



Technical Article

## **Dust Generation and Control in Materials Handling**

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The mechanisms are described by which dust is generated and dispersed in materials handling systems and the general approach to dust control is outlined. Specific methods of dust control mentioned include: modification of handling system, hoods, booths, containment, water sprays and air curtains; empirical design data is given where available. The problems discussed and the lack of comprehensive design procedures from the background to current work at Warren Spring Laboratory. The present paper forms the basics of one of the lectures in a series of industrial awareness seminars that are organized by Warren Spring Laboratory.

The economic control of dust in materials handling plant requires that it be considered as an integral part of the system at the design stage rather than adding ad hoc arrangements after the plant has started up. Solving the problem after it has brought the process to a standstill is not only expensive in terms of extra equipment and manpower but also in lost production.

The generation and control of dust depends upon the nature of the material being handled, the selection of the handling processing and abatement equipment, plant layout, detailed engineering and the method of operation and control of the plant and processes. There are four important aspects to the overall control

problem:

1. Minimization of the generation of dust at source.
2. Containment of the generated dust and prevention of its dispersion.
3. The selection and sizing of the dust abatement equipment.
4. The handling of the collected dust.

The discussion below concentrates on 1 and 2 above and it briefly summarizes the state of the technology prior to the commencement of the current work at Warren Spring Laboratory. This work is directly financed by the Department of Industry (through the Chemicals and Minerals Requirements Board), 20 companies and the Health and Safety Executive.