

ANNUAL REPORT
OF THE INDUSTRIAL HEALTH SECTION
1945

PLANT SURVEYS

The Laboratory of Industrial Hygiene conducted sixty surveys of health conditions in the plants of our Group policyholders. These consisted of surveys of new plants, as well as recheck surveys in plants of a number of our policyholders which request that we make these periodic checks to determine whether or not any new health hazards have developed and, if so, how they can be controlled. They also wanted to know if the fume and dust control systems installed on our recommendation are efficient.

The following instances of service may be of interest to show how the work of the Metropolitan Life Insurance Company in the field of industrial hygiene is accepted by management, employees and the Divisions of Industrial Hygiene of the State Departments of Health:

The Bates Manufacturing Company of West Orange, N. J. requested a survey of health conditions in their plant because their grievance committee, consisting of representatives of management and labor, wanted such a survey made to use as a guide in improving conditions in the plant.

Mr. W. G. Hazard, Director of the Industrial Hygiene Division of the Department of Health of New Jersey was ordered by the War Production Board to make an investigation of the plant of the Johns-Manville Corporation at Manville on the basis that there were a number of unhealthy working conditions

in the plant accounting for a large labor turnover. Due to the fact that we have periodically been surveying this plant, Mr. Hazard asked that we make the survey. Our investigations indicated that the asbestosis hazard was adequately controlled and had been for a number of years. Mr. Hazard accepted our findings and made his report to the War Production Board. The case was closed.

The Ruberoid Company of Gloucester City, N. J. also asked for a survey of their plant at the suggestion of Mr. Hazard and our findings were accepted by the New Jersey State Department.

The Industrial Hygiene Division of the Department of Health of Alabama was planning to survey the iron ore mines of the Republic Steel Corporation in Birmingham, Ala. and the Company asked us to make a check of conditions prior to the state's study so that they would have a clean bill of health.

Mr. Dyktor, Director of the Bureau of Industrial Hygiene of the City of Cleveland, Ohio made a visual survey of the Corrigan-McKinney plant of the Republic Steel Corporation. After learning that the Metropolitan was supervising the plant conditions affecting the health of the employees, Mr. Dyktor said that it would not be necessary for his Department to make a survey.

The National Carbon Company of the Union Carbide Corporation at Cleveland, Ohio asked the Metropolitan to conduct a survey of their Amalgam Mixing and Drying Department at the time the State Department was conducting an investigation of working conditions. However, the State Department did not have the proper equipment nor the personnel to take the tests and the Metropolitan was asked to complete these studies.

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PLANT SURVEYS

During the year 1941, 30 different industrial plants employing approximately 15,706 employees, were studied. Firms engaged in manufacturing heavy metals and printing plants comprise most of the firms studied this year. The industries studied may be classified as follows:

Metals	40.0%
Printing	40.0%
Chemicals	13.4%
Ceramics	3.3%
Textiles	3.3%

The samples collected necessitated making 1,112 separate analyses in the laboratory. A number of different substances which affect unfavorably the health of exposed workers was detected, such as dusts (silica, lead, arsenic, zinc, ganister, manganese); carbon monoxide; benzol, methyl alcohol, carbon tetrachloride, etc.

It has always been believed that employees in isolated locations in the plants, as for instance crane operators, were not exposed to gases and fumes, at least to concentrations not as high as the workers at the breathing level of the operation. However, we found that on certain operations where gas is given off that the crane operator has a higher exposure than those on the floor level, especially in connection with the lighter gases which tend to

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rise to ceiling height. This was particularly evident in crane operator's cabs over the gas-fired soaking pits in steel mills and over galvanizing pipe operations where the men were exposed to excessive concentrations of zinc and lead fumes.

In addition to the above, the plants of three Group policyholders were visited and advice given regarding hazards or medical services.

Our policyholders have continued to send in for analyses, mostly for free and total silica, materials constantly used in the plant, as, for instance, bricks used in blast furnaces, pre-heating furnaces in steel and iron foundries, as well as abrasive powders used in the plants. We have also during the year analyzed materials used in our Home Office buildings.

Requests for plant surveys and information were received from Group policyholders and others in all lines of industry. Some of the more important firms which we have served are:

Allis-Chalmers Mfg. Co.
Milwaukee, Wis.

Combustion Engineering Co. Inc.
New York City

Idaho-Maryland Mines Co.
Grass Valley, Calif.

✓ Johns-Manville Co.
New York City

Sears-Roebuck & Co.
Chicago, Ill.

Standard Oil Co. of N.J.
New York City

Armstrong Cork Co.
Lancaster, Pa.

Otis Elevator Co.
Yonkers, N.Y.

Union Carbide & Carbon Co.
New York City

United States Leather Co.
New York City

Electro-Metallurgical Co.
Alloy, W. Va.

Rochester Gas & Electric Co.
Rochester, N.Y.

Congoleum-Mairn, Inc.
Kearny, N.J.

Electric Storage Battery Co.
Philadelphia, Pa.

Clearwater Mfg. Co.
Clearwater, S.C.

Continental Baking Co.
New York City

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Caterpillar Tractor Co. Peoria, Ill.	Chrysler Corp. Detroit, Mich.
Monsanto Chemical Co. St. Louis, Mo.	Ralston Purina Co. St. Louis, Mo.
General Electric Co. New York City	Colgate-Palmolive-Poet Co. Jersey City, N.J.
St. Joseph Lead Co. New York City	Carnegie-Illinois-Steel Corp. Pittsburgh, Pa.
Curtis-Wright Corp. Caldwell, N.J.	Certain-Teed Products Co. New York City
General Motors Corp. Detroit, Mich.	New York Employing Printers Assoc. Inc. New York City

Requests for assistance were received from thirty-two states of the United States, three provinces of Canada, from China, Santiago, Chile, and from Honolulu, Hawaii.

TRAVEL CREDIT

Although our budgetary allowance for travel during the year 1941 amounted to \$4,000, our actual expenses for travel amounted to \$239.67. Our gross expense for travel amounted to \$3,366.85, but credits received from Group policyholders for incidental expenses incurred while in the field amounted to \$3,127.18, making an actual expenditure of \$239.67.

RESEARCH STUDIES

A method for the determination of aniline was developed in order to determine the exposure of employees in a dye house at a cotton mill insured under a Metropolitan Group plan.

One of the large Groups engaged in the manufacture of steel uses bricks of a high amorphous silica content for furnace linings. Methods for the determination of crystalline free silica are fairly well defined, but the

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PLANT SURVEYS

During the year 1942, nearly twice as many surveys were conducted as in 1941. The number of different industrial plants studied in 1942 was 58, as compared to 30 in 1941. As in 1941, firms engaged in manufacturing heavy metals comprise the major part of the studies, with ore mines second. The industries studied may be classified as follows:

Metals	62.1%
Ore mines	15.5
Coal mines	8.6
Asbestos plants	8.6 ✓
Chemicals	1.3
Quarries	1.7
Wood	1.7
	<u>100.0%</u>

The samples collected in the plants necessitated making 1,536 separate analyses in the laboratory. Analyses have also been made, as in the past, of materials shipped to the laboratory from plants of our Group policyholders. These tests were mostly for free and total silica. A number of materials used in our Home Office buildings has also been analyzed.

In addition to the above surveys, the plants or offices of three policyholders were visited and advice given regarding hazards or medical service.

Requests for plant surveys and information were received from Group policyholders and others in all lines of industry. To give an idea of the variety

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of firms which request this service, the following are some of the more important firms which we have served:

Armstrong Cork Company	Ruberoid Co.
Consolidated Gas Electric Light & Power Co.	Continental Baking Co.
Pennsylvania Greyhound Lines	Higgins Corp.
American Viscose Corp.	Atlas Powder Co.
Idaho Maryland Gold Mines Corp.	N.Y. Telephone Co.
American Rolling Mill Co.	International Business
Standard Oil Co.	Machine Corp.
Union Carbide Co.	Bredon Copper Co.
American Seating Co.	Florida Power & Light Co.
Humble Oil & Refining Co.	Lewisburg Chair and
Tennessee, Coal, Iron & R.R. Co.	Furniture Co.
Blackwell Zinc Co.	Norton Company
Republic Steel Corp.	D.S. Leather Co.
Kohler Co.	Virginia Electric & Power
Marshall Field & Co.	Caterpillar Tractor Co.
Vickers, Inc.	Johns-Manville Corp.
National Enameling & Stamping Co.	Eaker & Taylor Co.
Montgomery Ward Co.	Bell Telephone Laboratorie
Bethlehem Steel Co.	A.P. Green Fire Brick Co.
Pendleton Ship Yards	N.Y. Employing Printers
Norfolk & Western Railroad	Assoc. Inc.
General American Transportation Co.	General Electric Co.
Kimball Piano Co.	Monarch Machine Tool Co.
General Motors Corp.	Asbestos Textile Corp.

RESEARCH STUDIES

Due to the increased number of requests for plant surveys resulting from the speed up in production, due to industry's victory effort, more routine work has been loaded upon the laboratory. This additional work has left little time for research problems. The laboratory staff did design and construct a new type of centrifugal pump which could operate on A.C. or D.C. current of 110-220 volts.

TRAVEL CREDIT

The amount of money expended for travel in the Industrial Health Section during 1942 amounted to \$4507.57. However, of this amount \$4047.63 was paid to us by the Group policyholders for expenses incurred by our men in the field while conducting plant surveys. Therefore, our total expenditure for travel for the year amounted to \$459.94.

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Plant Surveys

The Laboratory of Industrial Hygiene conducted forty surveys of health conditions in the plants of our Group policyholders. Although this is a reduction in the number of plants surveyed last year, the individual plants surveyed were larger and employed a greater number of employees. Also, the initiation of a very large project - the surveying of approximately one hundred and twenty plants of the General Electric Company - as well as surveys of several other companies could not be included in this year's schedule due to the transportation strikes which held up for weeks trucks containing equipment and samples collected in the previous surveys.

A typical plant survey report includes a description of the processes, plant construction and layout, plant housekeeping and personal facilities; discussion of methods of sampling and analyses; chemical analyses and other findings of the samples collected; and recommendations for control of any health and safety hazards found. Attention is also called to safety hazards. A section of the report discusses the health hazards found - symptoms, toxic concentrations, treatment, etc.

The samples collected in the plants and sent to the Home Office Laboratory necessitated making 2,494 separate analyses. Exclusive of such environmental factors as defective illumination, inadequate local and general ventilation, and sanitary defects, a total of 42 different substances known

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to affect adversely the health of exposed workers was detected. These consisted of dusts, such as silica (which is by far the most prominent), asbestos, lead, manganese; solvents, such as carbon disulphide, tetrachloroethane, trichloroethane, trichloroethylene, benzol, toluol, ethyl, methyl and butyl acetate, amyl and ethyl acetate, naphtha, as well as hydrofluoric, hydrochloric, and sulfuric acids.

A number of new instruments were purchased for the Laboratory during the year in order to facilitate and expedite the survey work and to attain the best possible accuracy in determining hazardous exposures. These are a mercury vapor detector, a sound meter used to determine noise levels, and a Geiger-Muller meter for measuring radiant energy.

A ventilation engineer is now available for consultation in planning new ventilation and exhaust systems or necessary revisions of those in use.

Home Office Inspections

The Industrial Health Section and the Laboratory of Industrial Hygiene has continued to make periodic sanitary and industrial hygiene inspections of the Commissary Division. These inspections include methods of preservation of food, refrigeration, food handling and disposal, dish washing, vermin control and cleanliness generally.

The office has also continued to be of assistance in such work operations as paint spraying, lead soldering, welding and other operations where solvents and toxic materials are employed throughout the building.

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Another paper by Dr. McConnell entitled "Summary of Twenty-Two Tri-nitrotoluene Fatalities in World War II" appeared in the May 1946 number of the "Journal of Industrial Hygiene and Toxicology".

Conferences

During the year, Dr. Lanza held sixty-two conferences and Dr. McConnell held eighteen, in the office with representatives of our Group policyholders and others from health organizations.

Field Trips

Dr. Lanza visited the plants of twelve of our Group policyholders and conferred with management regarding nursing service, poor claim experience or other matters of interest. Among policyholders visited were the Corning Glass Company, the General Electric Company, the General Motors Corporation, Johns-Manville Company and the American LaFrance Ponneite Company. Dr. Lanza also made thirty-six other field trips during the year for the purpose of conferring with the executive staffs of health organizations, Government bureaus, universities, other insurance companies, etc. regarding methods of improving the health of industrial employees. Some of the more important of these trips were for the following purposes:

He had a conference with Dr. Dudley Irwin in Pittsburgh concerning the future activities with respect to the aluminum treatment of silicosis.

He visited a number of Group policyholders on the Pacific Coast during the first part of July when he attended the annual meeting of the American Medical Association at San Francisco.

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SUMMARY FOR 1946 OF WORK OF INDUSTRIAL HEALTH SECTION

Surveys conducted by Industrial Hygiene Laboratory	40
Analyses made in Laboratory	2,494
Home Office Inspections	62
Travel Credit	\$2,405.26
Special inquiries handled by mail or conference	675
(An increase of approximately 125% over 1945)	
Literature sent (Industrial Health Series)	3,684
Publications completely revised	2
Publications slightly revised	1
Facilets revised	2
Other publications written and published	3
Conferences in Home Office	80
Field visits to Groups	14
Other field visits	36
Meetings attended by staff	61

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Dr. Lanza has been made a member of the Board of Trustees of the Trudeau Sanatorium and Foundation.

A ventilation engineer is now available in the Laboratory of Industrial Hygiene for consultation in planning new ventilation and exhaust systems and necessary revisions of those in use.

We have secured the services of another chemist in the Laboratory.

The following are a few of the more outstanding research jobs conducted by the Laboratory.

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The Rochester Gas and Electric Company was visited by Mr. Fehnel to outline and supervise a program for the study of atmospheric dusts and gas pollution. The company is planning to erect a new steam electric generating plant which will take about two years to build. The Metropolitan is to make studies each season of the year of the normal dust counts and supervise the study of the dust fall and sulfur dioxide concentrations in the City of Rochester before the erection of the plant. After completion of the plant and when it is in production, we are to supervise check studies to see if the plant causes any pollution of the air which will be detrimental to the health of people living in the vicinity of the plant. The Metropolitan was asked to do this work by the Rochester Gas Company on the advice of the Republic Steel Corporation for whom similar work has been done.

A study was made of the possible exposure of employees to hydrogen fluoride generated by the addition of sodium fluoride to molten steel when pouring rim heat. The study was made over a prolonged period to determine the extent of the exposure of employees before this method of making steel was put into operation. Recently a strike was called at the Ford Motor Company due to complaints of employees who had been exposed to the irritating fumes of hydrogen fluoride generated at a similar process. It is interesting to note that before any new process is developed or any new materials are used in the plants of the Republic Steel Corporation, the company requests the Metropolitan to make a study to determine the existence of any possible health hazards.

Tests were conducted on certain days of the week for three consecutive weeks in the carding room of the Manville, New Jersey plant of the Johns-

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Manville Corporation to determine the dust pollution that could be expected
when carding and spinning four different mixtures of asbestos and cotton.
This is another example of tests being made by the Industrial Hygiene Laboratory of contemplated processes in the plants of our Group policyholders before being put in production to eliminate any potential health hazards.

Triethylene Glycol Study

In certain areas in the new building (Unit 1) the air supplied to the sections is treated with triethylene glycol as a method of air sterilization. We have taken air samples in the sections with the impingers and absorption tubes and made quantitative triethylene glycol determinations. Considerable work was done in checking and adapting the analytical method used. By adapting a special filter, we were able to use our Electrophotometer in the analytical work in these determinations.

The results of our study to date indicate that the concentration of triethylene glycol vapors in the atmosphere is not at the optimum quantity and, therefore, no positive results are indicated nor can they be expected until the triethylene glycol concentration is increased until it reaches the bactericidal or killing range.

Republic Steel Corporation

GENERAL OFFICE - REPUBLIC BUILDING

Hampton, Ohio

A. J. GENTWORTH
Assistant General Attorney



February 5, 1934

Dr. A. J. Lanza, Ass't. Medical Director
Metropolitan Life Insurance Company
New York, N. Y.

Dear Dr. Lanza:

There has been considerable discussion at this office during the past few days as to what position should be taken on the subject of the inclusion of silicosis and other allied diseases in the occupational disease schedule of the various compensation acts in order to avoid the threat of common law liability in such matters. I would like very much to get an expression from you on this subject.

You of course know my position as expressed when you were in the office, namely, to grant such a concession in Illinois or any other individual state would let down the bars for a flood of similar legislation all over the Country. I do not know of one state which has an occupational disease act where there are included diseases of this character. Your further comments on the subject will be greatly appreciated.

Very truly yours,

Assistant General Attorney
Republic Steel Corporation

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