BRICK & CLAY RECORD

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We're Out of the Depression And On the Way Up

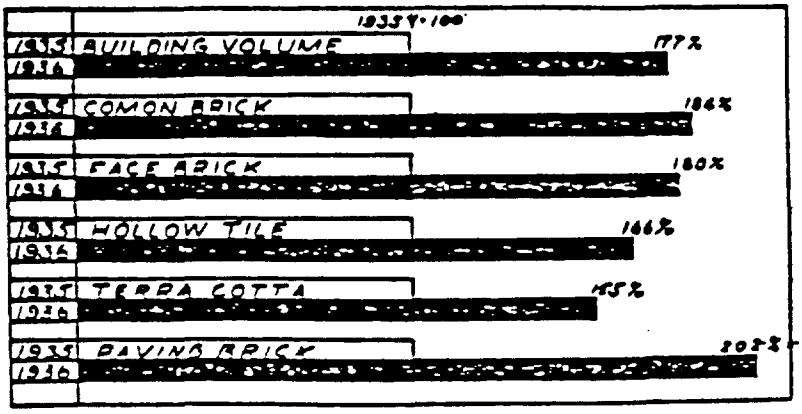
Clay Products Shipments Increase 79.5% Over 1935 and the Industry Is Operating at More Than 50% of Normal—Purchases of Clay Machinery Also Rise to 50% of Normal

DURING the past six years there have been a great many hot stove economists who, for lack of something constructive to do, tried their hand at making forecasts and prognostications concerning the building industry. Among the gratuitous opinions offered there were many predicting a complete revolution in building. Prefabricated construction, using so-called new materials such as steel sheets, plywood, porcelain enamel, glass, and others, was going to take the place of the standard old-line materials, they said. "Brick and tile are out of the picture because they cost too much to lay, and modern materials are different." All too often the clay products industry has heard this pronouncement of doom.

How true have these predictions been?

Here we are at the beginning of a revival in building, the chief market for clay products, and we find the clay products industry accelerating production and shipments at a pace equal to and in some instances actually exceeding the pace set by construction. There is overwhelming evidence that clay products are being used in construction in just as large a proportion of the total building volume as ever before. In the field of residential construction brick and tile are probably being used to a greater extent than during the building boom of the '20s.

Increased activity among brick and tile plants is unmistakable. According



The splendid record of recovery which the clay products industry has made in 1936 is graphically shown here. Increases in common and face brick shipments actually exceed the increases in the building volume. Figures from Department of Commerce reports and F. W. Dodge.

PLAINTIFF'S EXHIBIT MHD-111

When and How Silicosis Can Be Contracted

Only Dust Containing Free Silica in Very Finely Divided State Can Cause Silicosis—Control of Dust Conditions and Periodic Examinations Essential

BHS—DE—1696

A. J. Lanza, M. D.

Assistant Medical Director Metropolitan Life Insurance Co., New York City

THAT certain kinds of dust cause damage to the lungs when inhaled has been known for centuries. Even the ancients knew that there was a definite relationship between mining in certain kinds of rock and a disease which was evidenced by short-windedness, which they called asthma. A number of other terms have been used to describe this condition, such as miner's consumption, miner's phthisis, grinder's rot, and porter's asthma—all meaning the same disease which is now generally known throughout the world as silicosis.

In modern times, the introduction of tools operated by compressed air, used for drilling, cutting, and shipping rock, has caused dust diseases of the lungs to become fairly wide-spread and to be an important source of disability among industrial workers. There is only one kind of dust that produces a typical disease, with characteristic symptoms, which we call silicosis, and that is dust containing free silica (SiO_2) in a very finely divided state. Dusts containing silica in combination, with the exception of asbestos, are not, as far as we know, responsible for any appreciable amount of disability.

Nose Is Effective Filter

The human body has a very efficient protective mechanism against inhaling dusts in the atmosphere. The construction of the nose, the naso-pharynx, and the wind-pipe is such that these passages filter out from the air much of the foreign material that may be in it. It is only when this protective mechanism is subjected to continuous severe straining that it breaks down.

Silicosis is a disease which comes on very gradually and, in most forms of industrial exposure, takes from 10 to 15 and even 20 years to develop. This is one of the important facts about silicosis which should be kept in mind.

A great deal of laboratory research has established definitely that dust particles, to get into the lung, have to be exceedingly small, so fine, indeed, that they can traverse the terminal air passages or bronchioles and thus reach the air lobules where the physiological process of breathing takes place. Most of the dust particles which get into the lungs are between one and three microns in size (a micron is 1/25000 of an inch). At the most, ten microns would be the largest size which will reach the lungs. The second important fact, therefore, to remember about silicosis is that silica dust must be exceedingly fine before it can penetrate the lungs.

Furthermore, a silica dust is harmful in proportion to the amount of silica it contains. Obviously the higher the percentage of silica, the more dangerous the dust, so that we see the most aggravated, or what is sometimes called the "classical" form of silicosis, under those circumstances where the dust is almost pure silica (chert, flint quartz). We base our estimation of the severity of the silica dust hazard in any given situation upon the amount of silica contained in the dust and upon the amount of dust in the air.

For determining the amount of dust in the air, the standard method developed by the United States Public Health Service and United States Bureau of Mines is used in this country. The instrument used is known as the impinger and the results obtained are remarkably accurate. Other instruments are in use, but in this country the impinger is standard. When dust samples are taken in industrial establishments, the result is expressed in millions of particles, under ten microns in diameter, per cubic foot of air. One advantage of the impinger is that it can operate continuously, making it possible to obtain very large air samples, which in turn tends to cut down the margin of error. The instrument is simple, can be readily moved and set up, and, as a rule, is placed on a level with and near the faces of the workmen so as to sample the actual air which they inhale.

From the health viewpoint, we have no hard and fast limits of air dustiness, with respect to what is safe or what is dangerous. The various studies which have been made, however, seem to indicate that if the dust contains any appreciable amount of free silica, the dust count should be kept

Largely because so little is known about it, the subject of silicosis is creating considerable apprehension among clay products manufacturers. Although clay plants have not suffered from legal action to the same extent as other branches of the industry, still there have been a number of suits and in all probability there will be more.

Already a number of states have adopted compensation legislation for silicosis and in some instances the rates were exorbitant and unreasonable and not justified by the relatively small hazard involved in clay products plants.

Dr. Lanza, the author of this article, is perhaps the foremost authority on this subject in the country and his remarks should be read by all clay plant executives.

below ten million particl[es]. Even ten million particles of a [s]il[ica] dust is not a safe limit. Dust samp[ling] requires a careful and accurate technique and considerable experience is necessary before consistently reliable results are obtained. Industries are beginning to train laboratory technicians to do this work, as in order to keep a dust hazard under control, periodic checking is essential.

It was supposed formerly that the bad effect of inhaling silica dust was due to the hardness and sharpness of the dust particles themselves. We now know that this is not so. We do not know exactly how the dust acts in the lungs but the indications are that silica is a tissue poison. Whether it causes its effects by going into solution or partial solution in the lung tissue is still a matter for further study.

Silicosis Leads to Tuberculosis

Besides its direct action upon the lung tissue, one of the effects of continued exposure to silica dust, which has been noted in the various parts of the world where this disease has been studied, is that it causes the individual who has contracted silicosis to become peculiarly susceptible to tuberculosis. The more severe the silica dust exposure, the more apt is tuberculosis to result. While silicosis may cause disability and death in the absence of tuberculous infection, it has not been frequently observed to do so in industrial experience.

While it is possible for the individual with silicosis to contract other types of infection, tuberculosis is the only one of real practical importance. Those individuals who die from silicosis are found, in the great majority of cases, to have tuberculosis also. Just what is the relationship between these two diseases is as yet unknown, but it would seem as if the presence of silica in the lung tissues makes a favorable situation for the growth of the germ of tuberculosis. When an individual with silicosis develops tuberculosis, the latter may be essentially chronic and run on for a number of years, but if the exposure to silica has been very severe, the progress of tuberculosis may be quite rapid and cause death in a few years after the infection has first become manifest.

As would naturally be expected, silicosis comes on gradually and insidiously. The first symptom is a shortness of breath on exertion. This shortness of breath increases slowly but surely, and when the disease is well established, will impair working ability considerably or even cause total disability. In the early and moderately advanced stages, the affected individual looks well, may show a tendency to put on weight, and aside from the distress caused by physical exertion, feels well. This short-wind, or dyspnoea as the doctors call it, is a very clearcut and definite symptom and in well established cases, it is notable because it seems to be so out of proportion to the general healthy appearance of many of the patients. There is apt to be a dry cough and a tendency to "catch cold" frequently. Occasionally, there may be some spitting of blood but it is unusual to have a frank hemorrhage such as we see in consumptives.

Symptoms of Silicosis

As the disease progresses, pains in the chest are common and may give rise to considerable discomfort. When tuberculosis has become planted upon silicosis, we may see the symptoms commonly associated with the former disease, that is, profuse expectoration, loss of appetite, loss of weight, night sweats, and an afternoon rise of temperature. Sometimes these symptoms come on with dramatic suddenness and the patient grows rapidly worse. Even when it is obvious from the symptoms and general condition of the patient that tuberculosis is present, the germs of tuberculosis may not be found in the sputum until a relatively short time before death.

Where the exposure to silica dust has not been very severe, symptoms may not show up for many years; there may be some short-wind, but it does not develop to a point sufficient to impair working ability and with this type of exposure, we frequently see men with silicosis still able to carry on their work in good shape, many of them having reached their sixties and seventies. In other words, where the silicosis hazard is mild, it may not shorten appreciably the individual's working life. However, it should be remembered that if we study the mortality figures of those exposed to what might be termed the less severe types of silica exposure, we will find that the death-rate from tuberculosis among them is greater than that for wage-earners as a whole.

Examination by X-Ray

If we examine a man who is in the early or moderately advanced stage of silicosis, we may find little on physical examination to confirm the diagnosis. He may exhibit no physical signs other than somewhat impaired breath sounds. If the man is heavily built, with large muscles, it is difficult to get any definite impression from an ordinary physical examination. For this reason, we have to turn to the X-ray film in order to establish a diagnosis. The appearance of silicosis on the X-ray film is definite and clear-cut and should not be confused with other diseases of the chest.

When making examinations of men, among whom it is thought that there might be silicosis, it is exceedingly important to get a careful, accurate, occupational history. Not every man who is short-winded has silicosis, even though he may have been exposed to varying quantities of silica dust at one time or another. The diagnosis is based upon a history of exposure to silica dust together with the characteristic X-ray shadow. The physician should know the severity of the exposure and the length of time during which the individual has been exposed. A careful weighing of these facts enables him to make a diagnosis. If the X-ray film does not show the characteristic appearance of silicosis, a positive diagnosis cannot be made.

As a rule, when the silicotic has also become tuberculous, we can determine that fact from the X-ray film. Occasionally the examining physician will see films from which it is not possible to state with certainty whether tuberculosis is or is not present. It should be remembered that the absence of tuberculosis germs in the sputum does not rule out tuberculous infection.

For accurate and satisfactory X-ray diagnosis of silicosis, it is essential to have a good apparatus and to use it properly. In the same individual we can obtain films quite dissimilar in appearance by varying the time of exposure and the intensity of the current; consequently, a correct technique is all important. Much experimentation and study have indicated that, for uniformly satisfactory results, an X-ray apparatus should be used which is capable of taking a film at a distance of from forty-eight to seventy-two inches with an exposure not slower than one-tenth of a second.

We cannot obtain satisfactory films unless the patient holds his breath and the faster we can "shoot" him, the more apt we are to get a good film. While a well-advanced case of silicosis can generally be determined from a single film, it is better to obtain stereoscopic films. With stereoscopic films, we are able to view two exposures in a suitable viewing box which gives us the third dimension, namely depth, and greatly lessens the chance of error, especially in early cases where precise diagnosis is so important.

It should be remembered that most of us who are past our fortieth year will show various lines and shadows in the X-ray films of our chests which do not indicate disease and are compatible with good health. Consequently, he who takes it upon himself to interpret X-ray films of dust diseases of the lung should be thoroughly familiar with the variations in the appearance of the ordinary, healthy chest.

Early Silicosis May Clear Up

If a man has early silicosis and is removed from further dust exposure, his disease may not progress and may clear up somewhat. If the silicosis, however, is well established—that is, if there is any considerable amount of damage to the lungs—there is a tendency for the silicosis to progress even after removal from further dust exposure. There is some question as to whether in these cases the silicosis actually does progress unless the patient is also infected. Where there is a marked progress, after exposure to dust has ceased, it is probable that tubercle infection is present.

In a paper published in 1934, Lanza and Vase endeavored to estimate the number of persons exposed to the silica dust hazard in industry. It was not possible to make an accurate estimate, but from the statistics available, it would seem that there are at least a half million persons so exposed and that this figure is quite conservative. Among those trades and industries having a silica hazard are found those included under the general heading of ceramic industry in this country. In fact, some of the earliest studies of silicosis were made in English potteries where the disease was known as "potter's rot." A comprehensive report on silicosis in the pottery industry was published in England in 1926. Recent studies have also been made in Danish potteries. In the United States, Dr. Paul A. Quaintance published a study of pottery workers in the American Journal of Public Health in December, 1934.

Glass, porcelain enamel, pottery and refractories all present silica dust hazards in some phases of the work. All in all, it may be estimated that the number of persons exposed to silica dust in the ceramic industry is roughly 75,000. Much of this hazard is mild or moderate, some of it is severe. In any instance, the method of dealing with the hazard is the same:

1. Every possible effort must be made to prevent silica dust from getting into the air where it can be inhaled by the workman. This implies controlling the dust at the point of origin either by exhaust systems or enclosing the process. It is very seldom that engineering skill cannot cope with any situation that presents itself. It may be expensive but in the long run is less so than damage suits and claims for total and permanent disability.

2. Where the dust cannot be entirely eliminated, respirators, of a type approved by the Government, should be supplied and their use insisted upon. For some types of work, a positive pressure face mask is desirable.

3. Applicants for work should be examined to make sure that men with tuberculosis are not exposed to a dust hazard.

4. Employes who are or have been exposed to a silica hazard should be examined from time to time to guard against serious lung damage and to detect possible tuberculosis.

The ceramic industry must attack dust and dusty processes with the same energy, determination and intelligence with which they have attacked safety hazards. There is no reason why they should not be as successful in dealing with dust hazards as with safety hazards.

Lighthouse Brick Co. Increases Capacity

The Lighthouse Brick Co., Inc., will increase the capacity of its Cedar Bayou, Texas, plant from 25,000 brick daily to more than 40,000 brick daily. It is announced by Joseph B. Hutchison of Houston, secretary-treasurer of the company. Construction has been started on the first of two round downdraft kilns which will have a capacity of 125,000 brick each, Mr. Hutchison said.

The plant at present is manufacturing common brick only, but the quality and color are such that most of the output is being used for face brick. Cedar Bayou red clay burns to colors ranging from a dark brown, gray and red to salmon.

One of the first brick manufacturing plants in Texas was established here more than one hundred years ago and the industry has continued without interruption since that early beginning.

Residential Building For August 2½ Times '35

Residential building started during August attained a level of activity not seen since March, 1931, according to figures just released by F. W. Dodge Corp. Not only did the August volume exceed the figure for July by about 41 per cent but last month's record of residential building contracts was 2¼ times the size reported for August, 1935. For the 37 eastern states and the District of Columbia the figures follow: August, 1936 July, 1936 August, 1935 $100,522,300 $71,333,700 $40,528,300

Part of the current gains are attributable to accelerated activities under the PWA housing program, but the bulk of residential work undertaken in August represented private operations. Gains in residential work, as compared with totals for August, 1935, were well distributed geographically, with each major area in the territory east of the Rocky Mountains sharing in the general advance.

The total volume of construction awards, covering all types of work, undertaken in the 37 eastern states during August amounted to $275,231,400; this was in contrast with $294,734,500 reported for July of this year and represents a gain of about 83 per cent over the figure of $150,557,200 reported for August, 1935. The decline from July was chiefly the result of decreased contract lettings for civil engineering projects under the PWA program.

U. S. A. TRIP A SUCCESS

The Editor,
BRICK & CLAY RECORD,
Chicago, Ill.

Dear Sir:

"I reached Sydney a few days ago and now write to express my appreciation of the very great help you and your staff gave me during my recent visit to America.

"Without the assistance and information which you very kindly placed at my disposal I would have been considerably hampered, but owing to your kind efforts I think my trip was quite successful.

"If ever I can be of any service to you, please do not hesitate to ask me.

"With kind regards."

Yours very truly,
George F. Goodland,
Goodlet & Smith, Ltd.,
Grenville, N. S. W.,
Australia.

Sacred Cows

IN the superstitious religions of India many things are considered sacred and untouchable. No Hindu, for instance, would slaughter a sacred cow or otherwise interfere with it's well-being. Not even the thought of doing so would occur to him because, for generations, he has been surrounded with this and many other tabus and he accepts them as a matter of course.

From the heights of our enlightenment we smile at the benighted Hindu. Still, he would probably enjoy a laugh or two at our expense if he were aware of some of the customs that are peculiar to us. It's all in the point of view.

"Sacred Cows" are no rarity anywhere. We all have our habits and peculiarities—things we do for no other reason than because we have always done them.

Business, too, has its sacred cows, its traditions. Every factory, no matter how efficient, has some peculiar habits or methods of doing certain things for which there is no excuse except that "we have always done it that way."

The chances are good that you are not even aware of the sacred cows in your plant. Like the boss's habit of clearing his throat—you don't notice it because you have grown accustomed to it.

It is a case of familiarity, not in this case breeding contempt, but dulling the edge of perception.

We need an outside source of ideas to help clear up this astigmatism—to disturb the complacence with which we view familiar errors. Brick & Clay Record performs this function for its readers. Sooner or later you will read in these pages something that will open your eyes and enable you to recognize sacred cows you have been harboring in your plant.

F. L. S.

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