771 Correction for Anisokinetic Sampling of Gas-Borne Dust Particles. S. Badzioch. J. Inst. Fuel 33, 106-110 (Mar. 1960).

A representative sample of dust can be obtained from a dust-laden gas stream only if sampling is isokinetic. An expression is given for the effect of isokinetic sampling upon the relative quantity of dust entering the sample nozzle. Two methods for calculating the dust concentration are considered and a criterion is provided for deciding, under the particular sampling conditions, which method gives the closer approximation to the true dust concentration. Procedures are given for determining the true concentration and size [illegible] from a sample collected anisokinetically. Errors arising from sampling [illegible] velocity, irrespective of the value of the gas velocity, are small providing the appropriate method of circulation is employed. -- APCA Abstr.

772 Some Statistical Aspects of Dust Counting. J. R. Ashford. Brit. J. Appl. Phys. 11, 13-21 (Jan. 1960).

The author uses statistical methods to analyze errors arising in the counting and sizing, by optical microscope, of thermal precipitator samples of air-borne dusts. The samples were taken in coal mines as part of the National Coal Board's Pneumoconiosis Field Research program. The method of evaluating samples is described and the main sources of error are stated. These are: (1) sampling variation in the number of particles within the area counted; (2) the basic error of the counter as indicated by repeated counts of the same traverse by the same counter, due to the difficulty in deciding whether a particle is within a given size-range and of marking off particles counted; and (3) differences between observers. To separate these 3 types of error the logarithms of the numbers of particles counted were used: this is stated to be accepted practice since both variability and personal error increase with the number counted. The logarithm of the number of particles recorded by a given observer at a given time is therefore treated as being the sum of 3 independent terms, namely the logarithm of the average count, the logarithm of the observer's error factor at the time, and the random error. The results show that at any given time a particular observer has a characteristic average counting error which with less experienced counters varies with time. By contrast, the basic counting error, between repeat counts of the same traverse, by the same, experienced, observer, shows little variation between observers continuously engaged in counting slides. Basic counting errors arise from: (1) failure to count all particles in the appropriate size range, and counting some twice; and (2) allocating some of those counted to the wrong size-range. Of these, the latter is normally the more important, and since the number in a given range normally falls steeply with increasing size this latter can cause overestimates in the count in any range. -- Cond. from Bull. Hyg.

773 Particle Size Analysis for the Chemical Engineer. L. Cohen. Chem. & Process Eng. 40, 383-386 (Nov. 1959).

For the chemical engineer who is interested in using particle size analysis for routine process control or to obtain design data, this article summarizes the applications of particle size distribution, the various types of instruments available, and the factors involved in the choice of an instrument. Some comments are made on the limitations of the various instruments, not as a critical review but as a brief guide for the uninitiated to this rather controversial field. The choice of an instrument must be made in the light of all factors involved. The choice of an instrument for size analysis is very wide and it is not possible to pick out any one instrument as being the best in all respects and in all circumstances. -- APCA Abstr.

774 Dust Control in Glass Manufacturing. E. F. Wilson. Glass Ind. 41, 202-203, 230-235 (Apr. 1960).

Major sources of dust in the glass industry originate in the material handling operations prior to mixing, in mixing, and in subsequent handling of the mixed batch, including dusting in the tank itself. Since control of dust is so difficult after it has become