

<u>Operation</u>	<u>Particles per cu. ft.</u>
Dressing 1-1/2" x 12" Aloxite Wheel (Grit 40, Grade H, Bond 33).....	226,560
(Evidently particles in the cloud of dust thrown off by the 2-1/2" x 6" Metcalf Emery Wheel Dresser are larger than 30 microns in size)	
Grinding "Diamond Point" Chisel on 1-1/2" x 12" Aloxite Wheel (Grit 40, Grade H).....	2,067,360
Grinding 2-1/2" x 6" Landis die on 2-1/2" x 1-1/2" x 12" Aloxite Wheel (Grit 46A-P P678).....	755,203

Under the Konimeter microscope dust particles in samples taken while dressing the 1-1/2" x 12" Aloxite Wheel appeared slightly angular with a yellowish tinge and were five microns or less in size. About 75% of the particles from grinding the Landis die were round, opaque, and less than 1 micron in size; 25% were slightly angular crystalline, less than 2 microns. Particles from grinding the diamond point chisel were less quartz-like than those from grinding the die. This difference is, of course, due to difference in the composition of the two wheels. On an average, Landis tool grinders are used about twenty hours a week, usually by different men.

G - YANKEE DRILL GRINDER: Used for grinding all types of drill bits. Has a side grinding type 1" x 1-1/2" x 9" Carborundum Aloxite (Grit 30, Grade M, Bond 28) Wheel. Operating speed 1735 RPM. On an average a Yankee Drill Grinder runs about three hours a day and is used by four different men with an average service of twelve years.

Samples taken during the grinding of a 2-5/16" high speed drill had an average of 1,000,829 particles, ten microns or less, per cubic foot. About 70% of these dust particles are slightly crystalline in appearance, five microns or less in size; 30% were rounded, semi-opaque, over ten microns in size. There were also a few small metallic shreds. No exhaust or dust collector is used in this grinding.

H - AUTOMATIC CIRCULAR SAW SHARPENING MACHINE: There are a number of these grinders in use in the wood working operations - such as in the production of wooden barrels, boxes and crates - closely associated with the refining of petroleum products. Since they are automatic when once put in operation, there is very little dust hazard except where no exhaust or dust collectors have been installed and the dust produced is thrown into the filing room atmosphere. Automatic Circular Saw Sharpening Machines are equipped with 1/4" x 8" Norton Alundum Wheels (Grain 60, Grade N), 3/8" x 8" Norton Alundum (1946 M) wheels, or 1/2" x 6" Carborundum wheels. The average dust produced during operation of these machines is:

<u>Wheel</u>	<u>Particles per cu. ft.</u>
1/2" x 6" Carborundum.....	1,923,280
1/4" x 12" ".....	3,568,320
3/8" x 8" Alundum (1946M).....	2,095,680
1/4" x 8" " (Grain 60, Grade N).....	1,461,312

About 98% of dust particles in samples taken while sharpening circular saws on the Carborundum wheels were black metallic in appearance, and one micron or less in size. About 75% of the particles from the Alundum wheels were rounded crystalline, 5 microns or under in size, and 25% round black metallic, about one micron or less in size. There were a number of small metallic shreds in the samples from the thicker (3/8" x 8") wheel.

I - AUTOMATIC BAND SAW GRINDER: After the Band Saw has been inserted and the