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How to Organize for Safety

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PREFACE.

This bulletin has been compiled to give mine and plant operators an idea on "How to Organize for Safety."

The bulletin as a whole applies to large concerns. For the small operator it will only be necessary to omit that part which applies to the larger one. The form used applies to any and all industries, either as a whole or as a department.

It is hoped that Safety Inspectors, Operators, Superintendents, Foremen and Workmen will find it a handy reference.

HOW TO ORGANIZE FOR SAFETY

By S. C. DICKINSON

GENERAL PHASES OF THE SAFETY MOVEMENT.

First—The Human Reason.

All our instincts rebel at the thought of maiming and killing for business reasons. Industrial accidents were once thought inevitable, but now Safety work has shown that accidents can largely be prevented and are no part of the successful conduct of business. Now that accidents can largely be eliminated, no employer who is informed of what Safety work can accomplish will accept the responsibility of old, slipshod methods, knowing that the lives and limbs of his fellow-men are being jeopardized by him. Present-day business men are not the kind to permit it to be said that they could but didn't save their men from possible injury or death. The public conscience has at last crystallized the Safety idea into the public policy.

"That the workman shall live to enjoy the fruits of his labor; that his mother shall have the comforts of his arm in her age; that his wife shall not be untimely a widow; that his children shall have a father, and cripples and helpless wrecks who were once strong men shall no longer be a by-product of industry."

Second—The Efficient and Financial Reason.

Safety work is a study of the right and orderly way of doing things and is, therefore, a great constructive aid to shop efficiency and economy.

This movement comes to modern industry as one well suited to assist production. It teaches workmen to be alert, thoughtful and considerate—to observe conditions and to study how to do things the safe and right way. Men are better workmen when, because of the safeguards, they can move with confidence about their work. The testimony of employers who have taken up Safety work is that the cost of the work is much less than the cost of accidents.

Third—The Sociological Reason.

Nothing has come into industrial life that has better served to bring men and management closer together. The meeting of employer and employees through Safety work has brought about understanding, team-work and good feeling—an invaluable *esprit de corps*

—that could not have been accomplished in any other way. The fraternizing on Safety Committees, the human interest of the employer, the awakening interest in shop conditions and methods in the workmen, have all served a great economic purpose and aroused a loyalty and co-operation of great economic value.

The estimated loss of 35,000 killed and 2,000,000 injured workmen and citizens of the United States has been a great economic waste. The conservation of the workmen of the country is of the highest importance. The pauperizing of individuals and families through incapacitating or the removing of the bread-winning power through accidents, is a serious community problem. It has meant deprivation of schooling to numberless children, privations to the women, public charges, beggars, poor houses, orphan asylums, old folks' homes and hospitals. Poverty and loss of opportunity thus occasioned have often had a relationship to crime.

From all view points, therefore, the humanitarian, economic and sociological—the Safety movement is one of the most vitally important issues in our National life.

THE OPPORTUNITIES OF A SAFETY INSPECTOR.

In a few years the packing industry has grown from a mere "slaughter house" to a truly wonderful institution, producing not only meats and hides, but drugs, oils, dietetic foods, fertilizers, acids, glue, candles, buttons and many other things, the true origin of which is not suspected by the average user.

THE BIG OPPORTUNITY FOR PROFIT LIES IN THE DEVELOPMENT OF BY-PRODUCTS.

This is not true of the stock yards alone, it's true of the oil, the gas, the mine and many other industries, *and it is true of the safety game.*

The ultimate goal of Safety First is the Universal Brotherhood of Man, and each succeeding Safety manufacturer who gets the big vision is absolutely convinced of its practicability and certainty.

The movement for the prevention of accidents, the conservation of life, health, and the keeping of a brother is the noblest human effort of modern times and it is not unlike the Crusades. And even now the infidels (Misunderstanding, Hate, Unfairness, Lack-of-Good-Fellowship and the like) are being dispersed and Jerusalem the Golden can be Won.

Safety First is today a battle cry that rouses the most humanitarian instincts of all who hear—in every walk of life—in school, in home, in factory, office or state.

Consider for a moment the by-products of Safety First in the shops:

It has brought freedom from the misery, pain and loss of accidents.

It has brought freedom from fear.

It has brought better sanitary conditions.

It has brought pleasanter and cleaner shops.

It has brought increased wages by reducing accidents.

It has brought steadier jobs by teaching managers the value of a safe, experienced man.

It has brought shop restaurants, company schools, medical supervisors, visiting nurses, mutual aid societies.

It has brought temperance by teaching men the danger of their own or others' overindulgence in liquor.

Because all these and more, are the results of Fellowship, which is in turn the product of Safety First, is only a vehicle—its committee of workmen and foremen and managers have grown so interested in their common, holy effort to conserve human life that they have been carried beyond the bounds of fear and prejudice to a realization of mutual interest and mutual benefit and mutual pride in the success of their plant.

The Opportunities of a Safety Inspector?

To strike such true notes in shop and office and home and State that "The Lost Chord" shall sound again in the harmonious blending of human effort toward "Everlasting Peace."

United States statistics have demonstrated that three-fourths of the deaths and serious injuries from accidents *can be prevented*.

The effect of this discovery is far-reaching, and can be measured only when it is realized that 35,000 men, women and children are killed by accident every twelve months. This means one killed every fifteen minutes. If three-fourths can be saved it means 25,000 fewer deaths—at least 10,000 fewer widows and 30,000 fewer orphans every year.

Here is a cause certainly worthy the co-operation of every man who thinks and cares.

WHAT ONE COMPANY ACCOMPLISHED.

The Board of Underwriters of the Insurance Companies has estimated the hazard of cement manufacture where quarrying is carried on by blasting at 6%. The manual rate adopted by the State Compensation Fund is 6.4%.

The estimated pay-roll was \$25,000.00 per month, hence the

expected loss should have been in the neighborhood of \$18,000.00. The total compensable loss was \$1,665.16.

Based on the pay-roll of 1915 the estimated loss should have been in the neighborhood of \$12,000.00, whereas the compensable loss was \$714.77. The method followed by the company in brief is as follows:

1. Installation of permanent safety appliances in every department of the plant.
2. The adoption of rules and regulations which are strictly enforced.
3. Organization of department heads. Education of employees.
4. Co-operation of employer and employee.
5. Selection of risks.
6. Tabulation and study of experience.

The total permanent disabilities for 1914 amounted to the loss of two fingers and an injury which resulted in the interference of function of the foot of one employee.

In 1915 permanent disability amounted to loss of middle finger, minor hand, and partial injury to index finger, same hand.

The average loss of time of all employees injured was less than two days per employee injured.

Percentage of reduction in accidents, year 1915 compared to 1914.....	32%
Reduction in compensable cases.....	56%
Reduction in drug bills.....	47%
Reduction in days lost per man employed.....	21%

Above cases all refer to 1915, compared to 1914, and are based on the comparative number of men on the pay-roll.

Of the six methods adopted, Nos. 1, 2 and 5 are far and away the most important, and probably the *most important* is No. 5.

ACTUAL ACCIDENT REDUCTIONS.

Industrial.

Bucyrus Company.....	65%
Cadillac Motor Car Company.....	69%
Commonwealth Edison Company.....	40%
(Public Service Company of Northern Illinois and Middle West Utilities Company of Chicago.)	
Commonwealth Steel Company.....	69%
Corn Products Refining Company.....	37%

Eastman Kodak Company.....	78%
Fairbanks-Morse Manufacturing Company.....	72%
George Cutter Company.....	43%
Harrison Bros. & Co., Inc.....	75%
Illinois Steel Company.....	85%
Inland Steel Company.....	35%
International Harvester Company.....	88%
(Wisconsin Steel Company Plant).	
Jones & Laughlin Steel Company.....	78%
A. J. Lindemann and Hoverson Company.....	62%
Milwaukee Coke and Gas Company.....	83%
Neenah Paper Company.....	83%
Packard Motor Car Company.....	72%
The Pullman Company.....	46%
Raritan Copper Works.....	22%
Rochester Railway and Light Company.....	33%
United States Steel Corporation.....	41%

Transportation.

Boston Elevated Railway Company.....	23%
Chicago Surface Lines.....	80%
(Reduction in accidents to school children).	
Norfolk and Western Railway Company.....	25%
El Paso and Southwestern System.....	18%
Northern Pacific Railway Company.....	30%
Oregon Short Line Railroad Company.....	39%
Pennsylvania Railroad Company.....	30%
St. Louis and San Francisco Railway.....	50%
Southern Pacific Company.....	76%

NECESSITY FOR ORGANIZATION.

The accident prevention problem involves two essential elements—Safeguarding and Education, in each of which there is more or less detail work. Experience in the past decade has conclusively proven that safeguarding and educational work in any plant is not a “one man job”; that satisfactory results can be secured only through the highest measure of co-operation between the employer and his employee, and this only by means of organization. The employer himself must be vitally interested in the work if he expects to educate his men to share the responsibility with him. The men must be given a part to perform in it, if their interest is to be aroused and maintained. The problem must touch through somewhere and they must be brought into direct relationship with their employer. It is

only through organization that this is possible, whether the plant be large or small.

THE WORK OF AN ORGANIZATION.

The form and character of any organization must naturally vary as the work to be performed varies; hence the work to be done by a Safety Organization in plants of all sizes should be considered before determining what the form of organization should be.

Safeguarding and education comprise the task of any organization, all of which naturally requires efficient planning, direction and supervision.

In safeguarding there are evolved, among others, the following essential elements:

1. A study of hazards incidental to the use of equipment and machinery.

An analysis of the hazards of the plant and mine should be made and classified. The reduction of hazards begins with the design and follows through the construction and operation. Hazards may be introduced by:

(a) *Faulty design.*

(b) *Structural defects, as*

Overloading of floors,

Slippery floors,

Inadequate lighting and head-room,

Lack of sanitation, hand-rails, exits, elevator enclosures, etc.,

(c) *Operation of machinery, as*

Broken emery wheels,

Broken fly-wheels,

Faulty gearing,

Faulty rope and belt drive,

Risk due to breaking of conveyors, piping and other mechanisms,

Burns due to breakage of boiler tubes and steam mains,

Switch-board hazards due to necessity of repair and addition of new work, etc.

(d) *Mining operations, as*

Falling down chutes, shafts, manways, etc.,

Fire,

Explosives,

Failure of hoisting machinery,

Falls of rock and ore,

Haulage accidents,
Broken ladder-ways, etc.

The study of the probable sources of accident or exposure to the chance of loss or harm is worthy of serious consideration.

2. Adoption of standards for practically and efficiently guarding dangerous places and machines.

After making a study of hazards a systematic study of all parts of the plant and mine should be made with a view to provide such devices and methods as will tend to decrease the most common classes of accidents.

Many concerns have prepared standard specifications and drawings covering their safeguarding requirements. These are gotten up in the way of blue-prints and written rules of construction.

3. Inspection of the plant is, of course, one of the first essentials in the carrying out of any safeguarding program. Inspection work naturally divides itself into four elements.

- (a) Inspection for the need of safeguards. Each machine and place must be examined for the purpose of determining the necessity of safeguarding and the extent to which the same should be done.
- (b) Inspection for the installation of safeguards in order to make certain that they are properly and efficiently adjusted to the machine in question.
- (c) Inspection for the maintenance of safeguards. In ordinary operating conditions guards, as well as machines, often get out of repair and it is essential that the machines be kept in good operating condition.
- (d) The use of safeguards. It is very often found that though guards are installed and properly maintained, the workmen will fail to make the proper use of them, or having removed a guard for the purpose of making a repair to the machine will fail to restore it to its proper position, thus in either event making possible the injury of himself or his fellow-workmen.

4. In new construction or replacement, checking in the drafting room or purchasing department.

Dangerous conditions arise in the erection, painting, alteration, repair of buildings or trestles, etc. The mechanical force here to be treated is the force of gravity. In this same class will be found operation of elevators, hoisting apparatus, derricks or lifting machines of any kind. Dangers due to fall of material from a height, due to a failure of any part of the hoisting machinery. Erection or

demolition of structures containing iron and steel work include dangers attached to great elevation and consequent exposure to wind pressure. Masses to be handled are usually great and their momentum may throw a man to his death without a mechanical failure or any fault or carelessness of the worker.

In conjunction with the adoption of construction rules and standardization of guards an adequate system is also necessary. Draftsmen should be instructed to see that full protection is made for Safety in accordance with the rules and standards of the plant. The title of each drawing should have as part of its title "Checked for Safety," according to the hazards of the different departments.

The opportunity placed in the hands of the purchasing department, or agent to secure safety in the plant, should not be overlooked. The use of a rubber stamp put on letters which reads as follows will stimulate interest at the fountain-head in the drafting room of the manufacturer: "Provisions for safeguarding workmen should be brought to our attention, as we will consider them in selecting new machinery and equipment."

The following is a part of an order and contract: "This order for machinery is accepted with the understanding that it will in all requirements comply with state laws as laid down for the preservation of life and limb, of machine operators, or any persons whose duties may call them around the machine as such laws may be interpreted by the state inspector. Unless this machine is received in this condition we reserve the right to return it at once without notification, charging the transportation charges to the maker, or to make such changes as may be necessary to make it satisfactory to the state inspector to take the cost of same from the price formally agreed upon."

Education is the foundation rock in accident prevention. Education and inspection can, it is believed, eliminate the majority of the preventable accidents. The word education as here used does not imply such training as will make engineers, foremen, or mine managers, but simply the direct training of the average miner, so that he may know clearly how to do his daily work with greater personal safety.

Training and education are necessary for safety and efficiency, and therefore all classes and types of labor should be interested in accident prevention.

Especially should all new workmen receive instruction in a language they understand, as to proper and safe methods of work. It is particularly important that they be warned of dangers apparent

only to intelligent and experienced workmen and be shown how to avoid such dangers. Practical instruction at the working face supplemented by illustrated classroom talks should be given on how and when to set timber, precaution in testing the roof or back, use of safety lamps and portable electric lamps, handling explosives, and underground traveling to and from work. A miner should possess knowledge that will enable him to work in comparative safety when left to his own resources. Such instruction makes both an efficient workman and a useful citizen out of a new recruit, and is greatly promoted by an adequate inspection system that gives personal directions whenever and wherever required.

In educational work there are evolved among others the following essential elements:

1. A study of hazards incidental to operation.

As is the case in safeguarding a study of the hazards is necessary, and in order to do this effectively and economically it has been found wise to standardize safety devices, guards and equipment.

2. Adoption of operating rules covering safe methods of doing work.

As has been said before, safeguarding alone will accomplish but little and the organization in taking up the problem must also enter upon a campaign for the education of the men, and interesting them in the program.

The object of a rule is not to abridge the rights of anyone but to point out the path which experience has taught us as the right one to follow, a rule given the benefit of long experience.

The traveler across the country is grateful for the guideposts that tell him how to reach his destination. If the sign at the crossing tells him to take the uphill way, he does so cheerfully and is grateful that the sign is there.

Begin with the following rule placed over the door of the employment office. Display it in different languages in a conspicuous place:

"To men seeking employment: Unless you are willing to avoid injury to yourself and fellow-workmen do not ask for employment. We do not want careless men in our employ."

After a company has decided to start a Safety Campaign and to organize their plant on a thoroughgoing basis, one of the first things to do is to issue some kind of a statement setting forth in black and white just what the company means by Safety. A rule book is an order issued by the officers of a company to every man in their em-

ploy. Different opinions regarding essential points can be avoided in this manner.

For small plants a set of rules may be typewritten and issued to the foremen and posted on the bulletin boards for the workmen. The rules may well be somewhat general in character or deal with special hazards inherent to the business because a considerable degree of supervision is possible in a plant of this kind.

For large plants the rules should be printed and bound in permanent form. Print rules for workmen and executive officials separately. The rules should be specific and enforceable, and do not include a rule you will not enforce.

In compiling a set of rules consult books of other companies which have done efficient Safety work. Consult each foreman and consider the accidents in his department. This will win his co-operation from the start and will make him feel that he had a part in making the standards.

The preface to a rule book should include a frank statement by the president setting forth just what the company proposes to do—and what is expected of each foreman and workman—and inviting the co-operation of every man in the worthy task of saving life.

The book should be complete and should include the following:

a. Rules covering standard Safety Devices and operating conditions to be maintained, equipment—including the standard construction of guards, railings, stairs, ladders, conditions in buildings, mines, etc.

b. Instructions to foremen regarding their duties in promoting safety.

Where there are several departments with distinct hazards such as Foundries, Machine-shops, Mines, etc., a separate set of rules should be made for each. These should be arranged in the book under department heads. This is especially important with regard to workmen's rules. Workmen will then need to study only the rules of their own department. General rules applicable to all departments should be placed in the front of the book.

c. Rules for workmen regarding safe and unsafe practices.

In plants where non-English speaking men are employed it has been found necessary to print the rules for workmen in the various languages. It would be well to consider the dialect of the district as well as the country of the workmen. Great care should be taken to use only simple, every-day words.

Each workman—especially each new employee—should be given a rule book and he should sign a receipt for it. The foreman should

see to it that each man reads and understands the rules. A number of companies have secured good results by offering a small prize to each workman who passes a successful examination on the rules. The foreman should frequently quiz the men to see if they are familiar with the rules.

The typographical features of a rule book are exceedingly important and often determine whether the book will be read or not read. The book should be bound in a simple but substantial manner—preferably in cloth. The following points are important to consider.

a. The paper should be of good quality, especially the cover of the book.

b. The type should be large and bold, with wide spacings.

c. Each heading should be set in 12-point, using a plain letter. Subheadings should be in 8-point of the series used in rule headings. Each rule should have a title printed in bold type.

d. The rules should be arranged numerically throughout the book regardless of departments. Where the numbering of the rules for each department begins with *one*, there is apt to be confusion. There should be only one rule number ONE in the book.

e. There should be a complete index for easy reference and this should be placed in the front of the book.

f. Illustrations, including pictures of guards, safe and unsafe practices, etc., add much to the attractiveness of the book and help to break up the solid body of reading matter.

g. The whole book should present an inviting appearance—simple, clear and easy to read.

Signs, illuminated and otherwise, should be posted in conspicuous places. They should contain some device or symbol making the danger evident at a glance; it is the most effective then. In other cases the briefest possible text should be added for any needed explanation. Dangerous parts of machines should be painted red.

3. Instruction of new men as to hazards and rules.

Mining, as a business, deals in a large measure with unskilled labor. There is no school to turn out skilled miners other than the mine. Hitherto, in the development of a skilled workman, emphasis has been laid upon the importance of his knowing how to perform to the best of ability the work set before him and also how to do it most efficiently. Today, a new element must be considered in industrial education of men, and that is the element of Safety. Unless men are taught to avoid accidents which may incapacitate them, as

well as being taught the skillful performance of their duties, they should not be regarded or accepted as desirable workers.

If you desire to educate your miners to think and act safely, place them in an environment which, through the medium of its safety devices and mining methods, emphasizes the genuine interest of the company in the miners' health and safety; and to this add rigid discipline administered by highly trained foremen and bosses, from whose ranks you have entirely eliminated all those whose interest in safety is superficial. Create these conditions in your mines and the education of your miners in safety will follow just as surely as the day follows night.

Foremen should thoroughly instruct a new workman as to hazards incidental to his own work. Heavy, slow men should not be placed in jobs where light, quick men are required. Slow-thinking, unintelligent men should not be put in where presence of mind is required. Watch out for men who are hurt frequently, and do not employ men to whom no one on the force can talk. Education will produce better results than compulsion.

Instruction in the principles of safety is a long step in conserving life and limb and increasing industrial safety.

Workmen should be required to familiarize themselves with the rules, especially new employees. Each should be given a rule book and he should sign a receipt for it. Foremen should examine the men and if it is found that they do not understand the rules a course of instruction should follow.

4. Interesting the men:

- a. Give a badge of distinction to those showing a thorough knowledge of safety rules.
- b. Advertise Safety by the distribution of match-boxes, watch-fobs, key-rings, pencils, pocket-books, etc. For instance, when a department is successful in meeting certain fixed requirements in accident prevention records during any one month, give each man in that department a "Safety First" prize. Safety requirements, of course, should be based on plant records and the inherent hazards of a department.
- d. Make it everybody's job to prevent accidents.
- e. Display illuminated signs, stereopticon or moving pictures at the plant entrances showing Safety precepts. This is a practical method of awakening interest, and the Safety views and reminders cause many a man to think of "Safety First" as he passes to and from his work.
- f. Have each foreman appoint some one of his men as Safety

Overseer. In addition to his regular work, this man is also on the alert for dangerous conditions and practices, reporting the same to his foreman. The man selected to fill this position should be given a distinctive badge. Have monthly meetings of all Overseers to discuss Safety matters.

- g. When foreigners are employed have a man versed in the language call upon the new employee, and, in conjunction with his foreman, talk to him about his duties and about being careful in his work.
- h. Keep the shops and yards orderly and clean. Beautify with grass plots and flower beds whenever practicable. Pleasant surroundings and proper conditions make far better and more careful workmen.

Excellent results have been accomplished in many industrial communities through campaigns made among the families and school children.

Some industrial concerns have also interested the clergy and press of the community in their work and obtained their support and co-operation, all of which has been found to be very helpful.

School children have also been interested in the subject of Safety through talks, stereopticon slides and moving pictures and much has been done in bringing their influence to bear upon their fathers and brothers at work, as well as educating them to think of their own safety in and about the street and at play.

Calendars with appropriate precepts for each month, besides being useful, serve as reminders.

Publishing a bulletin or a monthly pamphlet containing statistics, safety stories, accidents of previous month, accident records, etc., will prove very interesting to the men and it is a very good way of arousing enthusiasm along Safety lines.

5. Providing bulletin boards in the several departments for the posting of Safety Orders, Rules and Information.

Education must be continuous and constructive in character.

A LIVE BULLETIN BOARD.

1. *How to Keep Safety Uppermost.*—Any factory can have a brief spurt of Safety First, and then let it die. How to keep Safety uppermost in the minds of the workmen—really interesting, month in and month out—is the problem many employers are anxious to solve. A live bulletin board in each department is a practical solution of this problem.

2. *Widely Adopted.*—The majority of companies which are do-

ing efficient work have adopted the bulletin board idea, and find it a cheap and effective means by which they can keep continually before the men the subject of safety.

3. *The Secret of Success.*—A bulletin board can be made as interesting and up-to-date as a newspaper. Constant change and variety is the secret; always something new; something striking; a lesson of actual experience. The material on a bulletin board should be completely changed at least once each week. The men will read the bulletins, if the "punch" is there. This is the experience of all companies.

4. *Everybody Contribute.*—Some one man should be made responsible for keeping up the bulletin boards—but the foremen, the Safety Committeeman, and all employees should be encouraged to help. Make it a shop newspaper—this will add to the interest.

5. *Located in Each Department.*—Each department should have its own bulletin board, and it should be located at a point where the men pass on their way to work, or where they congregate.

6. *Suggestions for Exhibits.*—The following suggestions will indicate the sort of exhibits which have been found most interesting and effective in driving home to the men the importance of Safety:

- a. Pictures are always the most interesting—pictures of men who have narrowly escaped injury, and pictures showing how accidents happened.
- b. Stories of actual accidents, including name of injured, date of accident, how it happened, disability, time and wages lost; what might have prevented the accident.
- c. Newspaper clippings giving accounts of accidents which have occurred in other plants.
- d. Pictures showing dangerous practices—the wrong way and the right way of doing the same work.
- e. Exhibit on infections, including pictures of infected hands, statistics showing large percentage of infections caused by neglecting slight injuries, and instructions on how to prevent infections.
- f. Graphic chart in colors showing causes of accidents—accidents caused by carelessness should be emphasized.
- g. One company exhibited a cold chisel with a mushroomed head which had caused the loss of an eye. A chisel with a properly ground head was placed beside it. Above was the photograph of the injured man, and below was the story of how the accident happened. This is the sort of exhibit which

really reaches the men and leads them to take Safety work seriously.

- h. Another company arranged on a bulletin board 42 pairs of goggles, each with one lens broken. On a piece of paper pasted on the face of the unbroken lens was printed the name of the man who wore the goggles and the story of the accident which might have destroyed his eye had it not been for the goggles. A large sign across the board read as follows:

“42 YEARS SAVED—10 MONTHS.”

- i. Posters giving suggestions on sanitation and personal hygiene—such as dangers of contracting tuberculosis, lead poisoning, value of fresh air, care of eyes, cleanliness, etc.
- j. Attention called to Safety rules which are being disregarded should be occasionally posted on the bulletin board with notice of enforcement.
- k. Names of members of Workmen’s Safety Committees, with an appeal for co-operation.
- l. Important suggestions made by workmen.
- m. Safety slogans stimulate interest—a new one should be posted each week.
- n. Many companies post a schedule each month showing accident records of departments, compared with previous month or year.
- o. The bulletins issued each week by the National Safety Council include many graphic pictures and much valuable information which will prove helpful in keeping up a live bulletin board.
- p. They must be original—hit the nail on the head at the plant where it is posted.
- q. Bulletins should be personal—appeal to the imagination of the workmen.
- r. A bulletin has to be novel—surprise the men.
- s. Two or three bulletins posted on a board are better than several. Too many bulletins are confusing.
- t. Post one large bulletin for a change.
- u. Use a large blackboard for the board. Put the heading in red and the text in white.
- v. Use magazine pictures with appropriate headings.
- w. Report accidents daily by bulletins.
- x. Use pictures of untidy spots of other departments—also defects.

- y. Use a cartoon once in a while. A bulletin with a picture attracts more attention than one with only printed matter. Use bulletins in the employment office and, by all means, in all cases use a good bulletin board.

HOW TO MAKE YOUR BULLETIN BOARDS ATTRACTIVE.

Every shop should and can have its own "shop interest" bulletin. We are dealing with MEN. Humanize your bulletin boards and arouse interest.

You can write a better bulletin for your plant than any outsider can. Home-made bulletins are best—the typewritten or hand-lettered placard shows a personal interest apparently lacking in the printed page.

Blue-prints and drawings are more valuable as illustrations than are printed duplications or cuts.

Fractured goggles, a burned shoe, a broken safeguard with a crayon warning are worth a dozen artistically printed bulletins.

A dime's worth of colored (red or blue) chalk, a large pad of paper and a sincere effort to present the truth in simple language are all that is necessary.

Select a subject which will interest as well as instruct and tell the story as the story of life and its efforts have been told to you. Everyone reads the newspapers because the editors are skilled in writing headlines—they have learned that one or two lines of type, properly worded and displayed, will hold the attention long enough to read the subheadings and introduction, where the story is outlined. The busy man reads no further unless his interest or fancy is caught in the first few lines. Workmen in the shop are busy men—they should be. To hold their attention the familiar form of the news-writer should be followed. They are interested in bonuses; in the welfare of their families; in personal notes about their fellows; in mishaps which have occurred to their families or friends; and it is our work to get them more and more interested in their own safety, which can be given strong, human interest.

1. A splendid bulletin is one setting forth the illness (if serious) or accident in the families of employees. This immediately impresses the workmen with the kindly intent of the shop management. This style of bulletin is intended to be posted at the noon or quitting hour and removed before the next morning.

2. Accidents in the shop. Here is where the burned shoe, the mushroomed tool and the fractured goggles come in, together with the human interest story. Don't content yourself with a first state-

ment of the case—every week or so tell the men how the injured man is getting along. Use the “noon” bulletin for this.

3. If you have tried out the first two suggestions you will know your men so well that little can be added here. The man *must* obey the safety rules, but you want him to *want to obey them*. If you see a “wise” look on one of your men when you pass the bulletin board—pass on, but remember the “Know-it-all” and stop at his machine the next day for a good-natured word. Don’t talk “Safety,” ask about his babies or his father—time enough, don’t hurry. He knows that you know that he sneers in his sleeve, so don’t put yourself on his level. Get him up to yours. *The real bulletin board is not an inanimate one.*

If you have foreign-speaking men in your employ learn to say “Good morning” in their language—this will be *their* bulletin board—the friendly light in your eyes. Don’t mind your dignity—that can go till supertime, when you meet the little feet in the front hall.

When you write a bulletin read it aloud to your office companion (don’t let him see it till after it is read aloud); if he is interested stick it up; if he is not interested, find out where the fault is—and remedy it. If he says “Let me see it,” it’s a good bulletin.

HOME-MADE BULLETIN BOARDS.

Safety men are probably the most ingenious of all professional men. They must plan the Safety campaign and also design the guards to be used, and specify the details of construction. Then follows the campaign of education to secure their use and to make the crusade against accidents effective.

One concern has adopted a good-sized blackboard as the background of their bulletin board. They paste illustrations on the blackboard and then chalk their text. They are meeting with considerable success as their men recognize the personal effort they are making in their behalf and are carefully studying the new bulletin board.

Use suggestion boxes in your Safety work. Suggestion boxes for employees to report defects in grounds, machinery, manner in which work is carried on, carelessness of other employees; in fact anything in their opinion which is dangerous or might result in injury of any kind. Objects accomplished are:

1. Protection for employees.
2. Co-operation of the best sort.
3. Prevention of damage of company’s property.

A prize for the best suggestion submitted monthly or weekly will prove a source of value and it also encourages the workmen to

report unsafe conditions and make suggestions for the prevention of accidents.

Suggestions should be made out in duplicate—the original kept by the employee and the duplicate going to the company. The suggestion should be acknowledged by the latter and then sent to the foreman of the department to which it pertains for investigation, opinion or comment. The suggestions with the comments go before the committee (which should be composed of department heads and workmen), where it is decided to adopt or reject them. If adopted, the employee should be notified and paid the regular prize for suggestions.

In this way suggestions go direct from an employee to the management, where an unbiased investigation is made. Each suggestion goes to its particular committee, the secretary entering it into a book. The secretary then refers it to the head of the department to which the maker of the suggestion belongs, or to the party most directly interested, not disclosing the name of the suggestor. The original suggestion is never sent with the correspondence during the investigation, but is retained in the office of the committee, and a copy is made for investigation purposes, or the subject-matter embodied in the correspondence.

IV.

FORM OF ORGANIZATION.

The existing working force of every concern, whether large or small, is adaptable very readily to an accident prevention organization. No new employees are required unless it be in the case of very large concerns, in which it might be necessary to select some person to devote himself exclusively to the inspection work. The only differences are that the organization does not need to be so extensive in the small plant and that the duties in such a plant are performed by different factors in the organization. Forms of organization for plants of different sizes are suggested as follows:

1. A Safety Inspector. He should—
 - a. Inspect:
 1. For need of safeguards;
 2. For installation of safeguards;
 3. For maintenance of safeguards;
 4. For use of safeguards;
 5. For unsafe practices;
 6. For plant sanitation and cleanliness;

- b. Recommend methods of safeguarding and design of guards;
- c. Have charge of all details of Safety work;
- d. Receive all reports, recommendations, and suggestions;
- e. Supervise the holding of meetings of foremen and men;
- f. Keep all necessary records.

The services of the inspector should be devoted solely to safety work, independent of the operating department, and he should report directly to the executive. A person charged with and responsible to the executive for the adoption and enforcement of safety measures is far more effective in producing results than any committee.

The department chief may have one or more assistant inspectors for carrying on the work according to the extent of the territory and the number of operatives under his supervision. Regular and careful inspections of all equipment are made and proper safety measures receive the co-operation and active support of superintendents and foremen in furthering such work.

In smaller operations the safety work must necessarily be more closely associated with the operating department, in which event the inspector may perform duties other than those connected with mine inspection .

The mine rescue and first aid department usually comes under the supervision of the inspector. In some instances the inspector is called upon to assist in the welfare and educational work and to encourage, with a view to improving health, conditions, better standards of living among the employees.

2. A plant committee of Safety composed of a plant superintendent or his assistant (chairman), Safety Inspector (secretary), and three or more high-grade department superintendents, foreman, shift bosses, electrical engineer, mining engineer and chief clerks, which should—

- a. Have general charge and supervision over Safety work;
- b. Pass on all controverted matters;
- c. Gather all available information;
- d. Establish standards for safeguards;
- e. Promulgate rules of safe operation;
- f. Outline educational campaign.

Reports should be submitted to the executive head, usually the general superintendent. The members of this committee would be the active agents in carrying out the provisions of the law and such measures as may be adopted for promoting safety. This committee should hold regular monthly meetings for the consideration and discussion of all safety problems and submit monthly a detailed written

report stating the progress made, with recommendations. This report would give the judgment and recommendations of men who have had the most intimate experience with all the various divisions of the concern and would tend to standardize practice as a whole. It is extremely important that the foreman become actively interested, as it is the foremen who must enforce the rules finally adopted, and service in the committee best acquaints them with the reasons for these rules.

3. **Workmen's Committees.** These committees should consist of men doing different kinds of work and usually of different nationalities. Each member should serve two to four months and be succeeded by a new member, so that in time a large number of men of various nationalities would have been in a position where they would feel individual responsibility and could more readily understand the need of co-operation.

They should—

- a. Make inspections and recommendations as to method of remedying dangerous conditions found or unsafe practices noted;
- b. Investigate accidents in their several departments;
- c. Render weekly or monthly written reports on forms provided for that purpose.

WORKMEN'S INSPECTING COMMITTEES.

Value.

1. The majority of companies who have made substantial reductions in accidents have found that the surest way to interest the workmen and secure their intelligent co-operation—to really get them with you—is to give them an *active part* in promoting safety.

2. The plan of having committees of workmen inspect the shops has proven to be the best means of giving the men a chance to be heard and of enlisting their active interest.

3. Workmen who inspect their own departments discover for the first time how accidents happen; the small number which can be prevented by the company and the large number which is due to the ignorance or carelessness of the men on the job. This experience opens their eyes and changes their point of view; they find out what you cannot tell them and make them believe.

4. Men who have served on inspecting committees become the best boosters for safety and help to foster confidence among the men and make them take the work of accident prevention seriously.

5. A live workmen's committee in a plant serves as a prod to the

foreman, superintendents and the manager and helps to prevent laxness and neglect. The foremen are ashamed to be caught napping by the workmen.

Selection.

6. In plants with 100 to 300 men it has been found practical to appoint a committee of five men. In larger plants with many departments, in which there are hazards, it is advisable to appoint a committee of at least three men in each department.

7. The members of these committees should serve from one to three months. By changing the members frequently a large number of men each year can be given the benefit of the experience.

8. On the first committee appointed, older and more experienced men should be named—men whom the workmen know and respect. These men will help win the confidence in the committee idea. When the work of the committee has become thoroughly established it is advisable to include on each committee at least one man from the day-labor class. These men are often able to make suggestions on points which are overlooked by the more intelligent men. By recognizing these men and giving them responsibility it does much to win the co-operation of their class.

9. Workmen's committees will fail if the foremen do not believe in the idea and do not give the men consistent encouragement and support. In appointing a committee the foreman should carefully instruct the men in regard to their duties. He should especially encourage them to feel absolutely free and independent in offering suggestions which they think will make for safety—the more the better.

10. Workmen's committees should make regular inspections of their plant at least twice a month; in some plants where the hazard is great once a week is not too often.

All reports of the committee should be made in writing and should be submitted to the superintendent or to the central committee, if there be one. A written report prevents misunderstandings and encourages the men to believe that the suggestions will not be overlooked or neglected. Verbal reports of course may be made from day to day to the foremen or superintendent on points which need immediate attention, but these suggestions should be included in the regular written report. Foremen should assist committees in formulating reports or secure the services of a clerk to write up their notes.

11. The committeemen should especially be urged to look for

dangerous practices and should be authorized to warn any man whom they find doing dangerous things.

12. When a serious accident occurs the committee should be asked to investigate and make a written report regarding the case and suggest ways and means of prevention. This gives the men valuable experience and stimulates interest.

13. The committee in one department should be given an opportunity to inspect another department. This often results in new discoveries and stimulates friendly rivalry and interest.

14. Information, in the form of reports of accidents, pictures, pamphlets, newspaper clippings, etc., regarding what other companies are doing, should be at the disposal of the committeemen. This helps to give the men a broader view.

15. In some shops the bulletin boards are placed in charge of the committeemen. They select the materials and devise ways and means of making the bulletin boards an effective means of stimulating interest in safety.

16. All employees should report dangerous points to their committee. Workmen should be encouraged to regard the committee as their representatives, empowered to do everything possible to make the shop safe.

17. Every suggestion made by the committeemen should be given honest and careful consideration. If it is found that a certain suggestion is not practicable, the superintendent or foreman should take the matter up with the committeemen and try to convince them that the suggestion cannot be carried out.

18. Some managers are afraid to give the men a chance to make safety suggestions. They fear the committees will abuse the privilege—make foolish suggestions and stir up dissatisfaction. Experience proves this fear to be groundless. When workmen's committees have been properly organized and instructed they have always been a success.

An officer of the company which organized the first workmen's safety committee in the United States said that after eight years' experience he found the interest of the men in committee work does not lag, but rather increases. His experience has demonstrated that the best way to win the confidence of the workmen and to keep up their interest in safety is to recognize them by giving them an active part in the work.

HOW TO INSPECT.

Suggestions for Workmen's Safety Committees:

1. Follow the oiler. Remember he must oil every bearing in the

shop. The committee should visit each bearing and satisfy themselves on one question—Can the oiler reach it safely? If not safe, correction should be made at once.

2. In making inspections the one question which should be asked is: Can an accident occur? Not: Has an accident occurred at this particular point?

3. Remember, it has been demonstrated that practically every point of danger around machinery or buildings can be efficiently guarded without interfering with the work.

4. Make it a point to inspect out-of-the-way places as well as obvious hazards. It is surprising how many men are injured in places where it has been said "Nobody ever goes."

5. Conditions in yards and on roadways and passageways are always changing. They should be frequently inspected to find dangerous piles, defective floors, protruding nails and objects over which men may stumble and fall.

6. One weak link in a chain, or a few broken strands in a cable, have been the cause of many deaths. Chains and cables used for lifting and carrying loads should receive special attention.

7. A good guard out of place is a poor guard. The committee should see that guards are used. Particularly watch adjustable guards on such machines as saws, jointers, shapers, emery wheels and punch presses.

8. Keep sharp lookout for all kinds of dangerous practices. Remember that two-thirds of all accidents are directly due to carelessness, recklessness and ignorance.

9. Bear in mind that the four big causes of accidents are:

Men falling from high places.

Objects falling on men.

Men dropping things, and

Handling tools.

10. Watch for loose sleeves, flopping blouses and flying neckties—anything which may get caught in the machinery and draw the man in.

11. Try to detect slight cuts, scratches, bruises and burns which are not being properly cared for. They may cause infection and blood poison. Remember that the great majority of all infections are the direct result of neglecting small injuries.

12. Follow up your inspections and insist that the orders of the committee shall be carried out, or a good reason be given for not doing so.

13. Foremen. Each foreman should:
- a. Enforce safety rules adopted.
 - b. Be held responsible for the safety of his men.
 - c. Investigate accidents and "near" accidents, reporting causes and suggestions for method of preventing recurrence on forms provided for that purpose.
 - d. Make frequent inspections of his department.
 - e. Render weekly written reports on forms provided for that purpose.

A committee of foremen should make regular inspections to see that safety devices are installed and all safety regulations enforced. They should investigate all serious accidents. In order to do this properly they should go to the scene of the accident, examine witnesses and make a report as to what they think can be done to prevent similar ones; also, whether, in their opinion, anyone was negligent and what they think should be done with the negligent one. Careless men are discharged or laid off on recommendations of the committee.

FOREMEN CAN KEEP THEIR MEN INTERESTED IN SAFETY.

Foremen must show a sincere desire to prevent accidents. Remember, your attitude towards this work will be reflected by your men.

Make it your business to talk Safety, to the men, both individually and collectively. If possible, have regular and frequent meetings, even if only of short duration, to talk Safety.

Survey a job carefully and consider whether it is being done in the safest way. Is an accident likely to occur?

Keep safeguards in place and insist upon Safety devices being used.

Stop dangerous practices whenever you see them. Remember that two-thirds of all accidents are due directly to thoughtlessness, recklessness and ignorance.

Keep the premises about your work orderly. See that proper light is provided.

Use accidents and near-accidents as a text, drawing lessons from them as to *what not to do*.

Watch for loose sleeves, flopping blouses and flying neckties—anything which may catch in the machinery and draw the man in.

Take an interest in your men. Have every injury, no matter how trivial, attended to by the doctor.

Never overlook a careless act on the part of any workman—point out what such action may result in.

Ask your men for suggestions on how to make things safer.

If your duties sometimes take you away from your men, appoint one or more of the men as Safety Overseers, who, in addition to their regular duties, will watch for dangerous places and dangerous practices.

6. **Workmen.** Each workman should be educated and interested in safety matters. This work involves:

- a. Instruction of new men;
- b. Familiarizing of men with rules;
- c. Interesting the men through bulletin boards, prizes, etc.
- d. Discipline.

(a) Where two or more plants or mines are operated by one company, its Safety work may be co-ordinated and directed by a Central Committee of Safety. This committee consists of the general manager, general superintendent, chief engineer, inspector, secretary, or other officials, which should hold monthly meetings. Reports and recommendations of the inspector and of sub-committees should be received and if practical put into effect, the causes of accidents studied and classified and steps taken to avoid the recurrence of similar accidents. Regular trips of inspection should be made and greater impetus given the movement by frequent public meetings in the interest of safety.

In larger organizations, special committees may effectively assist the central or plant committee in solving peculiar or intricate problems.

(b) Plants employing 250 to 750 men: In plants of this size the form of organization should be practically the same as in larger plants, except that the person performing the function of Safety Inspector may perform other duties, preferably along mechanical lines, in the labor department, or as an assistant to the superintendent or manager.

In plants of approximately 250 to 350 employees, the Central Committee need not be so large, but should include at least the plant superintendent, Safety man and one department superintendent or foreman.

(c) Plants employing less than 250 men. The following elements are essential:

1. Superintendent as head, to perform the same functions as the Central Committee in large plants; also to perform part of the duties of the Safety Inspector in the following respects:

- a. Have charge of details of Safety work.

- b. Receive reports, recommendations, suggestions.
- c. Keep all necessary records.

2. Workmen's Committees, to be organized and perform the same duties as required of similar committees in larger plants.

3. Foremen, to perform the same duties as required of foremen in large plants. The inspections by foremen will take the place of inspections by Safety Inspector or Safety Man in larger plants.

4. Meetings of foremen, held monthly to discuss Safety matters.

5. Workmen. The same work must be done in instructing, educating and interesting the men as is done in the large plant.

The foregoing elements of an organization may be modified or amplified to meet the needs of plants of any size or peculiar form of operating organization.

SUGGESTIONS FOR TALK BY FACTORY MANAGER
AT THE FIRST MEETING OF ALL
THE EMPLOYEES.

1. The officers of the company are determined to stop accidents and to make the shop a safe and healthy place in which to work.

2. This meeting is called for the purpose of discussing ways and means of preventing accidents.

3. The following is an analysis of the accidents which have occurred during a series of years. (Here read the analysis.) These figures show that.....percentage could have been prevented by the company, thatpercentage were caused by the carelessness or thoughtlessness of the workmen, and that.....percentage were unavoidable or classable as Trade Risks.

4. From the foregoing it will be seen that both the officers of the company and the workmen have not done their full part, and therefore both are to blame for the accidents which have occurred.

5. A new leaf is to be turned over; every man should put his shoulder to the wheel and all push together to make this a safe shop.

6. The men on the job—the men who run the machines and do the work in the shop—are a thousand times more interested in safety than the officers, because they are the ones that are liable to be injured or killed. The value of an eye, an arm, a leg; the value of a human life, cannot be estimated in money, and the loss falls on the men themselves, not on the manager or officers of the company or its stockholders.

7. This Safety First movement is a nation-wide movement. It is coming not only in factories but on the streets, in the schools and in the homes. Remarkable results have already been secured in many factories where the foremen and workmen have pulled together in working for safety. Here are some companies which have made large reductions in accidents:

REDUCTIONS IN ACCIDENTS.

Eastman Kodak Company.....	73%
Harrison Bros. & Co., Inc.....	68%
Illinois Steel Company.....	70%
International Harvester Company.....	68%
Jones & Laughlin Steel Company.....	71%
Packard Motor Car Company.....	67%
The Pullman Company.....	70%

8. The experience of practically all the companies which have

done good safety work reveals the fact that not more than one-third of the reductions which were made were accomplished by the use of mechanical guards, while two-thirds were accomplished by carefulness on the part of the workmen.

9. The officers of the company will go the limit in this work of safety, and will build any practical guard which the workmen or foreman may suggest.

10. The superintendent and foreman have selected a committee of workmen consisting of the following.....
This committee is appointed to serve a period of.....months, when a new committee will be appointed. In time it is hoped that every man in the shop will have an opportunity to serve on this committee. This committee (once a month or once a week) will make a thorough inspection of the entire shop and will make a written report of all points of danger and all dangerous practices.

Please bear in mind that the members of this committee have a serious duty to perform; namely: To do everything in their power to keep men from being killed or injured. Co-operate with them and help them to do their work well. Jesting on this subject will not be tolerated.

11. We want every workman in the factory to report to his foreman, or to the workmen's committee, any dangerous practice or condition which he may find. The more suggestions made the better the officers will like it, because we want to find out as soon as possible every dangerous place and every dangerous practice in the shop and then go to work to eliminate dangerous places and practices as soon as possible.

12. Tomorrow morning we are going to start a safety campaign in this shop. We have selected our motto, "A Safe Shop." Other shops are practically eliminating serious injuries and deaths from accidents. We can accomplish just as much. Let us all come to the shop tomorrow morning with the determination that we will each do our part in this worthy cause, and not only avoid doing those things which will endanger our own lives and limbs, but also avoid doing anything which will endanger the life or limb of another man.

SUGGESTIONS FOR TALK BY SUPERINTENDENT AT THE FIRST MEETING OF HIS FOREMEN.

1. The officers of this company have decided to launch a safety campaign. Hundreds of companies over all the country are taking up this proposition of safety and are organizing and promoting it as a part of the factory organization. In every factory where the work is being done efficiently large reductions in accidents are being made and large savings in money are being realized.

2. We should look upon this safety work not as an outside matter, but as an inside proposition—a legitimate part of an efficient factory organization. An efficient shop means a safe shop. It is a bad, bungling business to kill workmen.

3. The officers of the company are willing to spend any amount of money to equip the plant with safeguards. We must understand that, before we can hope to win the confidence and co-operation of the workmen in this safety campaign, the officers of the company must show by tangible and visible signs (by building guards) that they mean business.

In laying out the work of guard building one of the first things which must be done is to decide upon the points of danger which are most hazardous and which should be guarded first. I shall expect each foreman to send a written report to me giving a list of the points which he considers most important. Out of the lists which are sent in will be made up a revised list, copies of which will be sent to each foreman, and this will constitute the schedule according to which we shall all be expected to work.

4. The experience of a large number of companies which have done good safety work has demonstrated beyond a doubt that in the ordinary industry 75 per cent of the deaths and serious injuries can be eliminated. The experience of these companies has also demonstrated that not more than one-third of the reductions which they have been able to accomplish has been accomplished by the use of mechanical guards; two-thirds has been accomplished by reaching the workmen and really interesting them by giving them an active part in the work of safety.

5. The following is a list of companies which have made substantial reductions:

Eastman Kodak Company.....	73%
Harrison Bros. & Co., Inc.....	68%
Illinois Steel Company.....	70%

International Harvester Company.....	68%
Jones & Laughlin Steel Company.....	71%
Packard Motor Car Company.....	67%
The Pullman Company.....	70%

6. Practically all of the companies that have done really successful work have found that the appointment of rank and file of workmen on inspection committees has proven to be the most successful way of creating and holding the interest of the workmen. Men who serve on these committees get a new insight into the causes of accidents and come to appreciate the work the company is trying to do, that part which the company cannot do, and the part which the workmen must do if accidents are to be prevented. It has been found that these committeemen invariably become interested and become the best talkers and boosters for safety among their fellow-workmen.

The foremen should bear in mind one thing: That these inspection committees of workmen will not be a success unless the foremen have confidence in the plan and give them their hearty co-operation.

7. Every foreman should realize that he has a very important place in this safety work. A foreman who is interested, enthusiastic, and determined to make a record in his own department, can do much to interest his men by carefully instructing every new man who comes into his department, and constantly watching for dangerous practices. In the great majority of cases a friendly word of advice to your men is all that is necessary. There are extreme cases where discipline must be applied, and in rare instances, the punishment must be discharge.

From now on the officers of the company propose to hold each foreman responsible for the accidents in his department. He will be expected to study the conditions of his department and to study every accident which happens and to do everything in his power to eliminate dangerous places and dangerous practices.

8. Each foreman, in the future, will be expected to send a written report to the superintendent of the condition of his department. It is the purpose of this report to post the superintendent as to conditions in each department. The reports will also give the foremen an opportunity to put themselves on record regarding things which are needed along safety lines.

9. Arrangements are being made to have bulletin boards installed in each department. Each foreman is requested to co-operate with the safety inspector and the inspection committee in posting up pic-

tures, stories of accidents, and other items which will keep the subject of safety constantly before the workmen.

10. A safety inspector has been appointed whose chief duty will be to look after the details of safety which the superintendent and the foreman have not the time to look after. It will be his duty to keep in touch with the foreman and to follow up work which has been planned and to keep the detailed records of inspection reports, etc. Every foreman is expected to co-operate with this safety inspector.

11. This safety campaign, which we are now starting, will succeed or fail, depending upon whether you foremen take hold of it with vim, with confidence, and with enthusiasm, showing by your words and acts that you have faith in it; that you believe it is a practical thing, and that you are going to do everything in your power to protect your men from being injured or killed. If the foremen are cold, indifferent and skeptical, the workmen will be careless and the campaign will fail. The attitude of the men will very largely reflect the attitude of the foremen. Remember that an enthusiastic start—all of us pulling together during the first weeks of this campaign—will do more to arouse the workmen, win their confidence, and make them take this movement seriously than many months of humdrum plodding effort.

SUGGESTIONS FOR TALK BY FOREMAN AT THE FIRST MEETING WITH HIS WORKMEN.

1. The manager of this company has told you about the campaign for safety which has been started in this plant. He has told you that the company is willing to go the limit in building guards and has asked you to do your part by giving the company your hearty co-operation.

2. This safety campaign is no fad, no joke, but is a serious business. It means the saving of men from being killed or injured.

3. Now we want to make our department the banner department of the shop—we want to do everything in our power to eliminate accidents.

4. This means that we must all pull together. I must do my part as foreman, you workmen must do your part.

5. Every man in this department has three things to do in this campaign for safety: Be careful to protect himself; be careful to protect his fellow-workmen; report any dangerous place or any dangerous practice which he sees.

6. I do not want any of you men to feel backward in reporting dangerous places or dangerous practices. The more points you report, the better the company will like it. I do not want any man to feel sore or hurt because some other workman has reported that he is doing something which is dangerous. No man who deserves the name of a man will let his pride blind him to his duty in this work of saving human life. I want to tell you of some of the dangerous practices which I have noticed lately in this department. (Outline dangerous practices.)

7. You all know that a committee of workmen has been appointed to make inspections of the entire shop and to report to the superintendent. I hope that, in the future, each man in this department will be honored by receiving an appointment on this committee. I hope that if you are appointed that you will do your duty. In the meantime I want to urge every one of you to give the members of this committee all the help you can. Don't laugh at them. Don't ridicule them. Don't treat them as outsiders who are interfering with your business. But treat them as friends, and recognize them as men who are trying to do an important piece of work to save human life.

8. You remember the manager has said that the company will build every practical guard which the foreman or workmen will

suggest, but the building of these guards will do no good unless you men use them. Remember that every guard covers a point where you may be injured. Use the guards—you must not remove them. Remember you are the ones to be directly benefited.

9. Bulletin boards have been placed in each of the departments. It is proposed to post on these bulletin boards, from week to week, pictures of injured workmen, stories of accidents, information in regard to accidents, etc. It is our aim to make these bulletin boards as interesting as a newspaper. We give you men the very best suggestions in regard to how to prevent accidents.

10. The manager has said that our motto is "A Safe Shop." It can not be a safe shop unless you workmen do your part. The money of the company can only do a small part—the foreman can only do a small part—in making this a safe shop. Two-thirds of the accidents which happen cannot possibly be prevented by any effort on the part of the officers of the company. This will be a safe department if you workmen do your part.

11. Let us all start to work tomorrow morning determined to join this safety campaign and to do everything in our power to help make this a safe department.

HOW TO START A SAFETY CAMPAIGN.

The following suggestions are addressed to the Factory Manager who has become convinced that Safety is an indispensable part of an efficient factory organization, and wants to organize his plant so as to secure the co-operation of his Foremen and Workmen in preventing accidents.

1. Call your Superintendent and Foremen together and tell them plainly what you have in mind. Lay before them the experience of other companies in reducing accidents and outline the methods adopted. Agree on a definite program and make a written outline of the items in the order in which they are to be taken up; the more serious points of danger, of course, should be covered first.

2. Remember the Company must show by visible and tangible signs that it means business and will do its part, before it can go to the workmen and ask them to co-operate; therefore the first thing to do is to build safeguards and cover the more serious points of danger.

3. Some one person should be selected to give part or all of his time, depending on the size of the plant, to the work of looking after the details of safety. He should be known as the Safety Inspector.

4. During the first six months have regular and frequent meetings of the Superintendent and Foremen for the purpose of reporting progress, exchanging suggestions and fostering interest and enthusiasm.

5. After considerable guard-building has been done, and you have succeeded in getting your superintendents and foremen lined up and interested, then call a meeting of all your employees. The manager should preside at this meeting and should lay before the men the facts as to the causes of accidents, the larger percentage of which cannot be prevented by guards, and the part which the workmen must do. He might frankly state that in the past the Company has been negligent and accidents have happened which might have been prevented had proper guards been provided. He should also state with equal frankness that many men have been injured because they were careless and thoughtless. He should say that a new leaf is to be turned over and the Company will go to the limit and will build any guard which is practical, and urge the men to co-operate and all pull together for a safe shop. The Superintendent and some of the Foremen should also speak at this meeting. If it is possible, have your doctor speak on First Aid and the importance of reporting slight injuries.

6. At this meeting appoint a Workmen's Inspection Committee and outline its duties. Make it plain that the members of this committee are to have absolute liberty to make any inspection they wish, and to offer as many suggestions as possible—the more the better. Urge every employe to report suggestions to the committee.

7. Select a safety motto for the shop. Such as:

“No Accidents”

“A Safe Shop”

“Be Careful”

“Boost for Safety”

“Stop Accidents”

“Safety First”

8. Place bulletin boards in each department and post on them such materials as the following:

- a. The motto of the shop in large letters.
- b. Pictures of injured men, with stories of the accidents.
- c. Newspaper clippings of accidents.
- d. Copy of suggestions made by Workmen's Committee.
- e. Analysis of accidents, showing causes.
- f. Monthly reports of accident records in the various departments.
- g. National Safety Council Bulletins.

9. Remember that the secret of a successful safety campaign is to grip the proposition just as you would a new piece of work in the

manufacturing or mining end of your business. Convince every foreman that the Company is determined to eliminate accidents, and give them to understand that they are expected to do their part. Be absolutely frank with your workmen and make them feel that you will welcome any suggestions.

A safety campaign should start off with vim; the men should be made to feel that a new leaf has been turned over and everybody is to take a new start; a sort of a "all pull together" spirit should be fostered. An enthusiastic start will do more to jar the men loose and awaken interest than months of humdrum plodding effort. One manager who reduced accidents 50 per cent the first year was asked how he did it. He replied, "I made a noise, and I kept right on making a noise until every man in the shop got to thinking about safety."

Note: Other activities which will be helpful.

- a. Start a safety campaign in the schools. The children will carry the message home and help to increase the interest of the parents.
- b. Ask the ministers to conduct a safety Sunday.
- c. Secure publicity in the local papers.
- d. Have moving picture films run in the local theaters showing films as "The Workman's Lesson," etc.

There are all sorts of Safety committee meetings—some of them are like funerals, some are merely debating societies, some are very efficient. If they are "too dead" they would bury the enthusiasm of the Safety First movement under the sod; if they are debating societies, they bury it under an avalanche of words; if they are efficient, they put the red blood of success into every artery of Safety work. A dead committee can't have a live meeting; a thoughtless committee can't have an intelligent meeting.

A rapid-fire, aggressive, enthusiastic meeting can be produced only by men who believe in the work they are doing and are determined to make it a success.

Officialism must be put into the background and co-operation must stand out as predominant. But this need not be secured by permitting the discussion of a wide range of subjects having only incidental relation to Safety. The Safety Committee was not organized for the purpose of instructing the superintendent how to operate his division, even though it may be true that every operating problem involves the element of Safety. It is for this reason that the superintendent who is usually the chairman, must exercise a firm discretion in curbing unprofitable discussion on the one hand, without, on

the other, discouraging freedom of action along lines properly within the scope of the committee.

The superintendent is the key to the situation. He can either make or break the success of the meeting. If he can impress the men with his sincerity of purpose, that he is heart and soul with them in the fight against avoidable accidents; that, in fact, he is the best Safety First man on the committee; if he will greet the members cordially, make them feel at home, exercise a friendly tact in drawing out the best that is in them, and thus create an environment of good fellowship and co-operation in the humane work that is set before them, he will have done more than any other one man could do to solve the problem of interesting and profitable meetings. If, on the other hand, he is cold and indifferent, narrow in his views, official in his bearing and unresponsive, if not tacitly antagonistic, to the suggestions offered, he can kill the meeting as dead as a door nail and with it the vital spark of the whole safety movement.

As an aid to good fellowship, and for the benefit of those with whom thinking and smoking are coincident, it is always well to have a nice, luscious box of cigars within easy reach of the members. Nothing will crack the ice quicker than a good cigar, and a smoke "on the company" is never resented.

The social features of the committee problem present an interesting question. A dinner to the members and their wives at least once during the lifetime of each committee will prove a splendid aid in Safety work. Many who have tried it believe that the conservative use of some feature is of great advantage in maintaining interest in the meetings and work of the committee. An occasional dinner or luncheon served in connection with the committee meeting is also advocated as a very welcome diversion.

The presiding officer should prepare the program or at least sketch out the salient points for discussion. He should so subdivide his subject as to draw into the discussion the individual members and encourage them to accept responsibility in the success of the gatherings.

Suggestions as to special features have been many. A few of them are: That topics, on which written papers are to be read at future meetings, be assigned to members of the committee; that general officers and members of the Central Safety Committee occasionally attend division meetings to encourage and advise with the members; that people prominent in public or industrial fields in the vicinity be invited to address the committee, former members and other employees who can arrange to attend.

Men need the impetus of a new idea; the stimulus of a new setting to an old idea; the inspiration which grows out of contact with men from other fields, who bring messages of good cheer and counsel in the great cause of Safety.

There must be freedom of discussion and evidence of integrity of purpose. There can be no successful Safety meetings if a policy of repression or avoidance is in evidence as to matters which are proper subjects of discussion. Free exchange of opinion must be encouraged or the result is very likely to be a Quaker meeting and one barren of action. The accidents of the previous month should be stated and analyzed. This is always a live topic. It presents concrete examples of the way accidents are caused and how they might have been avoided. It will always bring out the ever-present baffling problem of the personal equation as applied to avoidable accidents.

As a rule the men do not like to discuss the unsafe practices of their fellow employees, especially in the presence of their officers. To avoid this it has been suggested that the division committee be composed only of employees, as distinguished from officers; that the committee so organized hold its own meetings, reporting to the officers its recommendations, or that sub-committees of employees be appointed to take up the question of dangerous practices to handle in their own way. My thought is that unsafe practices should be dealt with openly and directly. If Safety First means anything at all it means that unsafe practices both by the employer and the employee must go and there shall remain only those hazards inherent in the business or reasonably growing out of its operation.

The life-blood of the whole Safety First organization flows out from these committee meetings. Their interest must be maintained if there is to be efficiency all along the line. Its members, both officers and privates, must be made to feel the weight of the responsibility which is theirs, that if they shirk that responsibility, or fail to measure up to the demands of their high calling, if they are unwilling to be prophets of the new faith and to stand for a time as sentinels to point the way of Safety, then they should make way for others who have a clearer vision, warmer hearts, and stronger and more willing hands for the work which is set before them.

HOW TO CONDUCT WORKMEN'S MASS MEETINGS.

In manufacturing plants, where the number of employees is not too great, a Safety Campaign may be accelerated, and "esprit de corps" fostered, by an occasional mass meeting of employees.

Some companies are holding them annually.

If your safety work heads up into a Central Safety Committee, let the meeting be under its auspices.

Give all a cordial invitation in the printed bulletin, on the bulletin boards and through foremen to all the employees, and by all means extend the invitation to the wives of employees. When the wife is intelligently interested the battle for Safety is half won.

Have cards printed which may be a combination invitation and admission ticket, or have ribbon badges printed and previously distributed which will serve to admit in lieu of a ticket. A large number of people wearing badges help to create enthusiasm.

Choose ushers from your Safety Committees and provide them with a distinguishing badge.

Engage a hall or theater suited to the probable size of your audience—too much space deadens the spirit of a meeting. See that the room is of proper temperature and adequately ventilated. These elements have a subconscious influence on the temper and receptiveness of an audience.

Sunday afternoon has been found to be a most appropriate time for such gatherings.

Bring in local touches. For instance, at a mass meeting last fall the stage was decorated with flowers from the mill gardens. The gardener was an employee who had been forty-three years in the Company's service.

PROGRAM.

The presiding officer should be some member of the organization with a hearty and genial disposition. His heart must be in the Safety Movement.

Make the audience feel at home.

A little well-chosen music helps.

Get a leading speaker who has a conception of the *ideals* of the Safety Movement. The "hammer-and-brass-tack" type talk has a place on such programs, but here is a golden opportunity to go further and touch the emotions and reflect the ennobling influence of active participation in the Safety Movement.

There is a response in the breasts of most men to such a presentation if sincerely put and not overdone.

Such an occasion affords the opportunity to stress any kindred effort—for instance, one company took this opportunity to clarify, in the minds of its men, the workings of a dental dispensary which they were about to install in the plant.

If any awards to individuals for special efficiency, life-saving, etc., are to be made, here is the strategic time and place to do it.

Close the program with one or two carefully selected Safety motion reels.

A popular song or verse of patriotic music will not prove amiss. Have an American flag among the decorations.

Plan the program to run not over two hours.

PLANNING SAFETY INSPECTION WORK.

The average member of a Safety Committee is somewhat at a loss as how to inspect and check his work once he leaves his own particular calling or department. Too often a feeling of diffidence prevents the committman from fully checking his investigations—he does not want to appear critical or, as he probably puts it, “fresh.”

If the inspection is announced to take place at a specied time and to cover the points set forth in the accompanying tables, the Safety Committman will have a guide and a reminder which will relieve him of his qualms. If a table is checked for each department the full report will be of great value as a Safety factor and as a guide in directing an economical course of repairs.

MINING DEPARTMENT.

SAFETY INSPECTION REPORT.

.....No.....

.....MINE. DATE.....

Surface.

1. What are conditions of roadways on Company's property over which workmen are obliged to travel to reach place of work?
2. Are such roadways properly lighted?
3. Are railway tracks used as roadways and cannot other ways be provided?
4. Are all open pits, caves, disused and abandoned shafts properly protected?

Change House.

1. Is dry lighted by kerosene lamps or electric lights?
2. Is dry sufficiently lighted?
3. Are accommodations ample for men employed at the mine?
4. What protection for safety from fire is provided?
5. Is fire protection kept in good order?
6. What are sanitary conditions?
7. What accommodations and appliances are provided for injured persons?
8. How many fire-fighting helmets are provided? and where kept?
9. Are the same kept in good order?
10. Are there men around the mine who understand the first care of injured men and the use of fire-fighting helmets?

Shafts.

1. Is protection at collar of shaft sufficient and in good order?
2. Is opening to shaft at timber tunnel properly protected and in good order?
3. Is protection at shaft stations sufficient and in good order?
4. Are there skip tenders, and at what levels?
5. Is there a cage rider?
6. What tools are allowed the men riding in skip, cage or bucket?
7. Are projecting tools properly lashed to hoisting ropes?
8. How often are timbers in manways cleaned?
9. Are they in good condition?
10. Are working stations sufficiently lighted?
11. Are there passageways at all levels around hoisting compartment?
12. Are same in good condition?
13. Are there guides for the bucket?
14. What style of crosshead is used?
15. What clearance is provided on guides?
16. Is stopper securely fastened to hoisting rope at least seven feet above rim of bucket?
17. Are guides and crosshead kept in good condition?
18. Is there more than one outlet to surface?
19. Is the second outlet kept in good condition?
20. Is condition of pipes, electric conduits and wires safe?
21. Are steam pipes covered or protected from accidental contact?
22. Is the general condition of the compartment through which men are hoisted safe for men as regards lagging, timber, guides, etc.?

Sinking.—

(When more than one shaft is being sunk, separate report must be made for each.) The following questions apply to sinking new shafts and also deepening new shafts:

1. In lowering, is bucket stopped 15 feet above the bottom of the shaft?
2. Is shaft suitably covered while sinking is going on?
3. Are only safety hooks used for bucket?
4. Are there ladders reaching to the bottom of shaft while sinking?
5. State what kind of ladders, and if in good condition.
6. Is bell rope within reach of men in bucket at bottom of shaft?

General Mining.—

1. Is general condition of timbering or other means of support throughout the mine satisfactory?
2. Are mine maps clear and accurate for purpose of inspection?

3. Are all dangerous places fenced off?
4. Are proper danger signal boards displayed at all dangerous places?
5. Are candles or lamps left burning after shift?
6. Are sumps securely planked over?
7. In passageways, are roofs and walls securely lagged?
8. Are winzes and raises in direct line of drift?
9. Are winzes, raises and open stopes properly guarded?
10. Are ladderways in winzes and raises located in drifts properly protected by hatches?
11. Are all chutes in winzes and raises properly protected by gratings?
12. Is proper provision made for safety of men working at chutes?
13. Are the communications between contiguous mines in good condition?
14. What is the condition of ventilation in different parts of the mine?
15. Are sufficient dry closets maintained?
16. While the responsibility for the safety of the roof and walls in the individual places is upon the workman, are the same inspected by superintendent, captain and shift bosses, and how often?
17. Are the rules for safety pillars on boundaries observed?
18. In approaching workings which are known to be flooded are proper precautions taken?
19. Complaints from workman—report if any?

Main and Sub-Levels.—

1. Are levels and sub-levels properly ditched to prevent water from accumulating, making passage unsafe?
2. Are there any other conditions which might be dangerous for passageway for men?
3. Are tracks and switches in safe condition?
4. Is condition of wiring safe?
5. Is condition and arrangement of piping safe?
6. On haulage roads, are drifts properly lighted?
7. On all main drifts is there a manhole or refuge every 100 yards?
8. Are they kept clear?
9. Are the rules governing the employment of motormen and brakemen carefully enforced?
10. Are the rules governing the operation of electric motors strictly enforced?

Explosives; Manner of Handling.—

1. Are explosives stored on surface, and are the company's rules strictly complied with?
2. Are caps stored on surface, and where?
3. How often are explosives taken into mine?
4. Are packages of explosives plainly marked, giving date and strength, also name and place of manufacture?
5. Is there more than 72 hours supply of explosives stored in one place in the mine?
6. Is the same stored 50 feet from any other supply of powder?
7. How is dynamite thawed?
8. Is the method employed safe?
9. Are conditions as to blasting complied with?
10. Are the rules posted in conspicuous places?
11. Do men in preparing dynamite for blasting always use skewers and cap crimpers?
12. Before blasting are the necessary warnings given?

Ladderways.—

1. Do rungs of ladders exceed 12 inches apart?
2. Are ladders placed three inches from wall of shaft or other openings?
3. Are there platforms for ladders at least every 24 feet?
4. Are there manholes for ladders?
5. Do ladders project at least three feet above collars, or are hand-rails provided?
6. Are any ladders inclined backwards from the vertical?
7. Are rungs made of wood or iron?
8. Is there a complete ladderway from the lowest workings to surface?
9. Is there any loose rock or timber left at the top of ladderways, where it might accidentally fall or be pushed into same?
10. Are ladders and ladderways kept in good condition?
11. How often inspected?
12. Are stairways kept in good condition?

MECHANICAL.

Hoisting.—

1. Have printed rules, governing duties of hoisting been furnished to hoisting engineer and receipt taken for same?
2. Are the company's rules governing duties of hoisting engineers properly posted?
3. Are they maintained in good condition?

4. Is speed of hoisting and lowering men over 1,000 feet per minute?
5. How often are machinery and safety appliances inspected?
6. Are cages, skips or buckets used for hoisting men inspected daily?
7. Are the cages properly enclosed and protected?
8. Are signals in good order; is there a duplicate system of signals?
9. Is signal code posted in engine house and at each level?
10. Is moving machinery properly guarded?
11. Is hoisting plant equipped with an overwinding device?
12. Is same in good working order?
13. Are safety devices tested once a month by the superintendent or captain and inspector jointly?
14. Are hoisting ropes running through engine house protected for safety of men?
15. Are unnecessary persons excluded from the engine and boiler houses?

Hoisting Ropes.—

1. Are ropes inspected every 24 hours?
2. What is the present condition of rope?
3. How often is section of rope tested?
4. When rope is lowered to bottom are there two full turns left on drum?
5. Is the further end of rope secured by six clamps or bolts?

Surface.—

1. Are sheave stands and sheaves in shaft houses easily accessible and arranged for the safety of the men whose duties require them to oil and repair the same?
2. Is the machinery and belting in shops properly protected for the safety of employees and others?
3. Is the fire pump hydrant equipment provided for fire protection ample?
4. Is the quantity of fire hose provided ample?
5. When last inspected?
6. What is condition of same?
7. Where are lubricating oils and grease stored?
8. Is storage place kept in safe condition?
9. Where are kerosene and inflammable oils stored?
10. Is storage place kept in safe condition?
11. Are hoisting ropes, guy wires and piping on surface properly protected?

12. Is protection provided for safety of employees and others during construction and repair work?

Boilers.—

1. Are safety devices provided for boilers kept in good working condition?
2. Are general conditions in boiler house safe?
3. How often are boilers inspected by insurance companies?
4. Are their recommendations promptly complied with?
5. Are all steam pipes covered or protected from accidental contact?
6. Is boiler room properly lighted?

Engine House.—

1. What is condition of piping and general equipment as regards safety?
2. Is engine room properly lighted?
3. Is basement of engine house used for storage of materials?
4. Is the same arranged for safety of men?

Compressors.—

1. Is moving machinery properly guarded?
2. What is condition of piping around compressor as regards safety?

Electric Engines and Dynamos.—

1. Is moving machinery properly guarded?
2. Is switch-board railed off to prevent handling by outsiders?
3. Are all wires carefully strung to prevent accidental contact?

Pump Stations.—

1. Is moving machinery properly protected?
2. Are electric wires safe?
3. Is station properly lighted?

Top Tram.—

1. Is moving machinery properly protected?
2. Is wiring properly protected?
3. Are counterweights safe?
4. Are walks and hand-rails provided on permanent trestles?
5. Can the condition for the safety of men be improved?

Crusher.—

1. Are belts and shafting properly protected?
2. Are proper railings provided for all walks and railings?
3. Are electric wires properly protected?
4. Are stairs and ladders in safe condition?
5. Are all oiling places safely accessible?

Steam Shovel.—

1. Is all moving machinery properly protected?
2. Are all gears covered?
3. Is shovel in good condition for the work being done?
4. Are runway and stands protected by railing?
5. Is proper care taken to prevent trestle legs from falling and injuring workmen?

General Applications.—

1. Are accidents to persons and equipment reported promptly?
2. Are occurrences of fire, floods, extraordinary caves, and similar accidents, dangerous to life and health, reported promptly?
3. Do superintendents, captains and shift bosses, instruct employees as to their responsibility?
4. Is discipline strict or lax?
5. Are persons allowed in and around the mine except by permission?

GENERAL INSPECTION.

Mark plainly at top of table the department covered in report.

<i>Tanks, Roof or Tower, bottom six feet or more above level.</i>	Unevenness.
Without platform and guard rail.	Loose boards.
Without permanent ladder.	Sheet metal covers.
Supports not accessible for inspection.	Slipperiness.
Supports defective.	Holes.
If wooden, flat hoops.	Obstructions.
Covers.	Refuse.
Platforms.	<i>Floor or Hoistway Openings.</i>
Railings.	No railing.
Ladders.	No toe board (exception of hoistways).
Staves.	Railings kept in place.
Supports (roof and tank).	Covers kept in position.
Hoops.	Material placed at safe distance.
Pipes (supply, drainage and overflow).	<i>Wall Openings, 24-inch sill, 6 feet above level.</i>
<i>Floors.</i>	Unprotected.
Defective.	Good repair.
Vibration.	Railings kept in place.
Supports (beam and column).	Covers kept in position.

Stairs.

Defective.
 Without standard hand rail.
 Lighting and fixtures.
 Wall plaster.
 Partitions.
 Obstructions.
 Supports.
 Slipping.
 Doors.
 Open outward.
 Unlocked.
 Sanitation.

Runway or Platform, six feet.

Without rail.
 Without toe board.
 Lighting and fixtures.
 Obstructions.
 Stairs.
 Supports.
 (See *Floors.*)
 (See *Openings.*)

Boiler, Steam Pressure, over 15 pounds.

No standard inspection made.
 Defective.
 No water gauge glass.
 No guard on water gauge glass within eight feet of floor.
 Blow off unprotected, within seven feet of floor.
 Safety valve escape unprotected.
 Insufficient safe exit from each boiler room.
 No foot walk on boiler, nest or battery.
 No permanent stairways or ladders to foot walk.
 Leaks.
 Fittings.

Equipment.

Connections.
 Appliances.
 Tools.
 Hose.
 Safety signs and locks.
 Safety valve testing.
 Pressure gauge testing.
 Water column and gauge glass clear.
 Gauge-cocks tested.
 Water supply.
 Feed water apparatus.
 Method of handling fuel and ashes.
 Loose materials.
 Railings kept in place.
 Covers kept in position.
 Lighting and fixtures.
 Obstructions.
 Stairs.
 Supports.
 (See *Floors.*)
 (See *Openings.*)

Pressure Apparatus, over 15 lbs.
 No reducing and safety valve.
 No pressure gauge on each pressure apparatus or group.
 Condition of piping.
 Location.
 Operation.
 Testing and inspection.
 Valves.
 Safety valve testing.
 Pressure gauge testing.
 Equipment.
 Fittings.
 Attachments.
 Leaks.
 Drain piping.
 Connections.

Traps.	(See <i>Openings.</i>)
(See <i>Floors.</i>)	(See National Board of Fire Underwriters.)
(See <i>Openings.</i>)	
<i>Steam Engines.</i>	<i>Electrical Hazard Voltage, over 275.</i>
Not properly guarded.	Electrical apparatus, unguarded each.
Not equipped with governor.	Insulating mats.
Over 500 H. P. no independent automatic speed limit stop.	Rubber gloves.
Flywheel, no standard inspection made over four feet in diameter.	Insulation.
Flywheel, unguarded.	Switches.
Emergency stops.	Appliances.
Working parts.	Equipment.
Leaks.	Safety blocks or locks for switches.
Relief valves.	Emergency signals.
Fittings.	Circuit breakers.
Equipment.	Fuses.
Appliances.	Wiring.
Drains.	Danger signs.
Traps.	Maintenance.
Piping.	Operation.
Guards.	Life belts.
Speed testing.	Linemen equipment.
Regulation governors.	Working platforms.
Lubrication.	Clearance.
Lighting and fixtures.	Instruction to repair men.
Obstructions.	Wires properly fastened.
Stairs.	Wire grounding.
Supports.	Cross arms.
Safe blocking for engines.	Insulator caps.
Flywheel inspection reports.	Bracing poles.
Working speed.	Supports.
High speed.	Repair.
Low speed.	(See National Board of Fire Underwriters.)
Gas or gasoline engine installation.	<i>Transmission Machinery.</i>
Starting devices.	Set or train of gears, unguarded
Maintenance.	Clutch, pulley, sprocket or coupling within six feet of floor or platform, unguarded.
Operation.	
(See <i>Floors.</i>)	

Belt (rope, chain), vertical or inclined, unguarded.	Regular unguarded.
Belt (rope, chain), horizontal, within six feet of floor, unguarded.	Regular partially guarded.
Shafts, vertical or inclined, within six feet of floor, unguarded.	Point of operation not guarded.
Shafts, horizontal, within six feet of floor, unguarded.	No starting or stopping device.
Shafts, exposed end within six feet of floor or platform, unguarded.	Without ventilating system in each machine or group.
Key, set screw or bolt, exposed.	Maintenance of machines.
Belt shifter, not provided on tight and loose pulley.	Maintenance and use of guards.
Divisions without independent machinery control.	Maintenance and use of belt shifters.
Hangers.	Belt fasteners.
Spacing.	Chip and dust guards.
Oil cups.	Exposed parts.
Oil pans.	Goggles.
Oiling platform.	Lighting and fixtures.
Safety ladders.	Obstructions.
Vibration.	(See <i>Floors.</i>)
Loose pulleys.	(See <i>Transmission.</i>)
Belt shifters.	<i>Elevators.</i>
Belt fasteners.	No standard inspection made.
Guards.	Where sills and car form shear, each floor.
Signal system.	No approved car safety catches or device (except plunger type).
Railings kept in place.	No speed governor.
Covers kept in position.	Shaftway openings not equipped with approved gates or doors.
Lighting and fixtures.	No approved limit stops on machine or in shaftway.
Obstructions.	Cars not equipped with approved gates.
Stairs.	Cars not properly enclosed.
Supports.	No car cover.
Lubrication.	No protection underneath overhead machinery.
(See <i>Floors.</i>)	No proper signal system, each floor.
(See <i>Openings.</i>)	No cable locking device on hand rope.
<i>Machines.</i>	With less than two cables.
Automatic and unguarded.	Shaftway enclosed.
Automatic and partially guarded.	

Counter-weights, top and bottom, not guarded.	Not equipped with effective brake system.
Shaftway enclosure.	No effective bumper at end of crane runways.
Shaftway gates.	Railings kept in place.
Lighting and fixtures.	Covers kept in position.
Signal system tested.	Lighting.
Skylights.	Fixtures.
Window protection.	Stairs.
Pit cleanliness.	Supports.
Shaftway protection.	Ladders.
Platform.	Maintenance of guards.
Emergency devices.	Exposed danger points.
Annunciator.	Hoisting machinery.
Operating devices.	Attachments.
Shoes.	Blocks.
Attachments.	Tackles.
Machinery.	Cables.
Sheaves.	Chains.
Cables.	Hooks and equipment.
Ropes.	Safety blocks.
Lubrication.	Switches.
Weight guards.	Signal system.
Tension weights.	Operating rules.
Equipment anchorage.	Competency of operators.
Guide rails.	Warning signs and signals.
Holder and attachments.	(See <i>Floors.</i>)
Operations.	(See <i>Platforms.</i>)
Maintenance.	<i>Escalators.</i>
Competency of operator.	No emergency stop.
Signs.	No dogs or pawls.
<i>Cranes</i> , power traveling.	(See <i>Elevators.</i>)
No runways or platform on crane.	<i>Explosives.</i>
Runways or platform on crane without toe rail.	Not stored according to standards.
Runways or platform on crane without toe board.	Ventilating of rooms.
No proper repair platform.	Lighting fixtures tightly enclosed.
No effective fender guards on each track wheel.	Leaky pipes, joints and connections.
No gong, each crane.	Storage of acids and chemicals.
No approved hoist limit stop.	Approved receptacles.

Carboys, cradles and inclina- tors.	Material piled orderly.
Clothing.	Areaway protection.
Gloves.	Railings kept in place.
Rubber boots.	Covers kept in position.
Shoes.	Good repair.
Piping.	Repair of roads, passageways and walks.
Drains.	<i>Derricks.</i>
Valves.	(See <i>Machines</i> , item 12.)
Eye protection.	<i>Dock or Wharf.</i>
Respirators and helmets.	Capstans.
Goggles.	Boats loaded and unloaded.
Temperature.	Life preservers on docks.
<i>Building Hazards.</i>	<i>Railroads.</i>
Foundations.	Clearance between buildings.
Beams and columns.	Tracks.
Walls.	Bumpers at end of track.
Roof covering.	Crossing guards.
Roof supports.	Crossing signals.
Cornices and copings.	Guard rails.
Shutters.	Frogs and switches blocked.
Window frames and glass.	Derailers.
Skylights and protection.	Tell-Tale signals.
Chimneys and stacks.	Head-room through doors.
Anchorage and supports.	Clearance under trestles and bridges.
Wire or flag poles.	Flagman.
Supports.	Warning signs.
Open air shafts.	Operating rules.
Balconies.	Inspection of rolling stock.
Signs and fastenings.	Trestles.
Exterior pipes, ventilating and exhaust.	Working platform.
(See <i>Openings</i> .)	Railings kept in place.
<i>Yards.</i>	Stairs.
Danger signs.	Ladders.
Trench and ditch.	Repair of planking.
Excavation and hole guards.	Supports.
Pole supports.	Chutes.
Dead tree limbs.	<i>Fire Prevention Equipment.</i>
Storage of waste material.	Automatic sprinkler system.
Sanitation.	Axes.
Obstructions.	Chemical engines.

Extinguishers.	Guard rail.
Hydrants.	Toe board.
Hose tested.	Hangers.
Interchangeable connections.	How secured.
Nozzles.	How loaded.
Spanners.	Planks.
Leak jackets.	Hoisting machinery.
Brigades.	Warning signs.
(See National Board of Fire Underwriters.)	<i>First Aid Equipment.</i>
<i>Exits.</i>	<i>Hand Tools.</i>
Doors open outward.	Condition of handles.
Plainly marked.	Condition of hammer heads.
Aisles leading thereto unobstructed.	Pneumatic tools.
<i>Fire Escapes.</i>	Wheelbarrow handles.
Good repair.	Truck handles.
Free of obstructions.	<i>Sanitation.</i>
Drop ladders inspected.	Lockers.
Sufficient egress, tower and fire escapes.	Wash room.
Counterweights and chains.	Toilets.
<i>Fire Drills.</i>	Dressing rooms.
Alarm system.	<i>Clothing.</i>
Periodical drills.	Aprons.
Time to empty building.	Loose neckties.
Rules posted.	Loose sleeves.
<i>Construction and Repair.</i>	Overalls, jackets.
Scaffolding.	Foundry shoes.
Blocks.	Gloves.
Cables.	Goggles.
Supports.	Respirators.
	Shields.
	Helmets.
	Pulmotors.