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Ventilation and the Dust Hazard

Now that the blackout is past history, the time is opportune for foundry executives to turn their attention to permanent lighting and ventilation. With this in mind we have been browsing over the latest American literature on the latter subject to ascertain current trends in overseas practice. It should be borne in mind that the laws governing industrial hygiene are the affairs of each individual State and not applicable to the whole country. Thus the State of New York has, through the Department of Labor, imposed a requirement "that the amount of dust in the breathing zone of an employee shall not exceed 30 million particles per cubic foot of air in any foundry operation except that in abrasive cleaning rooms, concentration shall not exceed 10 million particles per cubic foot, assuming, of course, that such concentrations apply inside the fresh-air-supplied helmet or respirator that is worn by the operator." The order goes beyond this and provides a number of engineering rules for the control and elimination of dust at its source of generation. The outcome has been that the two requirements are not compatible and many New York foundries now refuse to adopt the codes imposed and are demanding that the factory inspection division of the State prove that they are exceeding the 30 million count. Generally speaking, it is the policy of the American Foundrymen's Association to place no reliance on dust counting at this stage in the development of the science. This is important because the Association through its Industrial Hygiene Codes Committee, being nation-wide in constitution, is regarded as the guiding authority for the various States in this matter.

Another matter, voiced by Mr. John M. Kane, is the tackling of the problem of dust generated by electric steel melting furnaces. Though there are no indications that this is toxic, being largely a mixture of lime and iron oxide, he decided to attempt to eliminate it, if only for the sake of better vision for the crane driver. With a combination of ducts and a hood situated at the cardinal points, whilst still taking care of accessibility, and rapidity of removal for slagging and pouring, a successful system has been devised. Mr. J. W. Fehnel has made an interesting study of electric furnace fumes, and from it we learn that the amorphous silica produced does not set up silicosis, but it may be harmful in some other direction under prolonged exposure to heavy concentrations. Manganese fume, however, is said to be highly toxic, whilst chromium is deemed to be inert. Though little is known of many steel-making elements, vanadium fume is considered to be dangerous.

Looking at the subject by and large, it is obvious that dust of any type is undesirable. Its elimination is an engineering project, not half so difficult of solution as many which have been successfully tackled during this last war. Much has been accomplished; for instance, the dust concentration around a battery of well-ventilated grinders was of the order of 1.8 million particles per cubic foot as against 3.7 million for the average city streets. The opinion is expressed by Mr. Warren A. Cook that "whether or not grinding operations, where the quartz percentage of the dust is low total dust does not exceed five or ten million particles per cubic foot, actually causes injury to the lungs would seem to be exceedingly improbable on the basis of present information. Chest X-rays have shown some markings which simulate silicosis. There is a real possibility that these markings may be due to iron or iron oxide dust and analogous to the harmless condition of welders' lungs resulting from iron oxide fume, may have no significance as far as injury to health is concerned."

Post Scriptum.—The fumes from tellerium are not toxic, but anti-social, inasmuch as they communicate to the breath an odour so pungent as to warrant the diffuser exclusion from all civilised communities, except perhaps the porters' room at the Gare du Midi.

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