TABLE 14.—*Comparison of Reactions to Chrysotile and Serpentine Injected Intratracheally*

Dosage: Each animal was given an intratracheal injection of 0.5 cc. of a 5 per cent suspension of the dust. Two weeks later another similar injection was given. Total amount of dust injected was 50 mg.

Animals used: Six groups of 9 guinea pigs each (one group for each type of dust).

Periods at which animals were killed: One or two animals in each group at 1, 2, 6, 8½ and 12 months after last injection.

Preparation of dust: Chrysotile (ball milled) unheated: Ball milled for 1,176 hr., dried and reground in agate mortar.
Chrysotile (ball milled) ignited: Ball milled chrysotile heated for 2 hr. at about 700 C., then ground in agate mortar 2 or 3 min.
Chrysotile (fibrous) unheated: Ground in agate mortar to pass 200 mesh.
Chrysotile (fibrous) ignited: 200-mesh material heated for 2 hr. at about 700 C. No further grinding.
Serpentine (ball milled) unheated: Ball milled for 1,488 hr., dried and reground in agate mortar.
Serpentine (ball milled) ignited: Ball milled serpentine heated for 2 hr. at about 700 C., then ground in agate mortar 2 or 3 min.

Mineral	Size of Dust Particles	Results
Chrysotile (ball milled) unheated	3 microns and less	Grinding destroyed capacity to cause fibrosis. At 1 mo. considerable inflammatory edema and cellular proliferation and localization of dust particles about bronchioles; at 2 mo., only a very slight proliferative reaction; at 6, 8½ and 12 mo., widely scattered small mononuclear phagocytes. At 12 mo., a few microscopic patches of thin alveolar wall thickening with some adenomatoid change in portion of air spaces abutting on thickened bronchi. No asbestosis bodies seen.
Chrysotile (ball milled) ignited	3 microns and less	Reaction limited to large foreign body giant cells without production of fibrous tissue.
Chysotile (fibrous) unheated	20-50 microns approx.	A distinct fibrosis. Reaction localized to connective tissue about terminal bronchioles; little within those tubes. Contraction caused adenomatoid appearance of air spaces given off directly from terminal bronchioles. Reaction area became smaller with progress of time; no new regions involved. No chronic pleurisy even at points abutting intrapulmonary change. At 1 mo. considerable inflammatory edema and foci of cellular proliferation; at 2 mo. well marked cellular proliferation and fibrosis occurring focally about respiratory bronchioles. This reaction developed before asbestosis bodies had formed and was as advanced as that produced by 2 yr. inhalation of asbestos dust. At 6 mo., reaction less extensive than at 2 mo., apparently due to contraction of fibrous tissue; asbestosis bodies were abundant. At 8½ mo., reaction still less extensive, confined to the immediate vicinity of the small terminal bronchioles, where the scar tissue was quite dense and was becoming hyaline in character. Sometimes it even obliterated the bronchiole. Asbestosis bodies had become scarce. At 12 mo., the well developed peribronchial and intrabronchial adenomatoid areas of fibrosis had produced considerable distortion. More peripherally were patches of pneumonitis with eosinophilic infiltration, some of which was being transformed into fibrous tissue. These seemed to be precursors of the localized, diffuse patches of thin alveolar wall fibrosis seen elsewhere.
Chrysotile (fibrous) ignited	20-50 microns approx.	Reaction limited to large foreign body giant cells without proliferation. Heating the fibers, which made them brittle, destroyed their capacity to produce significant reaction.
Serpentine (ball milled) unheated	3 microns and less	Dust relatively inactive. At 1 and 2 mo., simple phagocytosis without proliferation; at 6 mo., no change except possibly lymphoid cell infiltration; at 8½ mo., a slight chronic pneumonitis; at 12 mo., only a little pneumonitis without suggestion of fibrosis.
Serpentine (ball milled) ignited	3 microns and less	Dust relatively inactive. Reaction essentially the same as for unheated serpentine. With ignited serpentine, less tendency for dust to be carried to bronchial nodes.