

EXPERIMENTAL BERYLLIUM GRANULOMAS OF THE SKIN

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THERE is considerable evidence to indicate that beryllium is capable of producing granulomatous inflammation in human tissues. Pulmonary fibrosis and granulomas have been observed in a number of workmen who had been exposed to dusts of beryllium oxide or to phosphors¹ which were comprised in part of beryllium oxide, and the fact that this pulmonary condition is related to beryllium compounds has been established beyond reasonable doubt. In addition, granulomas of the skin have resulted where fragments of metallic beryllium or of phosphors containing beryllium oxide were implanted accidentally through lacerations.² The epidemiological evidence relating to chronic pulmonary berylliosis suggests that various dusts containing beryllium oxide differ in their capacities to produce granulomatous inflammation. The reasons for the differences are not known, but there is a possibility that the pathogenic properties of the dusts may be related to the conditions under which the powders were calcined. Electron microscopy reveals modification of structure in particles which have been calcined under different conditions (figs. 1 and 2).

In the experiments reported here, an attempt has been made to produce granulomas in the skin of experimental animals, using purified compounds of beryllium and a sample of metallic beryllium. These experiments were planned so that differences could be detected in the degree or the type of reaction to the metal, to two different specimens of beryllium oxide and to two different fluorescent powders, each of which contained beryllium oxide.

COMPOUNDS TESTED

Sample A. Beryllium oxide powder which had been calcined for three hours at 1200 C. The average diameter of the particles was approximately 0.45 micron (fig. 1).

Sample B. Beryllium oxide powder which had been calcined for three hours at 1200 C., and then calcined further at 1370 C. for five hours. It was subsequently rolled in a mill until the average diameter of the particles was 1.2 microns (fig. 2).

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1. Phosphors are fluorescent powders which are used to coat the inside surfaces of commercial fluorescent lamps.

2. Grier, R. S.; Nash, P., and Freiman, D. G.: Skin Lesions in Persons Exposed to Beryllium Compounds, *J. Indust. Hyg. & Toxicol.* **30**:228-237 (July) 1948. Dutra, F. R.: Beryllium Granulomas of the Skin, *Arch. Dermat. & Syph.* **60**:1140-1147 (Dec.) 1949.