications and still continues to hold this record.

Nine other *Awards of Honor* were given for outstanding safety records. Three of these were for perfect records of three million or more safe man-hours. In addition to these, 51 *Awards of Merit* were given, 49 *Certificates of Commendation*, and 17 *Presidents' Letters*.

The final scores and statistics of the 1958 Contest have been publicized, and the National Safety Council has given its trophies and certificates to the group winners.

A part of this occasion is the announcement of the winner of the *Edward Benton Fritz Memorial Trophy*, which in the opinion of the judges made the best safety achievement among the 321 pulp and paper mill participants in the 1958 Contest. The selection of a winner was not an easy task for the judges, and we are especially thankful to them.

The winner of this Grand Prize is, for its second consecutive year, the *Falls Paper and Power Company*, a subsidiary of Scott Paper Company, located in Oconto Falls, Wisconsin, whose integrated operations include a sulphite pulp and paper mill and a converting department manufacturing towels and household wax paper. A perfect score in Group C that covered 643,937 safe man-hours in 1958 completed a total of 3,143,940 safe man-hours that continued through December 31, 1958.

## ARE EMPLOYEE INCENTIVES NECESSARY?

By ROY E. JOHNSON

Personnel and Safety Supervisor, Kroehler Manufacturing Co., Kankakee, Ill.

I doubt if there is anyone that would dare say that incentives are not necessary be it safety or otherwise.

Life itself continues to function and is worthwhile living because of the many incentives we have. However, there are many different kinds of incentives—some good and some bad. Early in life most everything is done for fun.

As we grow older our incentives change or should change in accordance with our basic desires such as fears, hunger and wants. We seek higher education as an aid to better living and added security. We work hard for promotions and higher wages in order to be better family providers. We all want to own nice homes, equipped with TV and other luxuries. We want a nice car; and a motor boat is a must. Because of these incentives we are stimulated to a greater activity of effort in order to meet these needs and fulfill our desires.

Let's look at the definition of incentive—Webster says it's to encourage or impel. That which incites, or tends to incite, to action. Syn: activate, drive, influence, persuade, push, send and spur.

Our superintendent says you can't buy safety. He doesn't believe in the so called "car of corn" to lead them on. He does believe in showing some appreciation after a good record has been established. Victory celebrations which include a presentation of awards to the plant as a whole, a dinner for the employees if the record is outstanding and warrants the expenditure or small favors for all of those who helped by contributing many accident free hours; all of these things are appropriate.

At one of our plants they experimented with a bonus of 50 cents per day after six months of safe driving and equipment handling for our truck drivers; however, it had no merit at all, as the plant in question turned in the poorest safety record of all Kroehler Plants. It seems as though the bonus became an integral part of their wages and it lost its value as an incentive.

The best incentive we found for our truck drivers' safety program was that all new

equipment is given out to drivers with the best safety records, and the old equipment is passed on to the other drivers. You might ask, what happened to these other drivers? Did they lose their incentive for safe driving? Not if they wanted to keep their job with our company; we have a definite ruling which states that three preventable accidents within one year constitutes an automatic discharge.

The National Safety Council Safe Driver Award has developed into a real incentive for safe driving. We have an annual award dinner at which time the safe driver awards are presented. Some of our drivers have as high as 12 years of driving without a preventable accident.

In the plant proper we are competing against each other within our own organization plant wide as well as in the furniture division of the wood products section of the National Safety Council. A Kroehler Traveling Trophy is presented annually to the plant with the best safety record. Even more significant is the National Safety Council Awards which includes other furniture plants besides our own. Then there is the Liberty Mutual Ins. Co. award as well as the National Furniture Manufacturers Association plaque.

To me, these awards, if presented properly with plenty of publicity and then displayed to the best advantage, make a tremendous impact on the employee as well as the supervisor and management. Definitely the entire plant personnel is spurred on to a greater effort of working safely without injury through this type of group activity. This is what is known as team work, complete unity and cooperation.

Incentives which do not create a oneness or unity do more harm than good. I'm thinking now about individual recognition especially with some type of a tangible award to one supervisor over another, or even one department over another where there is no similarity of hazards and yet placed on a competitive basis. This is a breeding ground for resentment, contention, and strife. You will find your supervisor and foremen, along with their employees, working against each

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In other words, they lose sight of the goal, the real incentive which is a "frequency zero" for the entire plant. I can't help but add that we look at our other plants with mixed emotions when one by one they drop out of the zero frequency class. Previously we had this happening within the departments of each plant and never did get close to "frequency zero" in any one plant, until we removed the department barrier. Now instead of working against each other and "laughing up the sleeve" when a department

falls by the wayside, they're pulling together for the plant as a whole and brother what a difference in the employee moral and safety environment.

We can't overlook the suggestion system as a real incentive. Our employees call attention to unsafe practices, equipment or conditions which could cause accidents if not corrected.

I hope that I have challenged your thinking with this discussion. We all know there are two decidedly opposite schools of thought on the subject of incentives for employee safety. What's your opinion?

## POWER SAWS IN LOGGING

By WILL RUSCH

Director of Customer Relations, McCulloch Corp., Los Angeles, Calif.

A quick look into almost any family garage throughout the nation would immediately impress upon the viewer that the average American, whether for pleasure or paycheck, has acquired a stable of unusual and versatile mechanical horsepower. Whereas the household garage once stored the family car, plus miscellaneous sentimental trash, we now find it has taken on the appearance of a junior version construction company equipment shop.

In addition to an endless variety of small, electric hand tools, there will be seen gasoline engine powered lawn mowers, outboards, and portable chain saws in ever increasing numbers. The accumulation may, to some extent, reflect the economic observation, "Let's all be happy and live within our income—even if we have to borrow the money with which to do it."

The mass transition from slow, less efficient, completely manual tools to dependable and rapid performing mechanical equipment has brought with it a parallel concern for the user's personal protection and safety. This is obvious in many ways and, most particularly, from the fact that the Wood Products Section of the National Safety Council has asked our participation in your program to discuss POWER SAWS IN LOGGING.

Stimulated by the needs of better forestry and progressive log harvesting, the chain

saw industry has had a remarkably rapid and healthy growth over the past ten years. During this span of time, the chain saw, generally, has been reduced weight-wise and price-wise by 50 per cent or more while the performance and durability features have grown by an equal percentage.

These factors of greater value have considerably broadened the field of chain saw usage. Where once manufacturers may have been pressed to fulfill the needs of the professional saw log or pulpwood cutters alone, we now additionally serve requirements in such important and diversified fields as tree surgery, Tree Farming and woodlot forestry, right-of-way construction, parks and recreation, lumber yards, fire fighting, public utilities, and many others.

A most reliable estimate of the total chain saws now in use in the U. S. places the figure at the one million unit mark. Of this vast amount, almost one half, or approximately 470 thousand, are in the hands of woodcutters who are completely dependent upon the logging industry for their principal income.

Curiously enough, though representing slightly less than one half of total chain saw usage, the injury reports, as we observe them, indicate that the professional cutters suffer most operational accidents. This does not necessarily mean that these injuries are

directly attributable to, or inflicted by, the saw unit. Most frequently the accidents are found to be a side effect of saw usage—falling limbs, log pinch and rollback, etc. The only conclusion to be drawn is that undue familiarity for the job and with equipment is breeding a carelessness that might be bordering on recklessness.

A responsible manufacturer should, and will, of course, offer every safeguard possible in the basic design of his product. With power chain saws, we recognize the outstanding design objectives to be durable construction, light weight, ample power, modest purchase and upkeep costs, safety and comfort, and minimum overall size. This is no simple assignment, and the order in which these objectives are listed are not necessarily in keeping with consumer preferences, nor do they reflect our opinions of priority. Each is important, however, and vital to ultimate market acceptance and satisfaction.

Chain saw safety and comfort is today's theme. We can best clarify and expand on the subject with a series of slides depicting desirable safety features incorporated in one of the current, professional logging models of McCulloch chain saws.

The McCulloch Model ONE-80 is a gear transmission unit created for one-man operation in giant sized timber cutting. When necessary, due to work requirements, and/or the hazards involved, this model can, by means of an outboard handle, or "stinger," mounted on the nose end of the bar, be converted for operation by a two-man crew.

The high strength, nylon starter cord rewinds automatically and is linked to a centrifugal clutch. In proper engine idling adjustment, the clutch is disengaged, or neutral, and the saw chain remains completely stationary.

Certain models of contemporary power saws incorporate a mechanical device referred to as a throttle lock. The function of this lock is to pre-fix the engine speed, through the throttle trigger, above the normal idling range and thereby facilitate engine starting.

Despite occasional scattered chain saw user requests, it is my well-considered belief that the throttle lock represents a potentially dangerous convenience. Vital seconds of safe reflex action are lost to the operator when

the cutting element of the saw is mechanically fixed into a moving position.

The Oregon Industrial Accident Commission expresses much the same view in their Safety Code for Logging. Section 3.44 of the Code reads in part as follows: "No means for locking the throttle in open position while the motor is running shall be permitted on portable power saws."

The operation and location of the controls is a most important consideration in any chain saw's construction.

In the ONE-80 model, and others in our product line, the controls are arranged in a keyboard styled position. The OFF/ON switch, chain oiler, choke, and throttle trigger are built to the operator's most comfortable and safest thumb and finger reach. This control positioning allows maximum freedom in running the unit without sacrificing any part of the operator's ability to hold the saw firmly. Both hands, because they need not be removed from the handgrip areas, are in a normal safety zone.

The vertical line cast into the shroud is a falling sight guide. In big timber felling, the chain and bar are often out of view—buried in the cut. With the saw in a horizontal falling position, the operator can, by means of the falling sight, immediately calculate the position of the cutting head in relation to the power head thus avoiding any undesirable or unsafe cut through.

The point at which engine power is eventually converted to saw chain movement takes place at the drive sprocket section. Although well recessed into the main crankcase region, the drive sprocket also has a metal canopy guard enclosure. This, in an effort to safeguard the operator from any possibility of body or clothing entanglement.

An additional benefit of the sprocket location and guard is the wood chip deflection action obtained. Chips are directed so as to avoid interference with a clear line of operator vision.

At one time, chain saws were provided with an aluminum guard extending the length of the bar above the saw chain. Although appearing a logical means of improving the safety features, it was soon realized that saw users found the guard a real hindrance. It made saw handling unwieldy and actually added more danger potential than may have been prevented. The

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advent of a centrifugal clutch and its ability to immobilize the chain without requiring the stopping of the engine has all but eliminated any further considerations towards the fixed, mounted chain guard.

In studying the recent third report, "The Use of Power Saws in Forest Operations," published by the Food and Agriculture Organization of the United Nations, we must agree with the statement, "The principles of (chain saw) safety technique have been adequately worked out and published in various pamphlets and books." Outstanding examples of this in the U. S. are found in "A Guide To Safe Woods Operations" by the Industrial Commission of Ohio; "Use and Care of Power Saws," by the American Pulpwood Association; "Safe Use of Power Chain Saws," Employers Mutuals of Wausau; and the National Safety Council's own fine booklet, "Chain Saw Safety."

The safety message barrage, both printed and oral, must and is being continuously directed to wherever chain saw using audiences exist, with emphasis to the professional user market. Trade journals and general readership publications are most ably serving in the effort. Accentuating carefulness to timber fallers in one of their editions last year, a West Coast magazine asked an old woods hand for his safety incentive advice. With a sly grin, the fellow replied, "It helps a lot if you get halfway killed once."

Considering the amount of attention devoted to chain saw usage safety incorporated in the publications and field activities of chain saw manufacturers, it somehow seems inconsistent that any accident ratio is not being reduced by sufficient and acceptable degrees.

Our clue for improvement possibilities may well be found in the information further provided by the United Nations power saw report. "Courses on the handling of power saws are also organized in the different countries. What is essential is to improve instructional facilities on working sites where seasonal workers are employed. A large number of countries make it a rule that power saws are not made available to workers until they have completed a course and attained a minimum standard of technical knowledge."

In most respects, these policies and practices are absolutely sound. What we need to resolve is the alliance requirements of chain saw manufacturers, and the professional safety people of the wood producing industries for achieving mutually desirable goals in the field of saw usage accident prevention.

Group chain saw usage training sessions are now being conducted periodically by qualified members of our factory and nationwide distribution organizations. We would welcome the opportunity to expand this activity, but can only do so with your cooperation and at your invitation.

Apart from the physical safe handling aspects of chain saw equipment, there is another major area of chain saw research and design development affecting the health of workers that is of primary concern to all of us.

There is no denying the fact that, despite all their pre-eminent advantages, engine driven power saws contain an inherent problem involving operational sound and, consequently, the hearing attitudes of operators. Diligent research is being devoted to the field of exhaust noises and during the last year, a major milestone in improvement was attained.

The exhaust mufflers on today's professional sawyer models of McCulloch chain saws provide an impressive 42 per cent reduction in sound energy over predecessor models, affording higher levels of work efficiency, comfort, and safety. From the standpoint of workmen's compensation involvement, this achievement is of special significance.

Consider, too, if you will, that the muffler must serve a dual role. Improved sound suppression is one objective—with it, spark arrestment and heat absorption to fulfill urgent needs in forest fire threat suppression.

We manufacture and distribute power chain saws—you manufacture and distribute the rules for their efficient and safe usage. How well we fare individually in logging accident prevention is dependent upon each one's understanding of mutual problems and the willingness to cooperatively overcome them. Our progress can start right now.

# PRINTING & PUBLISHING

## INFORMATION, PLEASE!

At this session, devoted to questions from the floor on safety problems of the printing industry, Walter B. Smith, manager of employee activities for R. R. Donnelley & Sons Co., Chicago, presided as chairman and introduced the first discussion on labeling of solvents.

**Q.** What type of solvents should be labeled?

**A.** According to Illinois regulations, any substance that could be harmful should be labeled. The Manufacturing Chemists Association issues a booklet on labeling, which gives information on toxicity, flash points, etc. We use gummed stickers that bear a basic warning message and a blank space for lettering the name of the contents. (Mr. Smith said he would send samples of such labels to anyone writing for them.)

**Voice from floor:** It requires a good follow-up program, as we have had trouble with the labels falling off of the containers.

**Q.** Do you use labels of different colors?

**A.** We are using red containers and yellow labels, printed in black ink.

**Q.** How do you keep up to date on newly-developed solvents, offset solutions, and the like?

**A.** We wouldn't buy without discussing with the manufacturer the effect of such substances on the health of workers, as well as on blankets, rollers, etc.

**Mr. Smith:** Any new solvent coming into our plant, even on a trial basis, must come through the safety department and be checked out by the medical director.

**Voice:** That's a good idea. We discovered a 20 per cent carbon tetrachloride content in an adhesive that was kept in a warming pot.

**Q.** Does anyone use discipline consistently for violation of rules on adjusting machines while in motion?

**A.** We're setting up rules that involve five steps to dismissal in case of continued violations.

**Q.** What about cutter blades and the dangers in changing them?

**A.** For a long time, it was our standard practice to transport blades in wooden crates. Now, we are developing aluminum sheaths to hold them. With constantly repeated instructions by the foreman, you'll avoid trouble.

**Q.** How do you avoid injuries in the handling of skids?

**A.** We found that many truck drivers were not able to see well, so we insist that they pass a vision test. We take all hoist truck operators every six months and put them through an examination that includes vision testing. They must pass the test in order to keep their certificate to operate the truck. If they are found to require eye correction, they must buy their own glasses.

**Q.** Do you have a solution to the problem of speeding in parking lots?

**A.** We have posted 10-mile-an-hour speed limits in the parking lot, where we have gained additional room and avoided confusion by painting white lines to mark parking spaces and passage ways. We found the NSC Data Sheet on Parking Lots helpful.

**Q.** What can you do to keep strapping bands from snapping back and causing injury when they are cut?

**A.** The complete answer is in the NSC Accident Prevention Manual.

**Q.** How can you avoid dermatitis in plate making?

**A.** Use gloves or protective creams.

**Q.** Does the cream get on the plates?

**A.** No, the cream disappears and we have had no trouble. More dermatitis comes from hand cleansers than from etching fluids, so we are careful to avoid waterless cleansers that contain kerosene or other harmful substances.

**Q.** We can't get our men to wear eye protection. How do you overcome this?

**A.** It is a matter of discipline. We found we had to enforce the rules for eye protection and, in our case, the unions supported us. We even had to discharge skilled craftsmen before they learned we meant business. Our rules involve a reprimand for the first

offense; a reprimand and warning for second offense; one day layoff for third offense; one week layoff for fourth offense, and final discharge for a fifth offense.

Just be sure your supervisors are properly instructed and will use good judgment in convincing their workers that the rules must be enforced.

**Q.** How costly are accidents in the printing industry?

**A.** Injury cases can be very costly, but even minor accidents are expensive. One manager reported seeing a minor accident that caused no injury, but he figured the breakage, downtime of machinery and wasted time of the men cost \$160.

In a Long Island City case, a man's arm

was caught in a roller, and compensation costs were only \$95—but maintenance charges for cut rollers and hangers and downtime for the machinery totalled several hundred dollars.

One prize case caused injury so slight that only a bruised finger resulted—but the workman dropped a wrench into the gears of a five-color press. Direct cost of repairs was \$4,000—but 48 hours of downtime on the press caused a loss of \$52,000 in sales.

**Q.** What are the precautions for handling propane gas?

**A.** Liquefied gas cylinders should be stored on racks outside the plant and filling should be done only in isolated areas, away from sources of ignition.

## FIRE PREVENTION IN THE PRINTING INDUSTRY

By JACK STROUBE

Asst. to Manager, Employee Activities and Safety  
R. R. Donnelley & Sons Co., Chicago

If you lost the use, for just 30 days, of one of your printing presses, how much would it hurt?

Of course, how much it hurts would depend on a lot of things, but more and more new presses are being designed around a specific product, a certain kind of printing of a certain size, and each new press is handling more and more work, faster, and leaves just that much bigger hole when you lose it.

A fire, even though it may not consume a press, can easily damage it to the extent that repairs will take longer than you can afford to wait. The actual fire loss may be quite small in comparison to the costs of side effects.

One death per million man hours can be considered a pretty fair safety record, but, one unprotected hazard which leads to one fire per any period of time, and you may not have any records left to keep.

A hazardous machine can injure a worker for lack of a safety device, but if all goes wrong the worst it can do is kill him, it's at least a limit on what you may expect. But a hazardous process that causes a fire has

no limits on it, except total destruction of your business.

A flying piece of metal hits a man just above the eye and does no damage, but the next time it may put his eye out. As safety people, you must be vitally interested in the non-injuring accident because of the fine line between them and the accident that disables. The near misses are in fire safety, too, because every fire you have is, at the same time, a lost time accident and a near miss. No matter how small, a fire costs something, time if nothing else, and no matter how large, a fire could have been bigger!

Each fire is both a failure and a success, you failed because the fire occurred, you succeeded because the plant is still standing. Therefore, you must approach the fire safety problem as you do the overall personnel safety problem, that is, any fire, or, more important, any hazard which may lead to a fire, is potentially the one that burns you down.

And this requires watching what most people consider minor infractions. One ordinary can of lacquer thinner can burn you badly, even though you may already have

200 safety cans. One empty or missing extinguisher can be the cause of considerable damage, and it doesn't matter that you have a fortune tied up in fire equipment, and one man, indifferent to the hazards of fire, and ignorant of the protective equipment provided can be your greatest hazard.

This is hard even for the safety man to keep in his mind, and it is much more difficult for the worker to recognize, especially if these "minor" hazards are being overlooked by you; once you compromise these safeguards in one area, they soon begin to deteriorate throughout the plant, because to a department concerned primarily with production, these individual hazards will always seem minor. You, at least, must understand this.

From documented records of fires in printing plants, the NFPA has gathered statistics and separated the major hazards. Here, basically then, are the causes of the fires we, as a group, have had.

Over half, (54 per cent), of all the recorded fires in printing establishments, started from common hazards.

Almost 80 per cent of the fires due to the common hazards result from these four causes: smoking & matches, rubbish disposal, electrical defects, and heating defects.

Eliminate careless smoking which, in itself, accounts for 30 per cent of the common hazard fires, and the other causes can be broadly grouped under the heading "Maintenance & Housekeeping."

And careless smoking, where allowed, is also tied in with housekeeping. Good housekeeping practices reduce the fires from careless smoking, and usually helps control careless smoking itself.

Of course, it would be ideal to eliminate smoking altogether in manufacturing areas. But usually this is impossible and is unnecessary except in certain areas. It will suffice to strictly control the areas where smoking is allowed, and to provide receptacles in these areas for safe disposal of cigarettes.

But there must be some hazards that make the printing industry different!

Forty-six per cent of the recorded fires originated in the so-called "special hazards," and most of those were traced to three basic causes. Almost 70 per cent of the special hazard fires resulted from these causes: gas

driers with their connected ducts and residue, oily rags, and flammable liquids.

Improved methods of ventilation, drying inks, and new inks are needed, non-flammable solvents, cleaners, and improved methods of lubrication must come to eliminate these hazards. Meanwhile, we must recognize them and protect against them. But what is so different about gas driers, dirty ducts, oily rags and flammable liquids?

These are fairly common hazards, it's the method of application and the degree of use that makes them "special" to the printing industry, and you will find that almost all fire protection hazards fall into this pattern for any industry.

The special hazards are really only common, basic hazards with some special method of application which may increase the normal probability of this hazard of starting a fire. We don't really have too many basic hazards to worry about. Let's list them: 1. Housekeeping—this includes waste disposal, oily rags, dirty ductwork; Storage and warehousing is basically a housekeeping hazard; 2. Hot surfaces—driers, ovens, boilers, and their connected ducts, and the fuel handling connected with these devices; 3. Open flames or sparks—again may apply to driers, boilers, etc. but can also include welding, smoking, static; 4. Flammable liquids—includes storage, painting, mixing; 5. Electricity; and 6. General maintenance—which classes as a hazard since poor maintenance can create a hazard, where none previously existed.

One or more of these items properly mixed with blueprints, engineers, and complicated gears, valves, buttons, and flashing lights, become our "special" hazards. If you can learn to look through the woods, you find it is not hard to identify the trees.

Once you have identified your hazards, you can do one of these three basic things to each hazard in the process or machine: eliminate it, isolate it, or protect it.

To eliminate or isolate a hazard you can rely on your own company's engineering people for details and performance merely by convincing them it is a hazard. To protect a hazard, once found, there are many companies in the business of providing the engineering know how to do this. And the job of deciding whether the possible consequences resulting from a hazard is worth

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it, must be a group management effort.

For the smaller shop without an engineer,  
there are many companies who can provide  
the information necessary to accomplish any  
of the three items. For one, try asking your  
insurance agent if the company you are  
insured with provides engineering services.  
You may also be able to reduce your insur-  
ance costs by following their recommenda-  
tions. For others, look in the yellow pages  
or check with the Better Business Bureau,  
the fire department, or the Chicago Asso-  
ciation of Commerce and Industry.

The same process can be applied to new  
equipment and processes. The hard job may  
be in seeing that these new things are made  
available to you early in their development  
stage, but this is a communications problem  
and you are already expert in that field.

So, really we have no hazards so mysteri-  
ous that a person, trained in looking, can-  
not break them down to every day items.  
Then it becomes a matter of using the serv-  
ices of one of the established fire safety  
organizations.

The NFPA or the NBFU will have a  
pamphlet recommending the best protection  
for any known hazard.

The big problem in fire prevention in the  
printing industry is much the same as the  
problem all industry faces, how to prevent  
the accumulation of unplanned for, minor  
hazards from starting fires. And this prob-  
lem results partially from the fact that fire  
protection is still too much an offshoot of  
general safety, it must be considered more  
than on a level with a safety shoe or safety  
goggle program, it must be weaved contin-  
uously through your whole safety program  
and have as much planning and fore thought.

Most companies cannot afford to main-  
tain a separate fire prevention section, as  
some companies are now doing, but you can  
maintain a fire prevention section in your  
own head and put more thought to it. The  
trouble with fire safety is basically lack of  
good planning or in many cases lack of any  
planning.

So, start at the bottom, literally; inspect  
your plant for housekeeping, oily rags, poor  
lubricating procedures, poor waste disposal,  
flammable liquid handling! Then check your  
fire doors, half of them probably are dam-  
aged or even inoperative.

Are the fire extinguishers full? Are they  
regularly checked and weighed? Has your  
fire hose ever been tested, in fact has it  
ever been taken out of the cabinet to see if  
it's still in one piece? Is the sprinkler sys-  
tem checked regularly, do you know if all  
the valves are always open?

These are basic items, and it doesn't take  
much special training to accomplish this.  
When you find that you have defects, there  
are again standards published that can form  
the basis for your recommendations or ac-  
tion.

After you have found your major defects,  
you can proceed on rather familiar ground,  
send out pieces of paper. Write basic stand-  
ards and requirements for your people, mod-  
ifying existing standards to your needs, the  
subject matter may not be as familiar as  
straight safety requirements, but the process  
is the same.

There are a great many people throughout  
your own plant who can aid a fire safety  
program if you only can give them some  
basic standards to work by.

The fires which still will occur are going  
to have to be put out fast and when they  
are still small. If your plant is sprinklered,  
your job is easier, it's a matter of record  
that 98 per cent of the fires in sprinklered  
printing plants were put out or held in check  
by the sprinkler system, this makes it an  
important tool for preventing large loss  
fires, but so many times you hear of the ex-  
pressed fear of water damage in the print-  
ing industry and of the elaborate plans for  
getting the water turned off, this can be  
dangerous and should be carefully controlled,  
a mistake here can invalidate the sprinkler  
system as a useful tool.

I think you will find that most of the  
damage any water will cause will be accom-  
plished in the first few seconds, so letting  
it run a little longer will not add much.  
And be careful who is allowed to turn the  
valve off, it had better be someone of re-  
sponsibility. Someone who knows when not  
to turn it off.

Automatic sprinklers, and all fire equip-  
ment, hose, extinguishers, doors, etc. need  
regular inspection, maintenance and testing  
to insure operation.

There is too much tendency to assume  
that the fire equipment once in a plant will  
always operate, that, because we haven't

used it, it's still ready to use. Unlike most safety equipment, fire fighting tools are not constantly in use, and time, dirt, and unnoticed physical damage can take its toll, and merely looking to see that the equipment is still there is not enough.

This is usually a problem with only two faces, one, lack of definite lines of responsibility, since for convenience in accounting procedures fire equipment is often split into two or more financial groupings, that is, some is process equipment and belongs to the manufacturing operation and some is assigned to the building, regardless of who owns it someone must be given the responsibility of assuring its continued workability. Once that responsibility is defined, you must then fix the other face, ignorance. See to it that the people responsible for the equipment understand its operation, know how to maintain it, and know how often and the procedures involved in testing it. And see to it that this is all in writing.

Seeing that all this is accomplished is a big job, and an important job, but there is another, equally important job to be done and before we go into this second job, I would like to quote parts of an article from a recent Factory Mutual publication. "Significantly, most of industry's disastrous fires in recent years have been the result not so much of weaknesses in the physical safeguards as of failures of the human element. The human failures have been either failures to maintain plant preparedness, thus making the physical protection ineffective when needed, or they have been mistakes of omission or commission during the emergency, nullifying the safeguards which had been provided." They go on to explain that chief among the failures are those relating to the handling of automatic sprinkler protection. But they end with a statement that can be your basic key to real fire safety.

"The answer is fully trained personnel, properly organized under competent direction. Relatively few people are needed to assure fire safety, but they must be present when needed and they must know what to do . . . and have the authority to do it."

So finally we come back to the same point as all safety, the foreman and his men, they must be talked to specifically about fire safety, given information concerning general hazards and given the job of performing their own routine weekly or monthly inspec-

tions, checked and backed up by your inspections. By "you" I mean whoever is working on this program. In the large plant the safety director should back up the foreman's inspection, or the safety committees inspection. In the small shop the foreman or even the owner should back up the crews inspection. However it works, someone should perform a checking inspection to insure the original inspection of being done seriously.

For those of you who are interested, I have some of the inspection forms and standards we have set up that you may take and use or compare with your own. But most important, and the item most neglected in the past, they must be properly and regularly trained in the use of the equipment provided them and have a lasting organization in which to use that training. And they should be exposed where possible to controlled, relatively large fires to practice on. A man who has never seen anything larger than a backyard bonfire or never attempted to use an extinguisher on anything larger than a fire in a sawed off oil barrel cannot be expected to perform well on a fire in a building where he must also fight smoke, heat, and confusion. For after all of your previous work, how big each "little" fire grows, may depend finally on one man with one small extinguisher in his hands, and he better know how to use it; and he can do better if he knows its limitations as well as its capabilities.

But the starting point in training is much more basic than that. If you will ask around in the factory, I think you will find a surprising number of men haven't the slightest idea of how to operate an extinguisher. Many of them can't tell one from the other and few know which to use on what type of fire.

You are spending money on equipment that a large percentage of your people don't understand and won't take the trouble to find out about. If this equipment is to be at all useful, you're going to have to show them how to use it, then let them try it out. And you must impress upon them the fact that all this preparation may not be needed but once, but that once can be worth the effort.

From a thorough and continuing training program you will not only form an organization of men who will be able to stop the fires small, you will gain valuable side effects. Just as the safety committees have

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proved invaluable to accident prevention, an active, informed fire conscious work force, whose interest and respect for fire is maintained, can prove invaluable in fire prevention as well as being a fire fighting tool.

By being fire conscious they will amend a lot of previous poor practices, and you will find that the areas where the foreman and his men are active and aware of the dangers of fire, general maintenance and housekeeping are way above average. This in itself can pay the way of the training program.

And as a morale factor for you and them, you will find that most of the men thoroughly enjoy these training programs and the more "for real" they are the more enjoyable, and it brings to them, more so than expensive equipment, posters and slogans can, the fact that management must be interested in safety to go to all this trouble. And if you can sell the men that fact, your whole safety program can gain from it. An occasional training session can also be a real boon to the safety director who just found out he's shown all his movies; and quite seriously can break the rut of always sitting and listening. Fire safety in the home can really wake up the class, and start some discussions. Start criticizing them for taking so little of the fire safety planning that industry provides, home with them, show them that, by and large, we take better care of them than they do of their own family. It can open a whole new field of meeting formats for you.

Well, now that we are in the midst of attacking our problems at the home plant, you suddenly find that because certain areas are gaining population rapidly, and because shipping is getting more difficult and expensive every day, your company is going to expand, move out into new areas. You'll probably follow the trend, you will start small. The building will be the semi-permanent type, no brick and concrete this time. No, now it's steel and glass walls, steel deck roof, covered with asphalt. It will be one story and built to expand horizontally instead of vertically. It will undoubtedly be out in the middle of nowhere, anywhere from 20 to 40 miles from a big city fire department and any semblance of a water pipe. Now what are those people going to say? I mean the ones who always tell you, "don't worry about it, the fire depart-

ment's only one-half block away." The biggest thing this new fire department ever saw was when Joe's chicken coop caught fire. Although most volunteer fire departments are quite capable and often more earnest than their paid counterparts, they are not usually equipped to handle a large factory fire. Then to top it off, you get a few older supervisors and a building full of new people.

A new plant can present you with many fire problems from the start, and you had better see they are taken into consideration. You must fight economy of materials which may add flammable construction to a building already only barely non-flammable. Insist on automatic sprinklers, a hot fire can drop the roof of this type building amazingly fast. See that sufficient water supply and distribution systems are provided for, and try to have them provided for use during construction, not after the last door is hung.

Get a fire pump, a hose stream at elevated tank pressure can look pretty sick, and your fire department may not own a pumper. See that fire divisions are provided, several acres under an unbroken roof can be deadly. And a well-trained and fire-conscious work force is more important now than ever.

Then as the new plant takes shape, begin to set up all the items you should have had in your old place:

1. Institute a system of regular, detailed, inspections. One to be done by the plant personnel, another to be periodically done by you. Send written recommendations and perform a follow up inspection to assure some thought and action being put to them.
2. Write a set of minimum standards covering all the basic hazards; general housekeeping, waste disposal, flammable liquid handling, smoking, welding and so on.
3. Write detailed specifications and descriptions on maintenance, testing and care of fire equipment.
4. Make sure the responsibility for all these items is clearly defined. This item is extremely important and is often neglected, or unclear when it is done.
5. Set up within your own company a procedure whereby you are notified of intended changes, additions, new construc-

tion, so that you will at least be aware of new hazards being introduced.

6. Begin a thorough and continuing program that will provide your company with an organization to fight your failures, and give them the training they will need to do this job. A good training program is time consuming and hard work, but it is the only way you can keep alive an awareness of the seriousness of a future fire. If any one item in fire safety comes first, it is the fact,

that your people must know and understand the possible consequences of a fire.

Don't solve your fire problems with a statement like this: "The sprinkler system is our first and foremost defense against fire." Because in too many places it is the only defense and this can be dangerous over a period of time. Something else must be first. Your first defense against fire, and your last hope in the event of one, is a well-trained man, backed up by a well-prepared program.

## SAFETY IN THE SIXTIES FOR THE PRINTING INDUSTRY

By WALTER McARDLE

President, McArdle Printing Co., Washington, D. C.

In any field of endeavor, respect is always inspired by a job well done. The National Safety Council in laying its plans for the 47th Annual Safety Congress, of which our meeting is a part, met the specifications of a job well done in a most admirable manner.

Some of you may have had the privilege of receiving an 186-page booklet which the Council prepared for its speakers and panel members in connection with this Congress. This book gathered together the considered opinions of distinguished leaders in American life and set forth their views on many aspects of what we might expect in the 60's. It was especially interesting to me since our association—Printing Industry of America—just completed an annual convention in New York which was devoted entirely to the subject of "How Will Change Affect Your Business?" or "Management Equips for Tomorrow's Needs."

The information in the Council's booklet "Safety in the 60's" was provided so that the various speakers and panel members might take advantage of these considered opinions in presenting their views of what might be expected in "Safety in the 60's" in their particular field of activity. The preface to this book is an interesting editorial, and so that you might enjoy as I did, a bit of the editorial style, I would like to read you the first sentence:

"Perched on the razor's edge of history, man at any given moment instinctively looks both fore and aft, for these are interesting, instructive and, at times, comforting things to do."

When I was asked to speak to you, it was for the purpose of having us together look ahead in graphic arts safety in harmony with the theme of the Safety Congress. When I accepted this assignment I was not aware of conditions surrounding the operation of the Printing and Publishing Section. So with your permission (and I have already obtained the permission of the Program Committee Chairman), I want to consider, not the safety aspects of the things that will come in 1960, but rather the practical and immediate problem that seems to be facing the future of a Printing and Publishing Section within the National Safety Council. I make this change because in my opinion the most effective manner in which we can achieve a satisfactory record in the graphic arts in the field of safety in the 60's is to have an active, progressive and successful Printing and Publishing Section in operation. This to me is Step No. 1, and without it the information which we might obtain by prophecy or develop by accurate survey cannot be translated into procedures which will safeguard our manpower and our investment in equipment and facilities.

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The discussion of this subject as compared to prophesying the future of safety in the graphic arts, I am sure will not be as glamorous but it can be more satisfying to you and to me if it results in concrete and specific action. I was advised just two weeks ago that a proposal would probably be submitted to the Industrial Conference at a meeting which took place last Sunday calling for the elimination of the separate Printing and Publishing Section under the National Safety Council. Probably I should have known of this before, but the matter came to my personal attention only two weeks ago, and immediately we approached the proper officials within the Safety Council. After discussions with the men who have been carrying on this work with considerable personal sacrifice over the past years, we arrived at an agreement that this proposal to discontinue a separate section would be held in abeyance for at least a year.

Now I would like to go back just a few moments to the beginning of the Printing and Publishing Section because I think by doing so those things I am going to suggest can be better understood by those of us who have not been closely associated with the work of this Section. Printing Industry of America worked actively with Walter Smith, Sam Mansfield, and a handful of other individuals who in 1947 petitioned the National Safety Council to establish a Printing and Publishing Section. PIA then undertook the financing of the initial work on the development of the special safety manual for the industry.

With the establishment within the graphic arts of the Education Council, PIA withdrew its active sponsorship of this work and assigned the activity to the Education Council. Quite frankly I have been out of touch with the matter, although we have maintained constant representation on the Section's Executive Committee.

In talking to Walter Smith, whom I have consulted on this matter, I found that the industry has not responded satisfactorily to the excellent work of the Section's officers. The gradual growth of membership of the Section, however, is encouraging, but the failure of the industry to cooperate in many ways was the principal reason for considering the discontinuance of the separate Section.

It is important to realize that the matter

of having a Printing and Publishing Section for the sake of a name only, is not the chief consideration. It is not a question only of prestige but rather a question of under what method of operation is there the greatest possibility for developing a satisfactory safety awareness on the part of both management and company personnel. Awareness should come from active safety programs established by management, the participation in statistical reporting, and the kind of interest which brings healthy active groups of people together to work on the various projects which an active section of the Council would normally carry forward.

We are handicapped in this matter by the absence of concrete statistics, but all of the reasons that existed when this separate Section was established in the late 1940's, exist today with greater emphasis on the need, because of the larger number of high-speed presses and the new manufacturing methods which are being introduced.

It is always difficult in matters such as this to avoid the appearance of being overly critical of those people who have performed so marvelously. Our experience in PIA over the past 14 years has revealed the fact that in our industry, a long strenuous period of educational activity is required to create an awareness of the value and importance to management of almost any one of the important management functions. This is not a condemnation of the industry, but rather a recognition of its particular composition.

Many of our management people have not had the privilege of formal management training. By far the great majority of our companies are of such a size that the appointment of a full-time safety director would be completely out of the question, even if management were fully aware of the benefits of a safety program. This does not make the job impossible—it makes it just a bit more difficult. Joseph Chanko always says that the impossible simply takes a little longer to accomplish.

I recognize that with us here are the men who have kept this activity alive. What I have to say is addressed to you as well as to the men who are attending their first session of the National Safety Congress.

It is our plan in PIA to endeavor to interest our independent affiliated associations (of which we have some 73 throughout the

*1959 National Safety Congress*

United States and Canada) in establishing an active safety activity as an association program. To accomplish this we must find in each city at least one interested industry man who will assume the leadership and serve as the liaison with the Printing and Publishing Section during the next year.

One active, enthusiastic, interested person is all we need to get under way in each city. I want your help in finding him. We need you, or someone from your company to personally take on the task. We will assist you in every way.

In the case of the industries which have organizations separate from the local printers' associations, it is our plan to work through their national officials, and endeavor to find in each organization an individual who will work actively with the Section. I know that in some industries this already exists and full cooperation and interest have already been established.

If we are to make safety live in the printing and publishing industries, it is going to be necessary for us to take positive action.

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