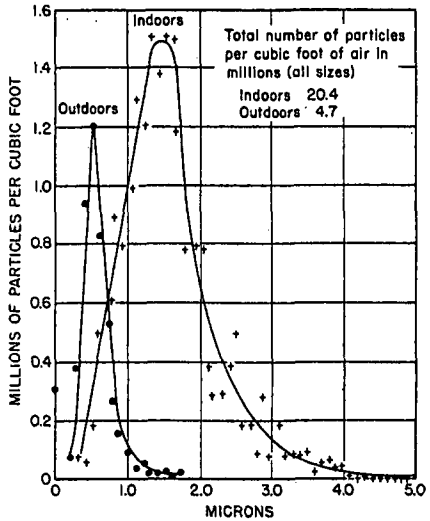


Figure 8. Graphic illustration of size distribution of indoor and outdoor dust at granite cutting plants.

TABLE 4

Size-Frequency Distribution of Various Industrial Dusts as Compared to Outdoor Dust

Kind of dust	Number of samples	Median	Average frequency in per cent (size group in microns)										
			0 to 0.49	0.5 to 0.99	1.0 to 1.49	1.5 to 1.99	2.0 to 2.49	2.5 to 2.99	3.0 to 3.49	3.5 to 3.99	4.0 to 4.49	4.5 to 4.99	5.0 to 5.49
Outdoor dust	179	0.5	56.0	41.0	2.5	0.5	....	....	....	....	....	....	....
Sandblasting	9	1.4	1.4	19.7	34.7	20.3	12.6	5.2	2.8	1.6	1.1	0.2	0.2
Granite cutting	4	1.4	2.0	19.0	33.6	24.5	10.4	4.6	3.1	0.6	0.9	0.3	1.0
Trap rock milling:													
Crusher house	1	1.4	0	13.0	39.0	33.0	10.5	2.5	2.0	....	....	....	....
Screen house	1	1.3	2.0	31.5	33.0	16.0	10.0	4.5	2.5	0.5	....	....	....
Disk crusher	1	0.9	10.0	48.0	31.0	6.0	3.0	1.0	1.0	....	....	....	....
Foundry parting compound	2	1.4	0.5	22.0	42.0	17.3	9.2	5.0	1.5	2.0	0.5	....	....
General foundry air	1	1.2	0	26.0	48.0	17.0	8.0	1.0	....	....	....	....	....
Talc milling	1	1.5	0	16.0	32.0	20.0	13.0	7.0	5.0	2.0	2.0	2.0	0.5
Slate milling	1	1.7	1.0	13.0	29.0	17.0	14.0	14.0	6.0	4.0	1.0	0	1.0
Marble cutting	1	1.5	0	12.0	37.0	21.0	10.0	11.0	3.0	0	1.0	2.0	2.0
Soapstone dust	2	2.4	1.2	16.0	19.0	13.0	11.0	6.0	6.5	4.5	5.5	3.3	2.5
Aluminum dust	1	2.2	3.0	8.0	20.5	14.0	11.5	9.0	6.5	3.0	3.5	4.0	7.0
Bronze dust	1	1.5	1.0	12.0	33.5	25.0	21.0	6.0	1.5	....	....	....	....

[57] J. J. Bloomfield, *U. S. Pub. Health Repts.*, **48**, 961 (1933).

...ions 1.5 to 2.4 μ and in each case represent much smaller frequencies than the ...modal zones.

Still another method of treating the data is to plot the cumulative percentage of particles for the different class intervals, percentage less than a stated size, against the size on logarithmic probability paper[58] and draw the best straight line through the points. From this line, which assumes a normal probability distribution, the geometric mean[59] is observed as the 50 per cent size and the standard geometric deviation readily computed by dividing the 84.13 per cent size by the 50 per cent size. As an example of this treatment, the screen-house sample from a trap rock mill has been taken from Table 4 and plotted on logarithmic probability paper and the parameters determined in Figure 9.

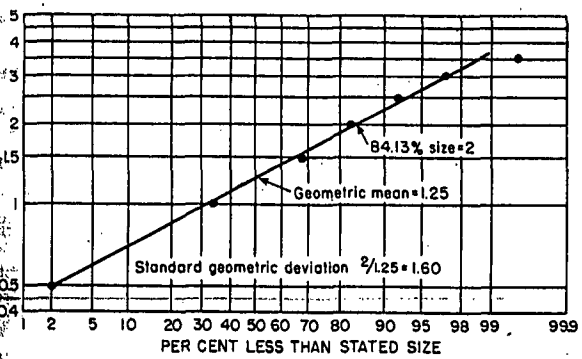


Figure 9. Logarithmic probability plot of data on screen house taken from Table 4.

...Results similar to those given by the microprojector are obtained by the use of a particular micrometer eyepiece at a magnification of 1000 diameters, but in this instance several representative fields are chosen and the diameters of the first 200 particles encountered in each are measured by moving the cross hair across the field from left to right.

...particle-size estimation of dusts can be made by the use of a photomicrograph which has the advantage of being a permanent visual record.

...any of these methods the results are only relative. The optical systems employed fail to resolve particles appreciably smaller than 0.5 μ and, since it has been demonstrated that dusts have widely varying proportions of particles below this size, it is evident that the absolute average particle size is necessarily less than the undetermined value. Since the significant size range of dusts injurious to health is now believed to be below 3 μ, with an as yet undetermined lower limit of ...

...Pinker, *J. Ind. Hyg.*, **7**, 305 (1925).

...Pinker and T. Hatch, *Industrial Dust*. McGraw-Hill, New York, 1936.