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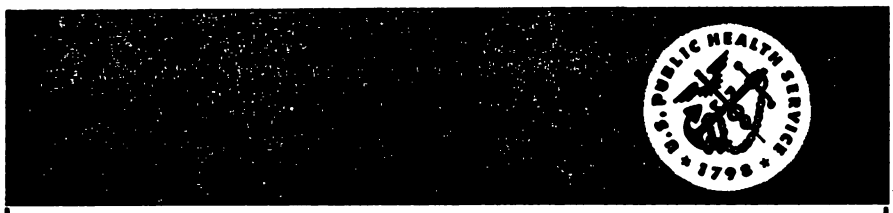

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Occupational Health More Meaningful Than Previous Title

OCCUPATIONAL HEALTH, the new name of this publication, has been selected to replace *Industrial Health Monthly*. As the official organ of the Division of Occupational Health, PHS, it is fitting that the publication connote by its name the Division's broadening services. Announcement was made in the December 1951 issue of the change in the name of the Division.

OCCUPATIONAL HEALTH will be not only more accurate in its implications but also more meaningful for the large majority of the readers.

The general content and audience of the publication will remain the same. It will continue to present information on technical and general developments in the field of occupational health, directed to governmental industrial hygienists, health educators, industrial physicians, nurses, engineers and chemists, labor leaders dealing with health problems, and managers of industrial plants.

Distribution policy for the publication will not change. It is free to the persons engaged in occupational health work in governmental agencies (Federal, State and local).

Paid subscriptions are available for $1 a year in the United States and Canada; and for $1.25 a year in other countries. Requests for subscriptions should be addressed to the Superintendent of Documents, United States Government Printing Office, Washington 25, D. C.

Pennsylvania Nurses Meet With Management

Representatives of 44 companies met with the industrial nurses of Pennsylvania for their Second Annual Nurse-Management dinner meeting, making a total of 182 in attendance. The Industrial Nurses' Section, District 6, of the Pennsylvania State Nurses' Association planned the event.

J. A. Stephens, vice president, Industrial Relations, U. S. Steel Co., gave the main address, speaking on the subject, "The Mission of the Industrial Nurse."

COVER PICTURE.—By courtesy of Standard Oil Co.

The Present Status of Silicosis

By Lawrence T. Fairhall, Ph. D.[1]

DIAGNOSIS

THE DIAGNOSIS of silicosis, where lung tissue is available for examination, is not too difficult. Policard (*19*) states that in general the microchemical examination and identification of the particles present in lung tissue can also give an approximate idea of their amount. Less than 10 percent of silica in the ash, or the absence of quartz particles, rules out the possibility of silicosis. Cesaro and Pecchiai (*20*) point out the advantage of noting the effect of silver nitrate on the reticular tissue in the diagnosis of silicosis. Tronchetti and Conti (*21*) have found a slight anemia which they attribute to the effect of silica upon the hematopoietic system.

In a study of the serum proteins in silicosis by Vigliani and others (*22*), it was found that measurement of the globulins in blood serum may be of value in diagnosis. A rise in the alpha globulins occurs when silicosis is associated with an exudative or necrotic process, usually tuberculosis. An increase in the gamma fraction indicates active proliferation.

Weissinger (*23*) was unable to establish any relationship between the erythrocyte sedimentation rate and silicosis in examining 2,213 silicotics. However, Foubert and LaFay (*24*) found an accelerated sedimentation rate in 464 cases of silicosis, and they consider it sufficiently valid to serve as useful in following the progress of silicosis.

In applying the electrocardiograph for the evaluation of silicosis, Horman (*25*) found that the chest wall leads permit some indication of reduced functional capacity and also permit differentiation of myocardial lesions.

Lischi (*26*) has pointed out that clinical symptoms may be lacking in cases of silicosis and cites two asymptomatic silicotic patients with advance lesions as revealed by roentgenography. He attributes the lack of symptoms to the particular pulmonary area involved. At that stage of the disease the fibrosis involved was insufficient to impair ordinary pulmonary function.

In this connection, it may be pointed out that one means of determining disability from silicosis has depended upon the degree of dyspnea apparent and that this has not proved to be entirely satisfactory. A new method has been devised by Pelnar (*27*) which avoids this difficulty. This method depends upon the simultaneous and continuous determination of the ventilation equivalents for oxygen and carbon dioxide while the subject is at rest, exercising, and recovering from exercise. When tested with both normal subjects and silicotics, this method was found to characterize different pathological conditions of the lungs and circulation very satisfactorily.

The *roentgenological examination* of suspected silicotics is the most important single means of diagnosing silicosis. Unfortunately it requires long experience and each expert has more or less adopted his own means of classification.

The classification adopted for one type of industry will not prove suitable for another type. The legal implications regarding silicosis, in view of compensation claims, have in a sense placed an additional burden on the roentgenologist. As a consequence of all these factors, an immense amount of literature has been built up in the field of pneumoconiotic radiographic interpretation that can scarcely be compressed into a general review. Nonetheless it may be of interest to note several recent surveys in the field of silicosis. These surveys outline the roentgenographic procedure followed in establishing evidence of silicosis.

In a recent study of foundrymen in 18 foundries in Illinois made by the Division of Occupational Health of the United States Public Health Service and the Illinois Department of Public Health (*28*), significant pulmonary fibrosis was found in 9.2 percent of the foundrymen. In 1.5 percent of the men, there was found nodular fibrosis, which in general had required 14 years or more of exposure in order to develop.

A survey of the granite industry in Germany and Austria in which 3,880 persons were examined has been reported by Rohrl (*29*). Silicosis was found to be present in 8.1 percent of the individuals examined. The later stages of silicosis were found to develop in this industry only after 28 to 45 years of exposure.

Yamamoto (*30*) has reported a survey of silicosis in the metal mines of Japan. A total of 23,823 workers were examined, and the number of silicotics totaled 11.51 percent. The author does not specify the kinds of mines in which these studies were made, although some indication of job-breakdown is given and the incidence of silicosis is indicated in such jobs as timbering and crusher-sorting.

Meiklejohn (*31*, *32*) reviewed 750 necropsies in the pottery industry and 275 necropsies in a group of occupations involving exposure to siliceous dust resulting from the use of sandstone. These cases were tabulated with special reference to tuberculosis, heart failure, and primary bronchial carcinoma.

Vigliana (*33*) reports the radiographic finding resulting from the X-ray examination of 143,000 persons engaged in dusty occupations. Stone and granite workers showed a silicosis incidence of 9.3 percent; workers in steel foundries, 5.9 percent; quarrymen, 12.8 percent; and cement workers, 5.8 percent. It would appear that the last will be of interest in this country where, it will be recalled, Gardner and others (*34*) several years ago conducted a survey of 17 widely distributed cement plants with a total of 2,278 employees. Only eight of these workers showed evidence of nodular fibrosis attributable to dust, and in six of the eight individuals prior exposure to silica dust was presumably responsible for their condition.

Further support regarding the absence of silicosis in cement workers is given by the study of Steinert and Moe (*35*), who conducted an X-ray study of the lungs of 453 male factory workers, all of whom excepting 14 were directly employed in cement plants and including 74 who had been employed in this industry for more than 25 years. None of the workers exhibited any symptoms of silicosis, and these investigators conclude that the cement industry is not a silicosis hazard.

(Continued on page 6)

[1] **Dr. Fairhall, formerly chief of the laboratory section of the Division of Occupational Health, Public Health Service, is now on a research assignment at Yale University, New Haven, Conn.**

The first half of this article appeared in the *Industrial Health Monthly*, November, 1951.

Columbia University Offers Lecture Series to Industrial Hygienists

The Faculty of Medicine, Columbia University, has announced a series of lectures on industrial medicine to be given from 9 to 10 o'clock on Saturday mornings. The first lecture in January is scheduled for January 12 on the subject, "Occupational Dermatoses and Infections."

On January 19 the subject will be "Ventilation, Lighting and Noise"; and on January 26, "Elementary Nuclear Physics; and Radiation Hazards." The last lecture will be given February 2 on workmen's compensation.

The lectures will be given in Amphitheater A, College of Physicians and Surgeons, 630 West One Hundred and Sixty-eighth Street, New York 32, N. Y.

Exhaust Fans and Electric Lift Truck Reduce CO in Warehouse

AN EMPLOYEE of a warehouse telephoned the Industrial Hygiene Section of the Oregon State Board of Health and complained of exhaust gases from a gasoline-engined lift truck which was used a few hours daily near his work station in the basement of the warehouse.

An industrial hygiene engineer of the section made an investigation within 2 hours after the complaint was received. While the basement extended over half a city block, the only ventilation was by means of a few small windows near the ceiling. Carbon monoxide determinations were made and then repeated on the next 2 days. Average concentrations of carbon monoxide ranged from 125 parts per million at the complainant's work station to 200 parts per million in the area where the truck was used. The safe limit is 100 parts per million.

After the exhaust fans were installed, carbon monoxide checks showed average concentrations of 75 parts per million in the trucking area. Within a few weeks, an electric lift truck was on hand and the exhaust gas hazard permanently eliminated.

SURVEY SHOWS ONLY 19 PERCENT OF WEST VIRGINIA WORKERS COVERED BY IN-PLANT NURSING SERVICES

By Faye G. Abdellah and Eugene Levine*

THE WEST VIRGINIA State Nurses' Association recently invited representative citizens' groups to help determine how the nursing needs of West Virginia could better be met. The Division of Nursing Resources, United States Public Health Service, was asked for assistance in conducting the nursing survey. The sponsoring group felt that if an intelligent plan were to be made, it would have to be based on accurate knowledge of existing nursing resources and their relation to current and future needs for nurses.

In any study of the over-all nursing needs of a State, consideration must be given to the nursing services provided by industry. A major facet of the study, therefore, was to determine how much nursing service was available in plants of different sizes and types of industry. Data on the industrial nursing phase of the study were obtained by the West Virginia Industrial Nursing Committee.

The study revealed that in 1943 there were 79 nurses working full time in 46 plants. Today, 8 years later, there are 182 nurses employed in 69 plants, representing an increase of 130 percent in the number of nurses employed and 50 percent in the number of plants employing nurses. About 80 percent of these nurses are engaged in in-plant health services. Others are employed by the mining companies and either work in industrial hospitals or do community nursing.

According to data presented in the accompanying table, the large plant is the major employer of industrial nurses. Of the State's total of 182 nurses, over 70 percent work in plants of more than 500 employees. This concentration of nursing coverage is further borne out in the proportion of large and small plants providing nursing services. Whereas 53, or 44 percent, of the 121 plants with 500 or more employees provide such services, only 16 of the 27,165 plants with fewer employees make services of this type available. Of the 68 large plants that do not provide industrial nursing service, 49 are mining companies, 8 are manufacturing plants, 7 are public utilities, and 4 are retail establishments or contract construction companies.

West Virginia's industrialization has been built around its key production of bituminous coal. The State leads not only in annual production and extent of reserves but also in the quality of coal produced. Moreover, the State's great Kanawha Valley has for a number of years been identified as the chemical center of the world. It is now 1 of 27 States having steelmaking capacity, and ranks fifth among the States in the production of natural gas.

Approximately one-quarter of West Virginia's entire population of 2 million is employed in nonagricultural establishments, of which one-half are manufacturing and mining industries.

The manufacturing industry maintains the most active industrial hygiene program in the State. More than half of the 136,338 workers engaged in manufacturing are covered by industrial nursing services. Among the specific manufacturing industries which provide nursing services, the chemical and the metal-product industries are especially outstanding. In these two industry groups, more than three-quarters of all the workers are provided with industrial nursing service, and every single plant employing 500 or more workers has industrial nursing services.

Despite the broad coverage of workers in some of the larger industries, most industrial employees in West Virginia do not have such services, for they are employed in small plants. These plants, comprising 90 percent of all industrial establishments in the State, employ fewer than 20 workers, and they consider the cost of nursing services prohibitive. To reach all of these and other uncovered workers, industry and the community health agencies will have to approach the problem

*Miss Abdellah, nurse consultant, and Mr. Levine, analytical statistician, are with the Division of Nursing Resources, USPHS. Miss Ingoldsby, industrial nurse consultant with the Bureau of Industrial Hygiene, West Virginia State Department of Health, Charleston, gave valuable assistance during survey.

jointly. Part-time nursing service, which has proved satisfactory in other States, might be furnished to small plants by local health departments on a fee-for-service basis. At present, part-time nursing services are not available in West Virginia.

Recommendations

On the basis of these findings, the West Virginia Industrial Nursing Committee recommends:

(1) That the State Department of Health through its Bureaus of Industrial Hygiene and Public Health Nursing concern itself with the means by which facilities for part-time nursing service can be made available to small plants in West Virginia.

(2) That the committee continue its function through study and development of the five subjects:

Industrial Nursing Coverage in West Virginia, by Type of Industry and Size of Plant, 1951

INDUSTRY	EMPLOYEES		PLANTS			
	Total number of employees	Percent of employees covered by industrial nursing	Total number of plants		Number of plants covered by industrial nursing	
			Less than 500 employees	500 or more employees	Less than 500 employees	500 or more employees
All industries	445,657	19	27,165	121	16	53
Total mining	[1] 135,574	8	2,261	59	1	10
Coal mining	128,591	[2] 7	1,380	58	0	9
Crude petroleum and natural gas	5,681	21	833	1	1	1
All other mining	1,283	0	48	0	0	0
Total manufacturing	[1] 136,338	54	2,050	48	15	40
Primary and fabricated metal products	35,419	78	373	14	6	14
Stone, clay, and glass	30,001	55	215	15	4	12
Chemicals and allied products	23,683	[2] 90	52	10	4	10
Lumber and wood products	11,526	3	943	0	1	0
Textiles and apparels	8,053	22	50	2	0	1
Electrical machinery	6,467	43	16	4	0	2
Tobacco	1,509	40	13	1	0	1
All other manufacturing	18,023	0	388	2	0	0
Total public utilities	28,457	2	1,376	8	0	1
Telecommunications	5,214	10	136	2	0	1
All other public utilities	23,243	0	1,240	6	0	0
Total services	31,495	2	6,266	1	0	1
Hotels	3,604	22	210	1	0	1
All other services	27,891	0	6,056	0	0	0
Total contract construction	20,083	4	1,637	2	0	1
Total trade, finance and real estate	91,786	0	13,081	3	0	0
All other industries	1,924	0	494	0	0	0

[1] Due to incompleteness of reporting, industry subtotals do not add to total; but industry total is correct.

[2] Estimated.

Sources: U. S. Department of Commerce, *County Business Patterns*, Part II, State Reports No. 46, Washington, D. C., 1949; F. S. A., P. H. S., Division of Nursing Resources, *Nursing in West Virginia*, August 1951, pp. 17–25.

(*a*) Criteria for the evaluation of in-plant nursing service;

(*b*) Employment standards for industrial nurses;

(*c*) In-plant orientation facilities for newly employed nurses;

(*d*) Continuous in-service education programs; and

(*e*) Curriculum content for schools of nursing which emphasize the implications of occupational health for all nurses.

SILICOSIS—

(Continued from page 3)

McLaughlin and his associates (*36*) have recently published a complete study of silicosis in iron and steel workers. This report comprises an investigation of 3,059 workers in 19 foundries, together with an analysis of the records of the lung diseases in foundry workers in the files of the Factory Department and of the Silicosis and Asbestosis Medical Board, as well as pathological investigations of the lungs of 64 foundry workers and dust surveys in 3 foundries. This report, which is too extensive to more than record for reference, is an excellent example of coordinated planning and scientific investigation.

In general, it may be said that owing to better protective measures the proportion of cases of silicosis occurring in industry in comparison with the number of workers exposed has diminished within the present generation. Nevertheless, silicosis still remains one of the most important of the diseases of industry.

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KENTUCKY NEEDS ENGINEER

An engineer is wanted in Kentucky's Division of Industrial Health, State Department of Health, 620 South Third Street, Louisville 2, Ky. A brief job description follows: Starting salary, $3,360–$3,600. Engineering degree required, preferably in chemical engineering. Three years of experience in industrial hygiene, or industrial engineering or chemistry, are necessary. The work to be done involves general industrial hygiene field evaluation and control work.

Shoemakers Substitute Safe Material for Toxic Methanol

SEVERAL small companies in New Hampshire manufacture and cover wood heels for shoes. In the process of covering the wood heels with celluloid, methanol was used to soften the celluloid prior to shaping it on the wood heel. The methanol was usually used in open vessels on benches.

Several studies were made to measure the concentration of the methanol vapors in the breathing zone of the workers, and these indicated that while, in general, exposure was not too excessive, it often was above the maximum allowable concentrations.

Conferences were held with representatives of a chemical company, and a new formulation was developed consisting essentially of acetone, denatured ethyl alcohol, and small amounts of ethyl acetate. Through discussions with the plant owners, arrangements were made to try out this new celluloid softener. The formula is now used by the plant, and one similar to it is used by a competitive company in the wood heel covering business.

Studies of Health Hazards in Industry

RADIATION

By J. J. Bloomfield

This article is one of a group of lectures which Mr. Bloomfield gave to a class of physicians in Rio de Janeiro, Brazil. In view of the constant demand for basic material on industrial hygiene techniques and for practical help in this field, a number of these lectures are being printed in Occupational Health. This is the sixteenth in the series.

FOR GENERATIONS, man has been subjected to the effects of certain kinds of radiation, but it has been within the last several decades that technological developments have made certain aspects of the problem of interest to preventive medical personnel.

Infrared Rays

These are the longer wave lengths in the electromagnetic spectrum that lie just below the visible. They are the heat waves. Man has been exposed to them throughout the years, and certain occupations have provided more or less severe exposures. They do not penetrate deeply into the skin and have primarily a heating effect on the body surfaces that they strike. They have been purported to cause cataracts of the eyes among such workmen as glass blowers, but this assertion is still under some controversy. Because of their heating effect, it may be necessary to take into account the additional heat load they throw upon the body in furnace areas and other similar locations and to devise protection for the worker in the form of shields, air-cooled clothing, or other devices.

Ultraviolet Rays

Nearly everyone is familiar with the effect of ultraviolet radiation because it is capable of producing severe and disabling skin and eye irritation. Without consciously taking into account all the reasons therefor, the sun bather takes with him to the beach a pair of dark glasses to protect his eyes from glare and a jar of lotion to prevent sunburn. Sunburn lotions contain materials which absorb ultraviolet radiations of the wave length that causes burning of the skin and allow to pass those wave lengths which stimulate the skin to produce melanin in the tanning process.

Industrially, the most familiar trade in which ultraviolet radiation is a problem is in electric arc welding. The welder is protected by clothing which completely covers the exposed portions of his body. The face and eyes are protected by means of a helmet with a glass insert to provide vision. The transmissive properties of the glass required for certain types of work have been sufficiently well-established so that it is possible to specify the grade of glass needed for welding operations involving specified voltages and rod sizes.

There are other sources of ultraviolet radiation which must be taken into account in the field of industrial hygiene. The type and location of germicidal lamps may create a problem. The use of ultraviolet lamps in the home for winter cosmetic tanning can be abused. Other potential exposures are the solarium in the health club and the arc lights in the photographic studio or the motion picture projection booth. In general, exposures should be limited to less than 0.1 microwatt per square centimeter for a 24-hour continuous exposure and to less than 0.5 microwatt per square centimeter for a normal working day.

Tolerance is no doubt increased between the "white" stage and the "tanned" stage.

X-rays

In 1895, a German investigator, Wilhelm Konrad Roentgen, described a new type of emanation produced in a discharge tube with which he was experimenting. This tube, operated at low pressure and with a discharge occurring between a cathode and anode at either end of the tube, produced rays which were capable of affecting a photographic plate much as would visible light. Since the turn of the century, the uses and applications of this initial discovery have become commonplace. The clinical X-ray and fluoroscope are familiar to all of us, and it is largely due to the use of these rays in the medical profession that we have accumulated experience on the damaging properties of these radiations. We know that they are capable of damaging the blood stream with a serious reduction in the white-blood count, sometimes to such an extent that the individual becomes prey to infections. Necrosis and loss of the fingers or other parts of the body that have been exposed for a long time also have occurred.

Epilation, or loss of hair, has resulted from overexposure to X-rays. Even now, the removal of unwanted hair is sometimes done with X-rays. Sterility, temporary or permanent, has occurred. X-rays, used in the treatment of cancer, is also known to cause cancer among those people who have been exposed to excessive amounts over long periods of time.

Experimentally, X-rays have been shown to increase the rate of mutations. In the fruitfly, the mutation rate is nearly a direct result of the amount of radiation and implies a statistical relationship which infers caution, since effects of exposure in man may not appear for several generations.

Expanding rapidly beyond the medical and dental fields, the use of X-rays is becoming an industrial and public health problem. Industry has found that very hard X-rays can be used in the inspection of such articles as metal castings, and several dozen installations have already been made where X-rays in excess of a million volts have been used. The shoe-fitting machine is a commonplace item and should be particularly suspected since it is known that bones of growing children are more susceptible to the action of X-rays than are those of adults.

The fluoroscope is employed for the inspection of food packages. It is also used by the police to detect concealed weapons in parcels brought into prisons by visitors. Laboratory study of crystalline materials may involve the use of X-rays, too. These, however, are but a few examples of the uses already found for X-rays. There are many others and still more can be expected to be developed.

How does one protect the worker against the harmful effect of these rays, and how does one assay the protection

provided? As indicated earlier, we have enough information now to conclude that the individual should not be exposed to more than 0.05 roentgen (r) per day nor more than 0.3 r per week. The exposure is cumulative, and any excessive exposures should be followed by a period of reduced, or zero, exposure so that the accumulated exposure is brought back to the rate mentioned above.

A great deal of data has been amassed on the relative effectiveness of shielding materials, and any X-ray installation should be made in such a manner that it does not become a hazard to nearby personnel. For most installations sheet lead of suitable thickness, depending upon the strength of the rays, is employed, although economic considerations may make it more desirable in certain instances to use a material such as concrete. For special applications, suitable protection has been devised through the use of lead in glass sheets or as fibers that have been woven into clothing, lead-impregnated aprons and gloves, solutions of lead salts, and others.

The monitoring of the individuals potentially exposed to X-rays should be done after the initial installation and periodically thereafter, and especially if changes in operating techniques, shielding, or X-ray source have occurred. Film badges have found wide acceptance in this capacity since they are small, convenient, dependable, and integrating. Their accuracy, if calibrated against X-rays of equal intensity, is entirely acceptable, although greater accuracy may be secured by other and possibly less convenient means, and as pocket electroscopes or portable Geiger counters.

Other Types of Radiation

The development of the atomic bomb has brought with it the ready availability of radioactive isotopes for experimental and industrial applications. As a result, the problem of exposure to ionizing radiation has become an important problem in the field of industrial hygiene. As new applications are found, these problems will be increased many fold. Already, they have required a revision of our thinking with regard to the protection of the individual from ionizing radiation, and have developed new definitions of exposure. These newer problems, however, are in such a fluid state that only those actively engaged in the field are competent to give a fair appraisal of our achievements and objectives.

In the past we have been able to use the roentgen as a unit of exposure, defining it as that quantity of radiation which produces 1.6×10^{12} ion pairs (or 83 ergs of heat energy) in 1 gram of air. Recent developments have indicated that a better terminology would be to use the roentgen equivalent physical (rep) which would be that amount of ionizing radiation that would produce an equivalent amount of ion pairs in tissue. Even the rep has not been adequate for the needs of the health physicist, and the roentgen equivalent man (rem) has been employed where the responses of man to thermal or fast neutrons have not been in keeping with the physical measurements of its ionizing capacity.

The most recent data on the maximum permissible levels of exposure are those agreed upon at the Chalk River, Canada, conference in 1949. Representatives of the Radiation Protection Committees of the United States, Great Britain, and Canada agreed on the following:

Maximum Permissible Tissue Dose Limits in Reps Per Week

Type of radiation	At any point within the body	RBE	In the basal layer of the epidermis	
			Exposure of entire body	Exposure of hands only
X-rays and gamma rays...	0.3	1	0.5	1.5
Beta rays.....	.3	1	.5	1.5
Protons.....	.03	10	.05	.15
Alpha rays.....	.015	10	.025	.075
Fast neutrons.....	.03	10	.05	.15
Thermal neutrons.....	.06	5	.1	.3

RBE = Relative biological effectiveness.

The monitoring of personnel exposed to any of the foregoing is a heavy responsibility. The damage is cumulative—from day to day and if more than one type of radiation is present it must be considered additive. In certain cases it is necessary to consider the possibility of inhaling or ingesting radioactive materials which may be deposited in the body and eliminated very slowly. Since no pain is associated with excessive exposure, irreparable damage may occur without the knowledge of the worker.

Frequently, multiple monitoring devices—film badges, pocket electroscopes, and Geiger-Mueller counters—are used to check on exposures. In each case, it is most important to know the type of radiation and its intensity. Sometimes this information is not available or, in some cases, has not yet been determined. Correct monitoring techniques with frequent calibration of the equipment cannot be stressed enough.

The effects of excessive exposure to the various radiations mentioned above can be analogous to those produced by X-rays. Medically, it is most important to have an adequate preemployment examination on each worker and to regularly compare the white blood count with the base line thus established. There are other medical reasons for a lowered white blood count, but an excessive exposure record, as determined by monitoring or that might occur by accident, associated with this lowered count should be regarded with a great deal of suspicion.

If the radioactive material is a solid or a liquid, maximum protection may be afforded the worker through the use of shielding, remote control (distance), and by reducing the time of exposure. If the substance is a dust, gas, or mist, there is the necessity for avoiding inhalation or ingestion. Ventilation may solve the problem, but it may be necessary to clean the exhaust air to avoid excessive contamination of other areas.

Respirators or self-contained breathing equipment may be required. Protective clothing may be required, and its cleaning or disposition may present a problem as great and diverse as the type and amount needed.

If the workplace becomes dangerous, it must be decontaminated. It will be necessary to enforce rules on eating and smoking, and it may be necessary to set up hand-washing and bathing schedules. Shipping and handling, waste disposal—all of these are but a few of the problems given to us with the opening of the Pandora box.

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Georgia Nurses Use Picture Story to Promote Industrial Nursing

By Josephine Kinman, R. N.*

VISUAL aids have long been recognized as a valuable means of stimulating interest in a subject. They also provide one of the easiest means of learning. In exploring this medium, the Industrial Hygiene Division of the Georgia Department of Public Health has found that the best visual aid materials are "right in your own back yard."

An exhibit and material were needed to demonstrate the activities of industrial nurses to student nurses, prospective industrial nurses, management, nurses in other fields of activity, and nurses already engaged in industrial nursing. These were to be used at the joint convention of the Georgia Association of Industrial Nurses and other nursing organizations of the State.

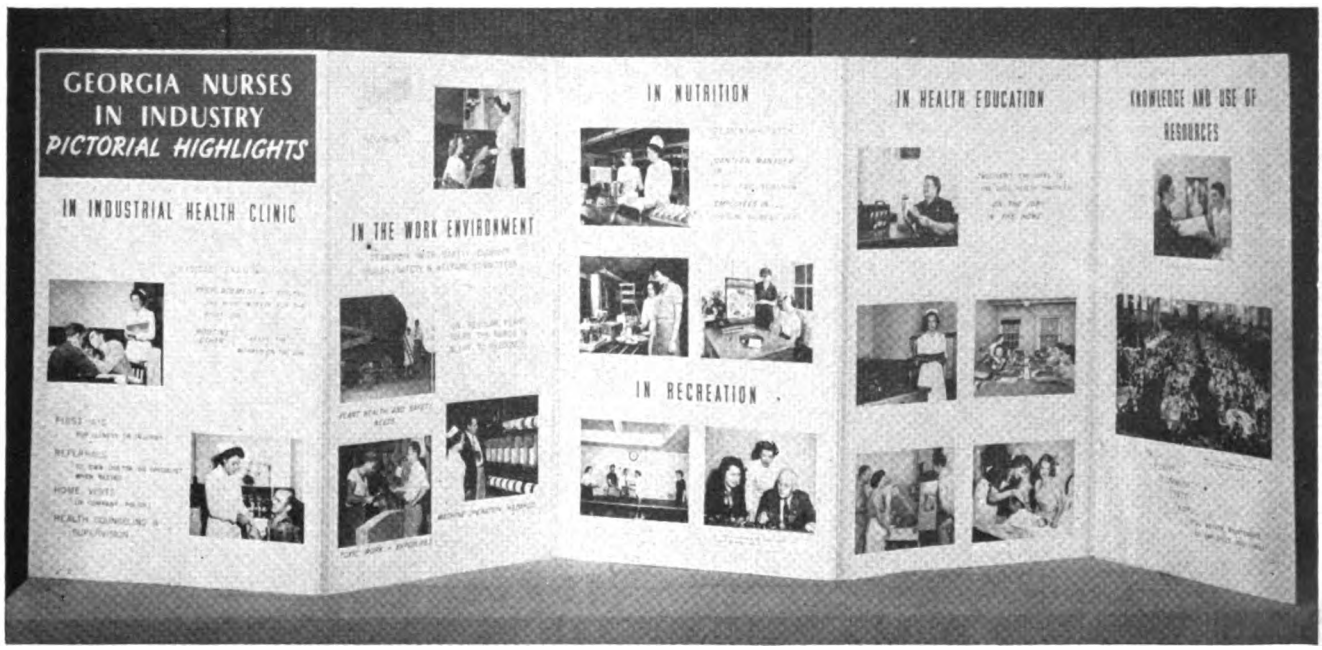
With the cooperation and suggestions of a number of nurses in industry and a health education artist, the nursing consultant and a photographer from the State Health Department went into the field to gather their pictorial story. After a 600-mile trip, they obtained about 40 photographs showing the activities of industrial nurses.

Eighteen of the 8 by 10 prints were arranged on five chipboard panels that were joined together for the complete display. Individual pictures were made of each of the five panels, and several miniature exhibits were assembled. The large exhibit itself, however, is not difficult for one person to handle since the panels are folded together when not in use. It can be enclosed in a cardboard case with handles which facilitate its transportation.

The other photographs, not included in the main exhibit, were put in a leather album and placed on display with take-home printed material on many phases of industrial nursing.

Since its original showing at the meeting of the Georgia State Nurses Association, this exhibit has been used on many occasions, including student nursing classes and in-service education programs for public health nurses.

*Miss Kinman is the industrial nursing consultant for the Georgia Department of Public Health.



1951 INDEX—INDUSTRIAL HEALTH MONTHLY

(Formerly *Industrial Hygiene Newsletter*)

Volume 11, Numbers 1–12 (1951) by subject, author and locality

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Michigan State College Plans Short Courses in Industrial Ventilation

Michigan State College, East Lansing, has announced a short course in industrial ventilation to be given February 25 to 28, 1952.

Among the lecturers are several engineers from the Division of Industrial Health, Michigan Department of Health—John C. Soet, K. E. Robinson, and R. S. McClintock. George M. Hama of the Bureau of Industrial Hygiene, Detroit Department of Health, is also one of the instructors.

REPORTING MAKES HISTORY

Hatter's disease and the secret—According to legend, St. Clement, the patron saint of hatters, on a pilgrimage to Jerusalem lined his sandals with camel's hair to ease his feet; and the combined action of heat, pressure, and sweat produced a sheet of felt. The making of felt is centuries old. Oriental shepherds are believed by some to have accidently discovered the felting property of wool when subjected to heat, moisture, and gentle pressure. It was known to the Greeks and Romans. Pliny said that the Greeks made a felt so strong that it would resist a sword stroke, especially if vinegar were used to make it.

In the middle of the seventeenth century, mercury nitrate was first used because it makes felting much easier, in that it softens the stiff hairs. Its use was kept as a valuable trade secret by the French Hatters Guild, and the French had a monopoly of felt-hat manufacture until 1685. In that year, the Edict of Nantes drove the Huguenot hatters over to England, and they took their secret with them.

A French workman, Mathieu, returning from England in 1747, gave away "the secret" to his companions in Paris. The French still call the liquid "le secret" and the process "secretage." The English word for the process is carrotting; the nitrate solution is called carrot because it turns white fur a reddish brown color. Gradually, the use of mercury carrot was introduced to all industrial countries and with it, le secret real, mercury poisoning.

Reporting Promotes Health

The earliest study of mercurial poisoning in the hatters' trade was reported by Dr. J. Addison Freeman of New Jersey. In 1878, in the annual report of the New Jersey Board of Health, Dr. L. Dennis reported on 1,546 workers. Harris of New York in 1922 reported 53 cases, whereas Wright of Connecticut found 53. Two studies by the Public Health Service revealed 59 cases among 534 hatters.

These reports led to a conference in 1941, called by Dr. S. H. Osborn, health commissioner for the State of Connecticut, with the Surgeon General of the Public Health Service industry in the United States. As a result of the conference, it was decided to ban the use of mercurial and representatives of the hatting carrot in the preparation of hatter's fur or the use of such carrotted fur in making felt hats. Some 31 States have adopted these regulations.

Thus because of these occupational disease reports, nonhazardous processes are now in operation in this industry.

All occupational diseases may be reported through your State board of health or your local health department.

Report All Cases of Occupational Disease

No. 5 of series prepared by A. Link Koven, M. D., USPHS.

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