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April 19, 1940

REPORT ON NEW ENGLAND HEALTH INSTITUTE

MEETINGS HELD AT HOTEL BOND,
HARTFORD, CONNECTICUT
APRIL 17 and 18, 1940

1. The Effect of Various Dusts on the Human Organism, Dr. LeRoy V. Gardner, Director of Saranac Laboratory, Saranac, New York.

In Dr. Gardner's discussion on the above subject, he stated that the objective was to reduce injurious dust conditions, and thereby reduce the rate of diseases. To achieve this objective it is necessary to understand the reaction which different dusts have on the human organism, and it must be understood that all dusts have the following four properties:

(a) chemical and physical
(b) particle size
(c) concentration
(d) duration of exposure

In order to study the chemical and physical properties of dusts, quantites of sample dusts are injected into animals, in this case rabbits, and their change in physical condition carefully studied. Injections of this type tell whether or not the sample used is injurious to health, but it gives no clue as to whether or not absorption through inhalation takes place or what quantities of the sample would be necessary to result in illness. It has been determined that free silica dust is very harmful and extreme care must be taken to keep free silica dust from the lungs. Silicates, such as garnet, sillimonite and sericite, are, on the other hand, inert and are considered irritating and troublesome but not toxic.

Mixtures of pure minerals are not as injurious as the pure minerals. Mixtures of silica and other substances are not particularly harmful until the quantity of free silica is 50 per cent or over.

Fibrous substances, as asbestos, cannot be studied by injection.

The particle size of injurious dust must be small enough to pass through the air ducts leading to the lungs. Silica particles under three microns are dangerous.

Concentrations of dust-laden air of over 5 million parts/cu. ft. for silica and 50 million parts/cu. ft. for floor dust are considered harmful to health.

The duration of exposure to injurious dusts, of course, depends on the concentration of dusts being inhaled, but usually it takes years of exposure for chronic cases. In rapid cases where the percentage of free silica is high, illness may result in about two years.

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2. Industrial Dermatitis - Incidence, cause, and Prevention. Dr. Louis Schwarts, Medical Director U. S. Public Health, National Institute of Health, Washington, D. C.

According to Government statistics shown by Dr. Schwartz, dermatoses of various kinds account for 65 per cent of all occupational diseases. Compensation cases resulting from dermatoses represent about 1 per cent of the total cases reported; however, much lost time is reported and many persons are rendered temporarily non-productive due to skin infections.

Synthetic resins account for about 7 1/2 per cent of all dermatitis cases. This knowledge should be of importance to us, the Raybestos-Manhattan Company, inasmuch as we handle quantities of these materials, as well as many irritating solvents and compounds.

Rubber gloves should not be used more than necessary because they often cause dermatoses from perspiration and from fillers and compounds in the rubber glove itself.

Susceptibility to skin diseases is, in general, classed as follows:

(a) Negroes, brunettes, and Latins are less apt to become infected than white persons, blondes, and persons of other races.

(b) Hairy men are more apt to be infected than less hairy men.

(c) Diet has a lot to do with susceptibility to skin troubles, inasmuch as the foods eaten affect the P-H, or acid-alkaline, balance of the perspiration.

(d) A young person or a new person at a job is more apt to develop a dermatitis than an old hand who has built up resistance to infection.

(e) Women are less apt to have skin infections than men, probably because they are more particular about their personal cleanliness than men are.

Allergy is a term used to denote increased susceptibility to skin infections. Allergies are of two types, inherited and contact. This latter type is produced in some persons by repeated exposure to some irritant. Allergic persons should be removed from contact with the irritant and given jobs elsewhere.

Wounds and skin abrasions are excellent places for skin troubles to start and should be taken care of immediately.

The best safeguard against dermatoses is cleanliness of person and surroundings. Where irritants must be handled, compulsory baths and clothes changes are recommended.

J. F. Fenning, Report on the New England Health Institute Meetings (1940)
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3. The Use of Respiratory Protective Equipment in the Protection of the Worker's Health. William P. Yant, B. S., Directory of Research and Development, Mine Safety Appliance Company, Pittsburgh, Penn.

Respiratory protective equipment is divided into two general classes:

(a) Emergency
(b) Non-emergency

The emergency type of respirator is designed to be used where a person cannot exist and not become physically harmed for even a very short interval of time, and is to be used, as the name implies, in emergency cases, such as fires, explosions, etc. Location of this type of apparatus is important, since it may be reached and put on quickly in case of trouble. Emergency respirators are usually self-contained and are not designed to work in easily or long but to serve the user with oxygen or clean air, although he may be in a highly toxic or suffocating atmosphere.

The group of non-emergency types of respirators are the kind used for general factory work where it is necessary for a man to work in atmospheres that might prove harmful to him if he worked in this exposure over long periods of time. They are designed to render the air which he breathes clean enough, so that no illness will result from his occupation no matter how long he works at it.

Some non-emergency respirators are merely air filters, removing only irritating, solid particles from the air. In using these respirators, care must be taken to have the proper respirator for the type of dust in the atmosphere. Many of these respirators are good enough for non-toxic dusts but are not effective enough against toxics, such as lead, to prevent illness.

Air containing smoke of finely suspended particles must be cleaned through some special type of filtering or absorption, as well as air containing vapors and fumes.

It is the problem of manufacturers making this type of equipment to develop an all-purpose respirator but, since no such make of the non-emergency type is available, it is necessary that each problem be studied carefully and the proper respirator used for the condition under consideration.

One of the biggest problems facing manufacturers today in regard to keeping their employees well is making the employees obey instructions. In the cases which we are now discussing, the problem is to make the employees wear the respirators. In issuing respirators to employees, some definite form of procedure should be followed:

(a) Explain to the employee why he is expected to wear protective equipment.

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(b) Teach him to breathe properly in it. It is the natural tendency of persons to fight obstructions to normal breathing, and the reaction is to make a voluntary action, respiration is increased, and heart action speeded up. With proper training, a man can breathe involuntarily and easily in a respirator, if the respirator is properly designed.

(c) Fit the respirator to the employee's face, so that he is comfortable in it. Adjust head straps properly, so that the mask will fit his face comfortably.

(d) Issue a respirator to one employee only, never swap or expect men to "take turns" with the same mask.

(e) Have "refills" accessible to employees.

(f) Insist that foremen and executives also wear protective devices when they are inspecting or supervising hazardous jobs.

(g) Never ridicule a man's appearance when wearing a respirator; never ridicule a man for being afraid if he is cautious or over-cautious in regard to wearing a respirator.

4. Engineering Methods of Occupational Disease Control. B. F. Postman, M. E., Industrial Hygiene Engineer, Connecticut State Department of Health.

Mr. Postman's address served as a very fitting summing-up of the Industrial Section of the Health Institute Meetings. He showed very conclusively how properly engineered jobs served to reduce hazardous situations to a minimum.

Operations producing either dust or smoke should be hooded and connected to a fan so that either the smoke or dust would be drawn out of the room before it could either get on or be breathed by the operator. Mr. Postman showed a number of slides picturing actual operations both before and after proper ventilating systems had been installed.

The main obstacle which Mr. Postman's office meets in trying to get a manufacturer to make a proper installation is the price of such an installation, its maintenance, and the cost of heating the air which is exhausted through the system. Mr. Postman's argument against this is that by properly engineering these installations, by locating properly designed suction orifices at the proper places, the costs can be cut to a minimum, in many cases to not over present ventilating costs with improper designs. The largest savings effected by properly exhausting dust, vapors, and smokes is the reduction in compensation cases.

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Properly engineered exhausing systems have the following bearing on the control of occupational diseases:

(a) Dust and harmful vapors are largely eliminated, thus reducing the number of diseases cuased by them as discussed by Dr. Gardner.

(b) The removal of these dusts is conducive to good housekeeping. Operators and Plant are kept much cleaner, thereby reducing the dermititis troubles reported by Dr. Schwartz.

(c) By removal of a large portion of dusts and vapors working spaces which are not rendered entirely free are at least placed in a class where non-emergency types of respirators may be used with perfect safety to operators.

With the exception of Mr. Yant's talk on Respirators, all of these addresses were given from illustrative slides, which made the lecturer's points very clear to the listeners but also made note-taking very difficult. The above report is, therefore, not as complete as it might possibly be, but in it I have tried to cover the high spots of each talk.

I had the pleasure and opportunity of meeting the following men directly connected with this Health Institute:

(a) Dr. A. S. Gray, Director of the Bureau of Occupational Diseases, Connecticut State Department of Health.

(b) Mr. A. L. Coleman, Chief Industrial Hygienist, Conn. State Department of Health.

(c) Dr. LeRoy U. Gardner, Director of Saranac Laboratory.

(d) Dr. Louis Schwartz, Medical Director of the U. S. Public Health Service.

(e) Mr. B. F. Postman, Industrial Hygiene Engineer, Conn. State Department of Health.

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