4.9 Air Volume Requirements for Exhaust Hoods. Exhaust hoods should be so designed and located as to provide the necessary air velocity with the lowest possible air flow. The following general rules should be observed:

4.9.1 Enclosure of Process. The process should be enclosed as much as possible (see Fig. 1).* The practical necessities of operating the process must, of course, be taken into account. Too complete enclosure of a process may result in economic penalties in terms of operating efficiency, or capital expenditure greater than that for the larger exhaust system required by a less complete enclosure; an economic balance should be maintained between the two extremes. The quantity of air required for enclosing or partially-enclosing hoods is determined by two factors:

(1) The air velocity through all openings must be great enough to prevent the escape of contaminated air, and the air volume must be sufficient to carry away all air or gas introduced into or created within the enclosure. In the design of the hood, special attention must be paid to the fit around rotating shafts, etc. and to the selection of air volume so that there will be an adequate flow of air into the hood at these points.

(2) The velocity within the enclosure should be high enough to remove the contaminant from the hood, except that the velocity should not be high enough to carry away

*ANSI Standard Z9.2 1971, page 14

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