

Figure 1 shows work practices in the early 1930's. It barely shows the man at the next machine as visibility was limited to about 20 or 30 feet. Notice the employee assigned to wipe off the electric bulbs so that people could see better. Obviously, it was extremely dusty. In this plant in 1921 and 1922, dust was exhausted through the ceiling, as mentioned and this was a fairly general practice. The next approach, shown in Figure 2, was downdraft ventilation, in which a hole was drilled in the floor, lined with sheet metal ducting, and equipped with a fan at the other end. All but a few windows were nailed up, leaving sufficient air flow so that the workers would not be in a vacuum. This reduced the dust level in the atmosphere to the point that one could see the employee at the next machine. The dust so removed was emptied into what was called the "dust room" shown in Figure 3. It was about 150 feet long and had burlap sacks nailed to 2 x 4's. Dust from the pipes emptied into these sacks. The routine way that they cleaned up this area was to send a man through with a "beater" as shown. He whipped the sacks in order to loosen the material and get it to settle to the bottom. In addition an individual used to have to go in with a shovel periodically to empty the sacks; usually this ranged from weekly to monthly. As shown in Figure 4, other individuals had to crawl through the ventilating system to rake out asbestos dust which had collected in the pipes. You can imagine that the exposure of the individual during this particular operation must have been maximal.

Figure 5 pictures the modern situation, showing a "wheelabrator" composed of approximately 1140 large canvas sacks. The dusty air enters from the bottom. It has a cutoff valve at the bottom which decreases the flow of air, and the large fibers which are trapped drop into carts that sit at the bottom of a sheet metal bin. The fiber dust so collected is re-introduced into the system. We have two of these large collection systems in our plant. One modern dust system conducts 53,000 and the other 90,000 cubic feet of air per minute.

The above-mentioned cutoff can be seen in Figure 5. The large fibers fall to the bottom, and the fine dust is blown up into these sacks, which need to be emptied only twice a year. The air which goes through these canvas bags is not recirculated. So our preventive engineering methods have effectively reduced dust from carded material. A sufficient capture velocity is maintained to keep dust out of the atmosphere.

Some operators also need to wear respiratory protection with the hood in operation.

Even where bulk raw materials are prepared and held waiting to go into the "card room", the atmosphere is so relatively free of dust that there is no longer any reduction in visibility whatsoever looking across the plant's interior.