

pattern, errors in sampling and measurement, the use of only two subjects, etc. Irregularities in the volume of successive inspirations would tend to make the retention greater than that which would occur under regular breathing. This, however, would probably be greater at the rapid rates of respiration and thus would only add to the discrepancy.

On the other hand, the discrepancy may be due to some combination of errors in the assumptions which have been made in the calculation. Since the various factors enter in complex ways it is difficult to determine the changes that should be made to remove the discrepancies.

SUMMARY

The results of experiments to determine the retention of triphenyl phosphate droplets in the human respiratory tract are reported, and they are much as would be expected from other experiments.¹² A study of subject variability revealed no marked correlations, though it would appear that retention decreases with body size and is somewhat larger for women than for men. Experiments in which the expired air was divided into four equal fractions suggest that the variability is greater in the fractions exhaled first than in those exhaled last.

Various patterns of respiration have been used, in which the retentions of various-sized particles were measured. The results of those experiments are compared with previous calculations,^{1b} which have been extended somewhat. A general agreement is found, though there are some discrepancies. The results indicate, however, that the calculations^{1b} for deposition in the various parts of the respiratory tract are fairly accurate.

12. Davies, C. N.: Inhalation Risk and Particle Size in Dust and Mist, *Brit. J. Indust. Med.* **6**:245, 1949. Brown, J. H.; Cook, K. M.; Ney, F. G., and Hatch, T.: Influence of Particle Size upon the Retention of Particulate Matter in the Human Lung, *Am. J. Pub. Health* **40**:450, 1950.