DUST PRODUCED BY SAND SPINDLES OR CYLINDERS (Concluded)

Size (Dia.)	Abrasive Used	Work Being Done	Particles Per Cubic Foot	Characteristics of Dust Particles (Sizes and Percentage Estimated)
3-1/2"	#1-1/2 Garnet Paper Minn. Mining Co.	Putting Taper on Pattern.	877,920	About 90% angular crystalline two microns in size; 10% opaque five microns or less in size.

C. - MAKING WOODEN CRATES - Two types of saws are used in preparing lumber for making crates for gasoline pumps and tanks:

(a) Band Saws - Samples taken during the operation of Band Saw had a dust concentration of 453,120 particles ten microns or less per cubic foot of air. All of these dust particles were round, opaque in appearance under the Konimeter microscope and three microns or less in size.

(b) Railroad Saws - Samples taken during the operation of an 18" Railroad Saw had a dust concentration of 3,964,800 particles ten microns or less per cubic foot of air. All of these particles were round, grayish opaque in appearance under the Konimeter microscope and about five microns or less in size. There were also numerous minute gray specks too small to count accurately.

XII - ROCK EXCAVATION

Rock excavation is usually a dust producing operation which is limited to construction activities in the petroleum industry. The hazardousness of rock excavation depends entirely upon the nature of the rock being excavated, the length of exposure and the methods being followed. The principal sources of dust are rock drilling, blasting, mucking and handling of the rock. Of these, drilling probably produces the greatest amount of dust.

A. - DRILLING - The pneumatic rock drill operates essentially as a crushing device which shatters the rock to a powder at the point of impact. According to Theodore Hatch of the Harvard School of Public Health (N.Y. Ind. Bull. Vol. 15, No. 9 - Sept. 1936) the particles of dust thus generated vary in size from one-quarter inch or larger down to sub-microscopic diameters. The dust is removed from the drill hole by a stream of air or water or a combination of the two introduced through the hollow drill steel. In the case of jack-hammer drilling a considerable amount of rock dust ejected from the hole falls back to be crushed further before it is removed again. Quoting Mr. Hatch:

> "The amount of dust produced by a rock drill is surprisingly large - a jack-hammer, operating at the over-all rate of 100 feet of drilling per day, actually crushes more than 200 pounds of rock in eight hours. Of this, at least five per cent. is in the form of particles smaller than ten microns; hence, more than fifty grams of dust small enough to be air floated is generated per foot drilled. In terms of numbers of particles the figures are enormous - it has been found that a jack hammer produces as much as one billion particles of hygienic interest during one minute of operation".