EXCERPT FROM AIR HYGIENE FOUNDATION
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Literature--News--Developments "
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" 278. Recent Developments in Relation to Silicosis. L. U. Gardner. Ind.Med., 9, 45-49 (February, 1940).

Experimental work in progress at the Saranac Laboratory seems to lead to the conclusion that inhaled asbestos fibres are irritating not because they are silicates but because they are stiff fibres which mechanically irritate the lungs. When asbestos is ground very finely so that few of the fibres are longer than 2 microns in length the irritating property of the asbestos is practically destroyed. Inhalation experiments with this fine asbestos in a concentration of 125 million particles per cubic foot over a period of three years has not produced fibrosis -- in previous experiments exposure to one third this concentration of long fibres has produced well marked fibrosis in two years. This phenomenon is directly opposite to that found in silicosis, where with decrease in particle size, reaction becomes more vigorous. Irritation, from the asbestos fibres seems to be more closely associated with the physical, rather than the chemical, composition as in the case of free silica. There are many experiments whose results are difficult to reconcile with the solubility hypothesis. In vivo, cellular reactions begin 15 to 30 minutes after injections; in vitro, traces of dissolved silica are found by the most sensitive methods only after 12 to 24 hours. There is some experimental evidence that free silica has a specific toxicity. Fine silica injected into the veins or hearts of certain animals acts like a strong poison. This has not been observed with particles of larger size or with suspensions of other minerals. These toxic effects can be neutralized by the addition of different substances, for example, collodial aluminum hydroxide and ferric hydroxide. More and more experimental evidence seems to demonstrate the physiological insignificance of particles over 3 microns. Finally there is a discussion of the similarity between the silicotic and tuberculous reactions in the lung. "

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