

October 27, 1938

Mr. Vincent Beckman
First National Bank Building
Cincinnati, Ohio

Dear Mr. Beckman:-

A few days ago you raised a question as to whether or not the inhalation of lead compounds and particularly lead oxide resulted in irritation of the lungs and eventually fibrosis of the lungs with disability.

Circumstances may arise, in mining and in grinding ores, in which a significant degree of exposure to silica is encountered and under these conditions silicosis may develop. Exposure to lead sulphide (galena) and to the oxides of lead, on the other hand, may result in some deposition of mineral materials in the lung tissue, and will certainly result in some absorption of lead, but it does not cause pulmonary irritation to any noticeable degree, nor does it cause pulmonary fibrosis. It is true that the inhalation of minerals in general results in deposits of these minerals in the pulmonary epithelium, in the pulmonary lymphatics and in the regional lymph glands. Likewise carbon from soot-laden air blackens the lungs. There is, however, little or no damage to the lungs, and practically no disabling fibrosis of the lungs as a response to dust in the air except in the case of silica and certain silicates such as asbestos.

Gardner at Saranac, and Sayers and his associates of the U.S. Public Health Service, have experimented extensively with dusts of various composition and size of particle. The general conclusions arrived at by animal experimentation and extensive human studies are that the only particulate dusts which can be convicted of producing disabling pulmonary fibrosis are silica and asbestos. Even carborundum, hard and sharp as it is, causes no important injury and results in no disability. It is apparent, therefore, that the injury is not mechanical in type but is rather the specific chemical effect of silica which not only causes a specific type of fibrosis, identifiable by x-ray photography, but also causes an increased susceptibility to tuberculosis. No other dust is known to do this, and lead oxide, by reason of the wide experience which has been had with it is known not to produce such results.

I trust this will serve to answer your question. If any other point is at issue, please let me know.

Very truly yours,

RAK:is

Robert A. Kehoe, M.D.