

As we mentioned before, in setting up a program of health control, the sources of lead and zinc contamination are usually dealt with first. This means starting in the melting department of the foundry, which is unquestionably the largest source of contamination throughout the plant. In our various old plants we have different types of furnaces for melting our metals. We use cupolas in some plants, and either the U. S. or Stroman Furnaces in the others as our primary melting equipment. Most all plants have either ground-type crucible furnaces, or the tilting-type, above-the-ground crucible furnaces. If cupolas are used, the greater portion of the fume goes up the stack to the outside atmosphere and only the tapping-out spout requires attention. We have handled this problem differently in two of our plants having cupolas. In one plant we use a small hood over the cupola spout with proper induced draft for removing the fume. In the other plant we use a large hood extending out from the front of the cupola approximately 20 feet and approximately 5 feet on both sides of the spout in width. This entire hood arrangement is exhausted by four large ventilating fans in the monitor of the roof. The reason for the two different types of hood arrangement is that the plant having the small hood over spout does not have water jackets on their cupolas; consequently, a lower air pressure is used through the tuyeres, resulting in a very small blowout when the cupola is empty. The other plant, however, has water jackets on the cupolas and requires higher air pressure through the tuyeres for proper operation. When the cupola is almost empty, a considerable blowout occurs that might extend as much as 12-15 feet into the room. By using the large hood, we are able to confine the fume given out in the blowout to the hooded area, but this requires the wearing of respirators by the pouring crews when working under the hood. We know that the respirator is not the best answer for health control, and men are prone to forget wearing their respirators in contaminated areas if they must be worn continually. We do not have any objection on the part of the men to wearing the respirator for only a few minutes when working in such an area. When such furnaces as the U. S. or Stroman Furnace is used for melting the metal, we use individual hoods over each furnace connected to a stack leading to the outside atmosphere, and by means of gravitation remove the fume at the source. Because of the intense heat in such a hood, we found it was not practical to use our existing fan equipment which had the motor in the air stream. Rather than incur a large expenditure for fans driven by motors out of the air stream, we experimented with the gravity type hood and found it worked satisfactorily. Therefore, all of the direct hoods over our large melting furnaces are now operating on a gravity basis. The ground type crucible furnace is handled in a similar manner, and at the present time we have just completed installing individual hoods over a pit of five ground furnaces at our St. Louis plant. We do not have a Medical Department test on the efficiency of these hoods, but our expectations are such that we believe this to be the method for properly exhausting this type of furnace installation. We have made several tests of various other types of hooding for this type of furnace, but did not experience too good results; thus, we rejected the design. The tilting-type, above-the-ground furnace, if properly located, can be handled with a baffle curtain extending from the ceiling down to within 7 feet of the floor and by using a power ventilator between the baffle curtain and the wall, we are able to properly exhaust the fumes from this source. If the tilting-type furnace is not located near a wall so that a baffle curtain can be used, then the individual type of hood is required. In the furnace bay of our St. Louis plant we have some fifteen or so melting furnaces and prior to the installation of individual hoods over these furnaces, we dropped a baffle curtain from the ceiling down to within 7 feet of the floor to separate the melting bay from the pouring and molding floor. This bay is approximately 40 feet wide and from the floor to the highest point of the monitor is approximately 35 feet. The total length of