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DUST CONTROL THROUGH ORGANIZED RESEARCH

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MANY a small plant owner is in sympathy with the movement to reduce dust, but he does not have the financial resources to plunge into the problem.

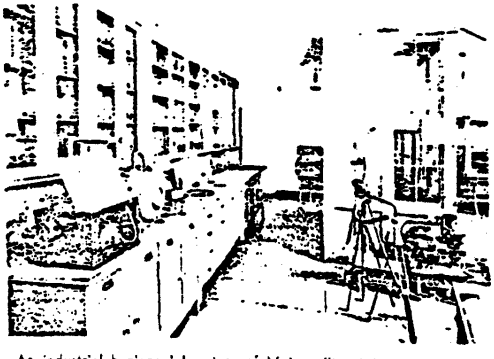
What *can* he do about it?

I should like to call to your attention the problem of the large plant as contrasted with the little fellow in organizing a dust control program. A concrete illustration may give us the picture better than anything else.

Let's make up, therefore, a composite of the best parts of several programs now being carried out by several good-sized companies. In point of fact, no one company can be paraded as perfect, but we can imagine that such a faultless organization actually does exist, and we shall label it "Consolidated Corporation."

In 1931, Consolidated Corporation was buying sand from a nearby sand plant. The sand plant was small in size, having about 100 men on its payroll. All of a sudden, at the depths of the depression, the sand operators were faced with silicosis claims presented by former employees, amounting to hundreds of thousands of dollars. Alarmed at the catastrophe that had befallen its neighbor, Consolidated Corporation quite naturally wondered how clean its own backyard was, for although it had escaped the "ambulance chasers," the fact remained that it handled tons and tons of silica sand —a potential hazard.

This urge for self-examination was born in the *legal* department of Consolidated Corporation, and this is the first important fact to bear in mind.



An industrial hygiene laboratory of Metropolitan Life Insurance Co.

Silicosis Unknown

Silicosis was just as new to the large company as to the sand company, and everything had to be learned from scratch. First of all, a committee was made up of a member of the legal department, a member of the insurance department, and a member of the executive department. This board of strategy was appropriately labeled "Hygiene Committee."

The help of the engineering department was solicited in making a study to see if a silica hazard actually did exist. Generous sums were spent on laboratory apparatus, and Public Health Reprint No. 1528 on the impinger was practically memorized. The only man who had had microscope experience was drafted from another important engineering survey and put on dust-counting in the company's plants from coast to coast.

Dust samples showed that control equipment was needed at certain jobs, and the Hygiene Committee had to hire an engineer to devote full time to these activities.

Thus the Committee had a full-time lawyer and a full-time engineer marshalled against the dust menace. It should be noted that the legal department not only saw the *need* of dust control, but took the *initiative* in pushing it.

Importance of Dust Counts

Engineering work included the spotting of dust exposures through dust counts. Then as control measures, bins were vented, hoppers were hooded,

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and conveyor transfer points were enclosed. Exhaust systems were installed where needed. A system of monthly maintenance reports was set up, with copies going to the plant manager and the general offices.

With no rule-of-thumb data available to give the proper volumes and air velocities for the exhaust systems, field tests were made with experimental hoods and a portable exhaust fan. In some instances, worthwhile information was obtained in this way, but in others, the field tests interfered so much with plant operation and took so much of the time of the already short-handed maintenance departments, that the tests were not practical.

Respirators had already been furnished years ago —and these, incidentally, were as good as the market afforded at that time.

When the Bureau of Mines issued its respirator schedule No. 21, Consolidated Corporation adopted approved devices. Every man was given two respirators, each marked with his number so that they could be cleaned on alternate days. A man will really wear a respirator conscientiously when he knows he gets his *own* back, cleaned every day.

Courtesy Harvard School of Public Health.

Metal spray gun. Note respirator protection.

You can see that these mechanics of dust control are not novel. To put them into *practice*, however, was a story of another color. It was a story many authors of technical papers skip over hurriedly. Dust control work out in Consolidated's plants was not so much "engineering" as just plain "selling." Everyone from the plant manager down to the janitor had to be "sold" on the reasons for keeping down dust.

First Line of Attack

With the expansion of business that followed the depression, industry blossomed out with new bins, new elevators, new drills, new machine tools, and even whole new plants, and Consolidated Corporation was no exception. A rare opportunity was here afforded to design this new equipment and these structures with the thought in mind of making them dust-free. The help of equipment manufacturers was enlisted, and the slight extra cost entailed in the *sensible* designing of a dust-free tool was *well* invested. No other approach to the problem is so fundamental nor so productive as this. This is a line of attack which should be followed by everyone purchasing anything from a one-inch grinder to a factory building.

On the medical side of the picture, Consolidated instituted pre-employment examinations. The task of finding satisfactory X-ray machines in some of the smaller towns was in itself difficult, and some plants had to transport their men over 200 miles for the X-ray, thus adding to the expense. *Periodic* check-up examinations on new employees were carried out.

"Playing with Dynamite"

Throughout this period, which we called the first phase, there was a feeling of tenseness, of playing with dynamite, for every precaution had to be taken to stifle any outburst of false personal injury claims such as had beset some other companies. The situation was paradoxical; on the one hand, each plant of Consolidated Corporation had to be instructed in the dangers of silica dust so as to be fully aware of what genuine hazard existed; but on the other hand, mention of the word "silicosis" was made in hushed whispers for fear some less scrupulous person might say "Here's where I can cash in." This difficult situation existed because silicosis at that time was not under the Compensation Laws of any State in which Consolidated operated.

The legal department worked with industrial organizations, labor groups and insurance companies, in bringing pressure to bear on State legislatures so that one by one silicosis was brought under (workmen's) compensation and taken away from the jury. As each state enacted a compensation law, with its attendant assurance of fair play, a huge sigh of relief was passed.

Dust Abatement Permanent

Up until now, the position of the Hygiene Committee was quite irregular. Here was an *engineer* attached to the *legal* department and assigned to work that had industrial *health* as its prime end. Thus, legal, engineering and medical activities were carried on in one room, but there was no space to fit this room into the company's house. From an organization point of view, dust abatement work was a "pain in the neck" when it came to tying it in logically with some department of the company. The remedy was found, however, when the personnel department of the company took over this work and incorporated it in health and safety, good housekeeping medical service and employee relations program that it was already carrying on. Dust control work was not merely "lodged" in the personnel department but was permanently built into it and today the company's safety program includes not only accident

prevention but occupational disease prevention.

With the program now in its fifth year, the *third* era of Consolidated's experience is dawning. What was born as a "pain in the neck," has now grown into a full-fledged interest in occupational disease in general, not merely silicosis. The trend is shown by pre-employment examinations for everyone, and the increasing use of voluntary periodic examinations. It is reflected in a different type of plant doctor; he is no longer just a bone-setter, but an industrial physician on the lookout for both accidental and *health* injuries. It is further reflected by a better understanding of the purpose of physical examinations. Their chief function is to aid the personnel director in placing the individual who has some disability in a job for which he is physically suited. Their function is *not*, of course, to weed out from industry every individual who has a physical disablement.

While the actual amount of money that Consolidated Corporation has spent on these three phases of its silicosis problem is unknown, it is easy to see that salaries, equipment, consultant's fees, and expenses of other kinds during the 5-year period have amounted to a very considerable sum. *Such* a program is *too expensive* for a *small plant*. Although everyone is "in sympathy with the movement," the wherewithal is not always to be found.

Help for Small Plants

There must be some agency that a small plant can turn to, some clearing house that will tell it what it's all about. Fortunately, today we can name such agencies. Many are still in swaddling clothes, but the infants are husky.

First, recognition should be given to the old-timers who were well established long before the depression bred the silicosis "racket." The United States Public Health Service, for one, has for years been vitally concerned with industrial health conditions. Dr. R. R. Sayers' Division of Industrial Hygiene handles specific problems of industrial companies with amazing skill and much patience.

The Bureau of Mines, likewise, for years has studied dust conditions, especially in the mineral and allied industries. The Director is constantly tackling specific problems that are of general application.

Two other leaders through seniority and accomplishment are the Harvard School of Public Health and the Saranac Laboratory.

Insurance Participation

One of the most fruitful sources of information for the small company is its insurance carrier. Insurance companies like the Aetna, American Mutual, Employers Mutuals, Liberty Mutual, Metropolitan, Travelers and others, have an engineering and medical service that is outstanding.

Rock drilling in building excavation work, New York City.

Industrial trade associations, like the American Foundrymen's Association, have done yeoman service in making available material on dust control to their members. The American Society of Heating and Ventilating Engineers, The American Society of Mechanical Engineers and the American Standards Association, through committees, have crystallized the thought of the authorities on particular engineering phases. ASA Code Z9 on factors involved in the fundamental design of exhaust systems, is a bible for any engineer who delves into this phase of the work.

With the burst of interest of state legislatures in occupational disease, many states have set up bureaus of occupational disease for the service of industry.

In addition to these, there are at least two developments that are backed by industry itself. One is the Occupational Diseases Research Department of Northwestern University. This unit began to function last November and has a dispensary clinic to which any case claiming occupational disease can be referred. An excellent aspect of the plan is that the staff spends half its time in the research department and half out in the plants making industrial surveys. Its first symposium was held last September.

Air Hygiene Foundation

The other development is the Air Hygiene Foundation, of which Harry Meller is managing director, with offices in Pittsburgh. The Foundation is unique because all phases of the hygiene problems are considered—engineering, medical, and legal. It was incorporated at the end of 1935, after a year of preparation, and its initial assignment, which has

just drawn to a close, was to gather together the *facts* relating to silicosis in all its phases, and to evaluate them. The results are three reports: engineering, medical, and legal. They are of unusual merit, and could only have been obtained by the pooling of resources and united action in the part of recognized authorities who compose the three committees.

This fact-finding survey showed many chinks in the structure of silicosis knowledge that needed to be filled in by further research. A research program has now been drawn up by the Foundation in the light of this first survey, and with the sponsoring of this, the Foundation has taken its second step.

Special Problems Handled

Special problems of members are dealt with by the Foundation which is well equipped for this service because of the exhaustive library that has been assembled and because of the ability of the members of its technical committees.

Membership in the Foundation is open to any industrial company for a fee that is scaled according to payroll.

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