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DOCUMENT DESCRIPTION: Dr. Abrams Report on Trip to Johns-Manville
Diatomaceous Earth Plant with Discussion of Medical Policy &
Pneumoconiosis Cases

SUBJECT: Trip to Santa Barbara County Health Department and Johns-Manville
Diatomaceous Earth Plant at Lompoc, on June 16 and 17, 1949.

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Health Department:

Conferred with Dr. I. O. Church, Health Officer of Santa Barbara County Health Department, and Dr. L. F. Busby, Chief of the Tuberculosis Section of the County Health Department. The Health Department has no significant data concerning the Johns-Manville Plant. They have no records on tuberculosis morbidity in this area, as they have never done a survey. About once a year the County Tuberculosis Association stations a miniature X-ray unit in Lompoc, but only relatively few persons in the community avail themselves of the opportunity. Drs. Church and Busby will send the Bureau data on tuberculosis mortality for this area, but their impression was that it was not excessive. Dr. Church at first expressed the opinion that the tuberculosis mortality in the Lompoc area was lower than that in other parts of the county, but later retracted this statement. He has not seen the plant for three years and was glad of the opportunity to see it again. The Health Department is at present doing a serology survey of the employees of the plant. There is a branch office of the Department in Lompoc, where several persons including a sanitarian and nurse are stationed.

Johns-Manville Plant:

The entire morning of June 17 was spent at the Johns-Manville Plant in Lompoc. Dr. Church and Dr. Busby accompanied me. The first part of the morning was spent in conference with Dr. Walter Anderson, the physician who is employed part-time by the company. Dr. Anderson ordinarily spends one hour in the morning at the plant, and is available for emergencies. He is a general practitioner in Lompoc and has been plant physician for several years. There is also a full-time nurse, who works during the day. The mill is a 24-hour operation, and emergency first aid materials are available in the event of injuries at night. Our conference with Dr. Anderson took place in the X-ray room of the medical department. A short time after we had started our discussion, Mr. Legge, industrial relations manager for the plant, came in and stayed for the remainder of the conference although the conversation was almost entirely devoted to medical and clinical aspects.

The medical policy of the plant is as follows: Every applicant for employment receives a pre-employment chest X-ray. Interpretation of the films is quite stringent and persons are rejected if suspicious lesions are found. All employees receive an annual chest film and a close-out film upon termination of employment. No other laboratory procedures are done with the exception of blood and urine procedures on selected employees.

With regard to the pneumoconiosis caused by diatomaceous earth, the following salient points were brought out at the conference:

1. Employees are exposed to the dust from diatomaceous earth in

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various forms: the crude powder; the so-called "natural" powder; the calcined powder; and the diatomaceous earth which is calcined and fluxed with soda ash to form several materials including glass, trydimite, and crystobalite. (There is also the possible exposure to silica containing dust from the clay used in the manufacturing of synthetic bricks.)

2. There are two major types of pneumoconiosis which result: (a) the linear and (b) the conglomerate. The linear type, apparently resulting from exposure to the crude powder only, is benign, apparently causing no disability. Pathologically, it is characterized by a venous vascular fibrosis. The conglomerate type is malignant, being progressive and eventually fatal. Pathologically, there is a cellular fibrosis, hyalinization and necrosis. In this type there occurs a central hilar contraction of the lung tissue with resultant emphysema and blebs in the periphery of the lungs. Dr. Anderson described the stages of diatomaceous earth pneumoconiosis as: P_1 , P_2 , P_3 , and then conglomeration. P_3 is the stage of reticulation and at this point it resembles what is seen in Berylliosis.

3. Dr. Anderson still feels the crude diatomaceous earth is less harmful than the processed material, but is less strongly convinced of this than formerly. In any case he believes that most of the employees at the plant are exposed to more than one type of dust and the question is largely academic. He has seen many cases with the linear type develop the conglomerate type and is unable to account for the precise cause of the change.

4. Dr. Anderson has already seen about five cases of pneumoconiosis from diatomaceous earth complicated by tuberculosis. He mentioned one such case had died just the week before our visit. He therefore is beginning to question the old concept that diatomaceous earth pneumoconiosis is resistant to tuberculosis.

Dr. Anderson mentioned that he and Dr. Smart will probably soon publish their long-awaited article on the subject in The Journal of Industrial Hygiene and Occupational Medicine.

Tour of the Plant:

We were taken on a tour of the plant by Mr. Westmont, the Manager, and Mr. Legge. Most parts of the plant were seen in a cursory manner. Unfortunately, by the time we arrived at the mills, they were closed down for lunch and were therefore not seen in operation. The following improvements may be mentioned:

1. Mr. Westmont stated the company is trying to develop some system for ventilating the cabs of the large vehicles which scrape and dig the diatomaceous earth out of the ground. One such vehicle already has an experimental ventilated cab.

2. Paper bags with a special type of flap opening are now used exclusively, with the exception of the material which is used for special purposes by the plant itself which is bagged in cloth sacks. There seems to be quite an elaborate system of local exhaust devices for eliminating the dust in connection with sacking operations.

3. We saw a newly constructed building containing lockers, showers

and lunch tables and chairs for the employees of the mill. (Apparently there is no similar arrangement for the other employees.) Numerous employees were observed eating their lunch at their work place.

4. In general, the mill appeared to be in good housekeeping order. (The tunnels and glory holes were not seen closely.)

5. The company has now removed all employees who were formerly living on the premises of the plant to a housing project just completed in Lompoc. The company has built seventy-two small frame houses which are available to the employees either by rental or sale. Dr. Smart later pointed out that this move was motivated by his diagnosis of diatomaceous earth pneumoconiosis in a young man whose only exposure to the dust was by virtue of having resided on the premises of the plant.

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The plant now employs approximately 500 persons. Of these, about (definitely 87 work in the mines and quarries; 125 in the mills; 15 in the brick mills; made. Moti 150 on maintenance and repair; and about 100 who are engineers, technicians (for moving and office personnel. All are males, with the exception of 9 women who work (was not t in the plant and 15 in the office. About 20% of the employees are Mexican. (but for There is an 85% annual turnover of employment.

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Suggestions for Future Work:

1. It is suggested that a community-wide miniature film survey be done on the entire community of Lompoc. The town's population is about 5,000. This was discussed with Drs. Church, Busby and Anderson. Dr. Anderson felt that such a survey would be very useful in giving some idea of the extent of chest pathology in the area and in uncovering possible old cases of diatomaceous earth pneumoconiosis. While Dr. Church was not so enthusiastic about the idea, he felt that it could be done if we believed it advisable. This idea was also discussed with Dr. Smart and Dr. Oechsli, and both are enthusiastic about it. It is suggested that miniature films be used for screening and follow-up with 14" x 17" films.

2. A complete engineering survey of the plant should be done by the Bureau of Adult Health. No such study has been done here since 1944. Since then many changes have taken place and the time is now appropriate for a thorough check. If possible, the engineering findings should be correlated with the medical data, both that uncovered by the survey suggested above and the medical data in Dr. Anderson's files. Dr. Anderson will welcome such a study and suggested that when we want to do it we should communicate with him. Dr. Smart also felt such a study would be desirable. (On the Monday, June 20, following my visit to the plant, Mr. Bush in Los Angeles received a call from Mr. Wilson, of the Johns-Manville Plant, requesting him to come up for consultation on dust collecting and counting procedures.)