PLAINTIFF'S EXHIBIT

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INDUSTRIAL HYGIENE and SAFETY

✦

Welfare Division

METROPOLITAN LIFE INSURANCE COMPANY

HOME OFFICE — NEW YORK

Pacific Coast Head Office — San Francisco

Canadian Head Office — Ottawa

CH0369-A

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FOREWORD

MOST ACTIVITIES in the field of industrial management depend largely upon their economic worth. The burden of industrial sickness, accidents or death is one which weighs most heavily in suffering and economic loss upon the workers themselves. It is also one which imposes a serious economic loss upon the industry. Sickness and physical incapacity among workers, whether causing absence from work or not, is a costly factor resulting in under-production, spoiled goods, labor turnover and low morale. Sick workers inevitably mean sick factories, sick stores and sick offices. Employees susceptible to accidents mean wastage and inefficient operation.

The elimination or reduction of this wastage and of the burden of industrial sickness and accidents is of very real interest to the Metropolitan Life Insurance Company, which insures one out of every five men, women, and children in the United States and Canada. Anything which it can do toward improving the health and safety conditions in industry is bound to react favorably for these policyholders. Accordingly, the Company maintains sections in the Welfare Division on Industrial Hygiene and Industrial Safety. It is the purpose of these sections to cooperate systematically with industry and commerce to the end that the health and the safety of employees may be protected or improved.

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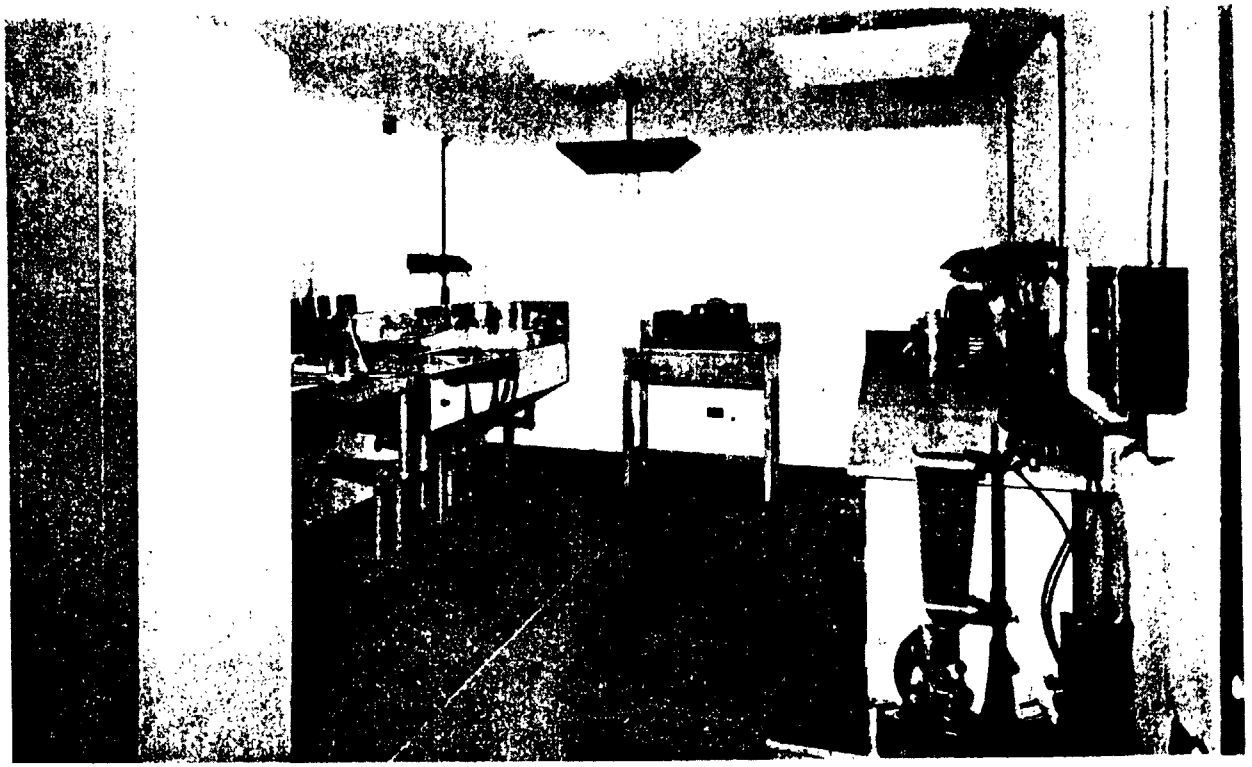
INDUSTRIAL HYGIENE

THE TERM Industrial Hygiene, like many other technical designations, is redefined and interpreted from time to time in the light of advancing knowledge. Not many years ago industrial hygiene was considered to be a portion of the field of medicine dealing almost exclusively with diseases due to occupation. Industrial Hygiene is now defined as that branch of medical and engineering sciences which is concerned with the study of the effects of environmental conditions in industry upon the health of industrial workers, and with the application of the principles of preventive and curative medicine and sanitary engineering in industrial establishments.

The job a man has, and the wages he receives, determine very largely the circumstances of his life and of the lives of his dependents. Wage earners, as distinguished from salaried workers and those in the professions, now display distinctly more favorable death rates than they did some years ago, but they still suffer a considerably higher death rate than those in professional and other groups. In 1931, the expectation of life for a wage-earning industrial worker aged twenty was forty-three and one-half years; for a man of the same age in the higher economic class, forty-eight and one-half years—a very significant difference of five years in favor of the latter group. This curtailment of the expectation of life of the industrial worker is due to factors both industrial and economic, but, in



Dark Room of the Laboratory



Chemical Laboratory of the Industrial Health Section

the aggregate, it represents a situation which intelligent effort can improve.

The burden of sickness is one which varies with sex and age, as well as with industry. For males, the loss from sickness and non-industrial accidents is estimated to be about eight days per year on the average. Among females, the loss is about fourteen days per year. These are averages; of course, in some industries the losses run lower; in others, they may be several times the figures here presented.

THE INDUSTRIAL HEALTH SECTION

Health Education

The Metropolitan publishes a number of pamphlets, each dealing with an outstanding health or disease problem. These treat in simple language such subjects as the prevention of tuberculosis, the control of acute infectious diseases, care of the teeth and eyes, first aid and similar topics.

The health pamphlets are distributed to Group policyholders at regular intervals and in quantity to supply all employees in each Group. In the twenty-four-year period, 1909 through 1932, 706,250,089 copies of such publications have been distributed by the Metropolitan. In 1932, there were issued 43,350,504 copies, of which 3,444,269 were sent to Group policyholders. In addition to these health pamphlets which are made available to policyholders, the management of organizations covered by Group insurance are supplied with information in booklet form on subjects



Physical Laboratory of the Industrial Health Section

pertaining to health promotion work—such as the value and method of conducting physical examinations, temperature conditions to be maintained for the comfort and efficiency of workers, information on specific occupational diseases and methods of prevention, and other pertinent subjects of interest.

Field Research

It is becoming more apparent daily that only by detailed study of the working environment can the various factors affecting health be evaluated. These do not concern themselves with individuals but with conditions, such as:

Atmospheric pollution by injurious dusts and fumes
Air conditioning
Illumination
Sanitation
Special occupational hazards

The Industrial Health Section of the Metropolitan Life Insurance Company is prepared to furnish information regarding these and related health practices to its policyholders.

The Laboratory of Industrial Hygiene

The Metropolitan Life Insurance Company for several years has maintained an industrial research laboratory fully equipped for the study of industrial health problems. The work carried on in the laboratory has so expanded in recent years that the Company has installed in its new building model physical and



Courtesy Kelley-Atwell Developing Corp.

Jackhamer operating without any dust control



Courtesy Kelley-Atwell Developing Corp

Kelley Dust Trap in use on a Jackhamer

chemical laboratories for its research studies. Trained personnel make the required observations in factories, mills or other industrial establishments, collect necessary air samples by means of the most modern devices, and subsequently complete their studies in the laboratories at the Home Office. In connection with field studies, air samples are taken under actual industrial conditions and analyzed for the dust content or for poisonous substances which may be present in the air breathed by workers exposed to industrial processes. An inspection is made of all other health hazards which may directly or indirectly affect the health and efficiency of the workers. There is thus acquired definite knowledge based on observations of actual working conditions which can serve in the development of protective measures.

The Industrial Health Section fully recognizes the confidential relationship which should exist between the Company and those whom it serves. When circumstances warrant a field investigation of plant conditions, this service is made available to insured groups, only upon their invitation and with their full cooperation.

Recent studies of the Laboratory of Industrial Hygiene have concerned such matters as the effects upon the lungs of various inorganic dusts encountered in foundries, asbestos fabricating plants, and in hard rock drilling; the extent of atmospheric pollution in certain factories by specific poisonous substances such as lead, manganese, carbon monoxide; and the effects

upon the workers of high temperatures and humidities in textile mills.

Home Office Research

There are being received constantly from Group policyholders throughout the United States and Canada a great variety of requests for technical advice concerning health matters and the maintenance of health in industry. These inquiries relate to such subjects as:

Methods of conducting industrial medical departments.
The rôle of physical examinations in industry.
Detection and prevention of poisonous substances used in industry.
Protective devices in hazardous processes.
Hospital benefits and mutual benefit associations.
The prevention of excessive fatigue.
The planning of industrial hospitals.
The study of sick absenteeism.

The *Industrial Health Series* of brochures on the above type of subjects is being published. The five booklets already issued are entitled:

First Aid Service in Small Industrial Plants
Physical Examinations in Industry
Industrial Dental Service
Functions of an Industrial Eye Clinic
Air Conditions and the Comfort of Workers

Other industrial hygiene booklets published are:

The Prevention of Oil Pimples
The Protection of Workers Exposed to Chromium and Its Compounds
Silicosis and Other Dust Diseases of the Lungs

The Industrial Health Section has at its command exceptional library facilities to supplement the many sources of information made available through its wide and numerous contacts with health work in various industrial and mercantile organizations. The Section endeavors in every instance to be of the utmost practical assistance to those who submit problems for its consideration. When indicated, visits are made to policyholders to assure a comprehensive first-hand understanding of the circumstances which are involved.

The study of those insured Groups showing an unfavorable and excessive sickness or death rate, makes it possible to localize, by cause or sex or age group, the particular health problems most urgently calling for attack. The individual policyholder thus receives direct information of the objectives against which corrective measures should be directed.

Group policyholders are cordially invited to submit to the Industrial Health Section any problems concerning the physical health or well-being of their employees.

Visiting Nursing

The Metropolitan Life Insurance Company offers, through its Welfare Division, a Visiting Nurse Service for persons insured under Group, Industrial and Intermediate policies. The service is available in approximately 5,500 cities and towns throughout the United States and Canada.

In carrying on this work the Metropolitan maintains a staff of more than 700 graduate, registered

nurses, and a supervisory staff comprising between forty and fifty graduate nurses qualified by special training in public health. The Company has also formed affiliations with more than 900 nursing organizations which have adopted the standard qualifications recommended by the National Organization for Public Health Nursing.

A traveling consultant Group Nursing Supervisor is available to advise employers and employees regarding regulations of our nursing service.

In communities where nursing service is available, the nurse will visit the home of the insured man or woman who is acutely ill and render skilled nursing care, provided a physician is in attendance. She will also teach the family how to care for the patient during her absence and will include instruction in the prevention of illness. The nurse does not remain in the home indefinitely, but remains long enough to carry out the doctor's orders and give the necessary instruction in the care of the patient. Visits are made daily or less often, according to the illness and need for nursing care.

The entire cost of the service is paid by the Metropolitan Life Insurance Company. Since the establishment of the Visiting Nurse Service in 1909, a total of 57,290,000 visits have been made to the homes of Metropolitan policyholders.

INDUSTRIAL SAFETY

SINCE industrial safety work was first undertaken on an organized basis in the United States, many very gratifying results have been obtained. The annual toll of accident fatalities in industry has been reduced from approximately 24,000 to about 15,000 in 1932. However, during the past ten years, the economic loss from accidents has increased tremendously as a result of more liberal compensation provisions and higher wage scales.

In 1931, the direct cost of accidents involving compensation payments, medical and similar expense was estimated at almost three-fourths of a billion dollars. It was generally considered that these direct costs represented the chief items of accident expense. Recent studies, however, have indicated that indirect costs of accidents involving loss in production, damage to tools, material and equipment, loss of experienced man power, etc., are several times as great as the direct cost. Safety activities are effective not only in eliminating these losses, but they also serve to promote improved production, higher operating efficiency, and decreased operating expense.

Aside from the purely economic grounds, accident prevention work, properly conducted, satisfies certain social obligations. Employees have a right to expect safe conditions and proper operating practices while at work. Since safety tends to decrease cases of painful injury, untimely death, human suffering and distress

to an employee's family upon his loss, the prevention of accidents is amply justified on humanitarian grounds.

THE INDUSTRIAL SAFETY SECTION

Consulting Service

The safety program of the Metropolitan Life Insurance Company was first developed to provide consultation services to the executives and supervisors of our Group policyholders. Through our contacts among leaders in industrial safety activities, material collected in our libraries and files, and the personal experiences of our staff members, the Safety Section is equipped to furnish information to Group policyholders concerning the various problems which arise in connection with the prevention of industrial accidents. Requests received for information of this type refer to problems involving safety educational activities, as well as questions pertaining to mechanical safeguarding and the development of safe operating processes.

Analysis of Accidents

It has been found that an actual knowledge of the previous accident experience of an organization is essential to the development of an effective safety program. To obtain such information, an effective system of accident reporting is necessary, and frequent and competent analyses of accident records are desirable. The Safety Section is in a position to aid policyholders in developing their accident reporting system and, when requested, is glad to receive and analyze previous

accident reports. This information is considered confidential and is returned to the policyholder with a description of his accident problem as indicated by his records, together with suggestions for improving existing conditions. Figure 1 illustrates a typical method of showing outstanding causes, and Figure 2 indicates a method of maintaining a visual picture of accident expenses.

Safety Surveys

When circumstances indicate the need, the Safety Section is glad to accept an invitation from a Group policyholder to make a safety survey of his property. Experience has shown that only a comparatively small percentage of accidents is in reality the result of improper guarding, but that a large percentage is the result of improper practices on the part of the worker. The surveys, accordingly, include a study of accident experiences, educational activities and operating practices, as well as a review of existing safeguarding methods. Figure 3 illustrates the steps usually taken in conducting such a study. After the completion of a safety survey, a confidential report is submitted to the proper executives.

Accident Susceptibility

In recent years, growing attention has been given to the fact that some employees apparently are more susceptible to accidents than others. To study this matter in a practical way and to determine what steps

CAUSES OF ACCIDENTS

Percentage of Total Days Lost

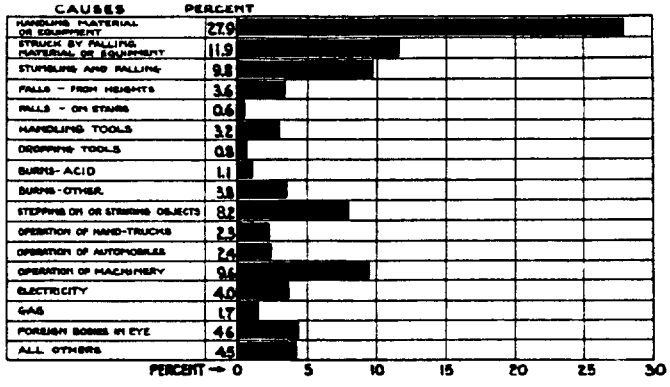


FIGURE 1

ACCIDENT COST BY MONTHS

Per Thousand Man Hours Worked

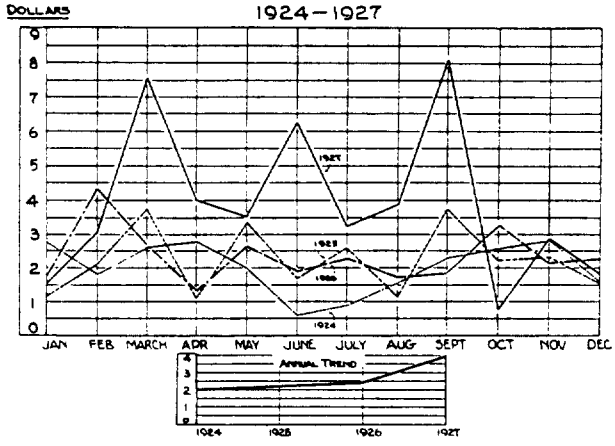


FIGURE 2

Typical Steps in Starting Organized Industrial Safety Work

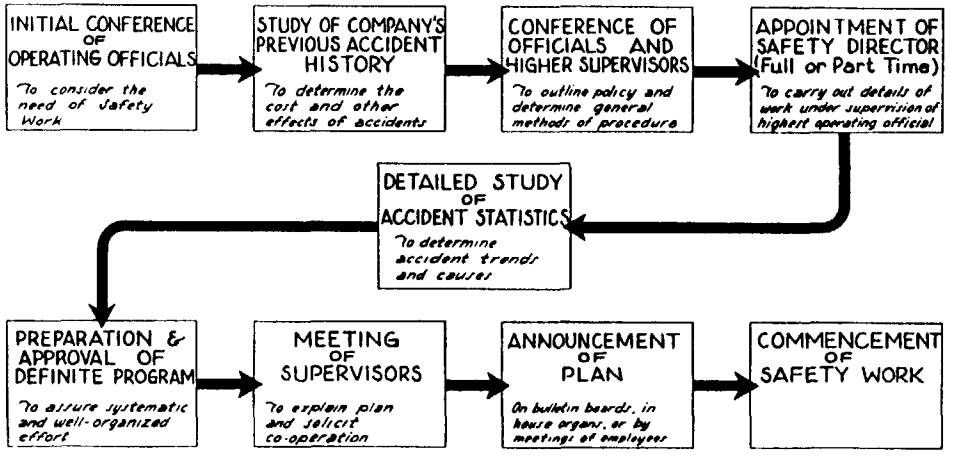


Figure 3

should be taken to analyze accident susceptibility and correct the conditions producing it, the Safety Section undertook a cooperative study with a Group policyholder. Figure 4 presents the primary causes of accidents, developed as a result of the study. The complete report is presented in a publication entitled *The Accident-Prone Employee.*

Major Industrial Studies

From time to time, the Safety Section accepts invitations from national or trade organizations to undertake studies of the methods utilized by specific industries in the development of safety programs. These studies are conducted in cooperation with the sponsoring organization, and the results usually are issued in printed form for distribution to those interested. The following reports deal with such studies:

Preventing Foundry Accidents
A Study of Safety Activities in Gas and Electric Utilities
Preventing Taxicab Accidents

Industrial Safety Publications for Management

A series of industrial safety booklets, dealing with the fundamental principles of organized safety educational work and prepared primarily for executives and supervisors, has been issued. These booklets are available for distribution to officials, foremen, safety committee men, and others interested. The entire series also is bound under one cover as a handbook for those

PRIMARY CAUSES OF ACCIDENT-PRONENESS

Percentage Distribution Among Fifty Motormen

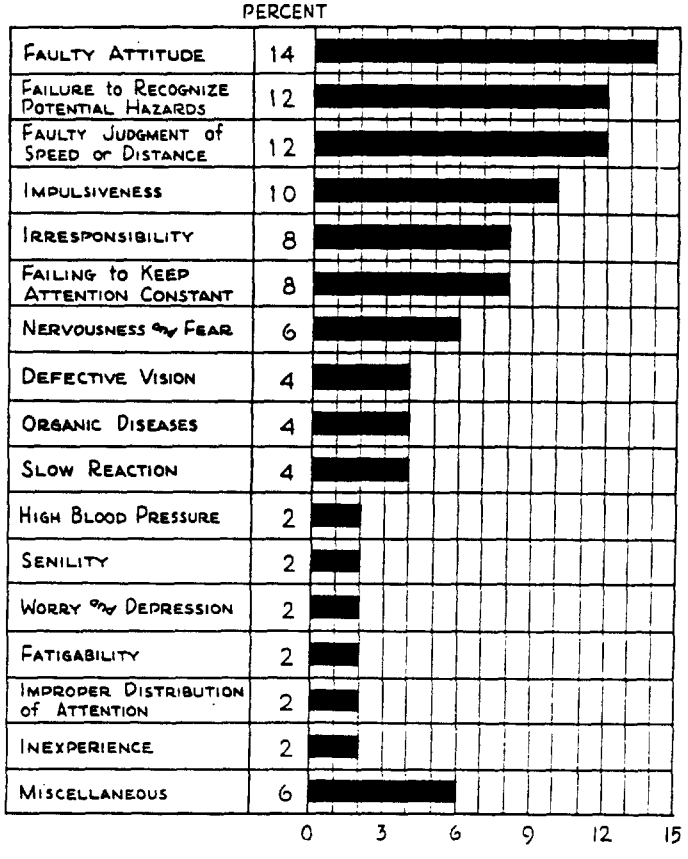


FIGURE 4

responsible for safety work. The series consists of the following ten booklets:

1. *Getting Results from Safety Work*
2. *Getting Facts About Accidents*
3. *Directing the Plant Safety Work*
4. *The Foreman's Part in Safety*
5. *Workmen's Safety Committees*
6. *Safety Advertising*
7. *Safety Competition*
8. *Safety Meetings*
9. *Making the Plant Safe*
10. *Safety Activities in Small Companies*

In addition, a special report, entitled *Methods of Organizing and Conducting Industrial Safety Contests*, has been issued following a study of this phase of safety educational work.

To assist executives in developing an organized series of safety conferences among their foremen and supervisors, a suggested outline has been published under the title *Foremen's Safety Conferences.*

Public and Home Safety

Industrial management is giving increasing attention to the need of stimulating safety interest among their employees, particularly outside of working hours when they are on streets or highways, or in their own homes. The absence of a valued employee from his place of work is an important economic loss, whether the accident occurs while the employee is at work or elsewhere. To aid executives of Group policyholders to stimulate

employee interest in public and home safety, the following booklets are available for general distribution:

Will the Rising Toll of Accidents Hit You?
Check Your Car for Safety and Performance
The Real Driver's Log Book
Accident Prevention in the Home
The Safe Walker's Memo Book

Community Activities

In many communities industrial executives are cooperating with organized street and home safety campaigns. Appreciating the opportunities of such local educational efforts, the Safety Section has published three booklets outlining methods which have been used in developing community safety programs. Copies of these booklets,

Promoting Community Safety
Encourage Real Driving in Your Community
Preventing Home Accidents in Your Community,

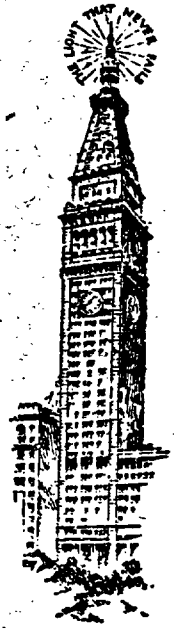
are available to members of local organizations, and others interested in this field of endeavor.

Street Traffic Studies

The proper control of street traffic has an important effect upon the prevention of public accidents. It also has an important bearing on the economic use of streets by commercial vehicles. To determine how traffic control measures and devices can be utilized to obtain safer and more effective use of city streets, a survey of local conditions usually is essential. The

practices of American cities in organizing and conducting street traffic surveys are being studied by the Safety Section in cooperation with the Highway Research Board. The results of these studies are being published in a series of booklets for use by city officials and others interested in the traffic problem of their communities. The first two booklets of the series are as follows:

Organizing for a Traffic Survey
Studying the Movement of Vehicles



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