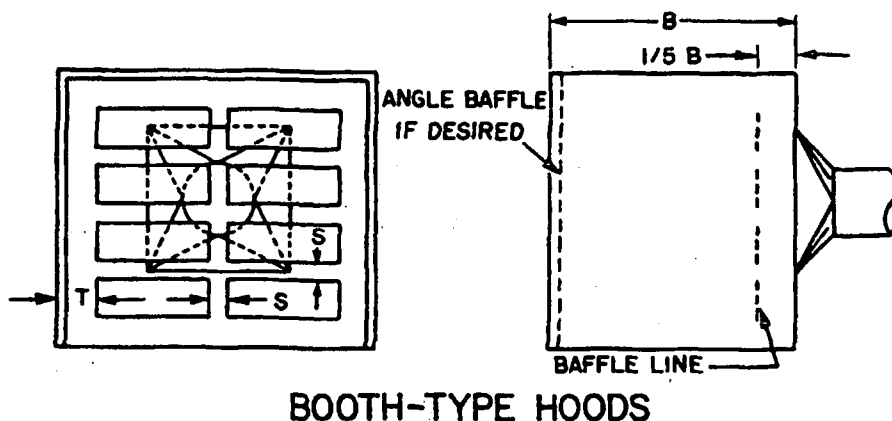


## Local Exhaust System



**BOOTH-TYPE HOODS**

FIG 29-18 — Spray booth-type hoods. Dimension  $S$  varies from 4 to 8 in., depending on the size of the booth.  $T$  varies from 6 to 12 in., depending on size of the booth. As size of booth increases, number of panels used increases. For booths 3 by 3 ft and smaller, provide one panel 6 in. larger than the fan diameter.

*Courtesy American Conference of Governmental Industrial Hygienists*

bureau may prescribe fire control aspects. At the same time the fire insurance carrier may have specific requirements that must be met. It may also have a secondary concern to reduce the total damage resulting from a fire, including water damage. The safety professional should be thoroughly aware of all requirements that apply in his locality.

A spray booth is simply an enclosure with sides, a rear, top, and bottom—the front, called the face, being open. The booth must, of course, be large enough to accommodate the work with space around it so the operator has necessary freedom of movement. Three feet of clear working space is a good figure. The overspray must be carried away from the operator's breathing zone. This can be accomplished usually with an air velocity of 100 to 150 fpm through the booth face. A small shallow booth is usually designed for a face velocity of 200 fpm or more. In metallizing, when the material is toxic, the velocity should be at least 200 fpm, and an air-supplied respirator approved by the Bureau of Mines should be worn by the operator.

The deeper the booth, the better the control. It is a good rule to make the depth not less than the height or width, whichever is the smaller.

Another design feature is baffles (Fig 29-18). They serve two purposes: they help

distribute the air flow evenly across the booth, and they catch as much of the overspray as possible, helping to keep it off the fan blades. The open area between baffles should total 25 to 50 per cent of the cross sectional area of the booth. If the fan is in the center of the back wall, the baffles, arranged symmetrically, should be placed no closer than 0.75 of a fan diameter in front of the wall. If the fan is on top of the booth, the baffles should be somewhat over one fan diameter in front of the back wall.

Baffles should be adjustable in position, and easily removable for cleaning. If there is much overspray or if the booth is used for production, a booth with a water wash or other collecting device should be used.

Exhaust piping should be as short as possible, with no unnecessary elbows or bends, and no screens or dampers. Duct velocity is usually about 2000 fpm.

The exhaust fan is usually an axial or propeller fan, with cast aluminum blades, belt driven with the motor outside the duct. The fan must be capable of operating against the actual resistance that the booth and duct interpose to the air flow, and so a free delivery fan such as the simple propeller type cannot be used. If the duct is fairly involved, a centrifugal fan may be required—but it should never have a blade of the forward