

safety in steel warehousing where the variety of sizes, types, grades and finishes of the steel carried in regular inventory is particularly great.

Problem number four was the employee's mental attitude in relation to the work pattern of the industry. The high degree of

flexibility in daily job assignments, bringing about a constant change in duties and industrial environment, demands a general safety knowledge of the warehouse operation. This is difficult to establish except through experience gained during an extended employment period.

The Use of Wetting Agents to Control Dust in Industries

By G. A. MAU

Vice Pres., Johnson March Corp., Philadelphia, Pa.

Within the past two decades chemists have developed materials with properties similar to soap but without the limitations, resulting in a large number of compounds with remarkable physical properties. The behavior of these materials has suggested their use in a wide variety of industrial fields.

These materials are known as Surface Active Agents since their primary effect is at the boundaries or surfaces between two phases.

Reduction of interfacial tension, lowering of surface tension, increase of wetting power, deflocculation and emulsification are some of the results of this activity. The synthetic surface active agents first came into use in this country about 1930. In the few years since their introduction, they have become numerous and varied, and have found many uses in diverse fields. The surface active agents can be subdivided into five groups. Wetting agents, penetrating agents, dispersing agents, emulsifying agents and foaming agents.

Reference will be directed particularly to the first and second groups. Namely, wetting agents; producing increased wetting or spreading of an aqueous solution or suspension over a repellent surface and the second group, penetrating agents, providing more rapid passage of a liquid into a porous solid.

With the above brief discussion on surface active agents, or as I will refer to them from now on as wetting agents or compound, I intend to discuss the use of wetting agents to control dust in industry and particularly, the foundry.

I like the popular definition of a wetting agent, which merely states that a wetting agent added to water makes it wetter. Perhaps, we should state for the purpose of keeping the chemical terminology straight, that a wetting agent is a material which, when added to water, or to any other liquid, will cause considerable reduction in surface tension. Safety and health have been benefited by the use of wetting compounds in many industries. Safety—in providing better visibility around plant and equipment, health by preventing the absorption or inhalation of dust.

Dusts, whether toxic or not, are harmful and an attempt to group dusts under the headings "active" and "inert" (with reference to effect on health) has proved unsatisfactory. Investigations have proven that practically all dusts may be harmful if breathed in large amounts over long periods.

In this country, dust diseases usually designated as "silicosis" is more or less common among workers in the mining, grinding, granite and foundry industries. According to Lanza and Vane, the estimated number of men exposed to Silica-Bearing Dust in various industries are as follows:

Process	Percentage of All Employees	Number Exposed
Metal mining	100	62,000
Anthracite coal mining	20	30,000
Quarrying of granite, gneiss, sandstone, etc.	100	22,000
Smelting & refining	100	18,000
Foundry workers	100	200,000
Potteries, glass works, stone products ..	50	70,000
Grinders, buffers, sand blasters, vitreous enamellers		62,000
Estimated total for mining, quarrying and manufacturing industries.		490,000

In addition of workers dust in the now engaged

In order the purpose agents for to discuss and the compared to tension an

Not all gain access lungs. For dust present should be

Investigate greater the sion are and that monly in Due to g of suspension of respirator penetrate lungs.

Therefore should be which an dimension

This g to wet, a tension I nozzle. I its effect dust has other liquid dispersed as has been

Dust c from the highly s raw water ten quon applicati mining.

Dust wetting dust cover case of all, espe

To ol led to t The g