MONDAY AFTERNOON SESSION

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Presiding: Dr. A. L. Brooks, Medical Director, Fisher Body Division, General Motors Corporation

Recognition and Control of Fume and Dust Exposure

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Illness which can be attributed to the occupation may occur in the automotive and allied industries. While occupational disease cases are much fewer in number than those resulting from accidental injury, there still remains the need for vigilance in maintaining a healthful working environment. The responsibility for employee health is delegated by management to the medical director with the safety director charged with matters pertaining to safety. For the smooth functioning of either department it is necessary that these individuals work in close harmony with each other.

A safety engineer who is capable of recognizing conditions which may be detrimental to the health of the employee is an excellent teammate for the doctor in any employee health maintenance program. The safety engineer need not be capable of actually sampling air in the environment or designing a ventilation system for the control of toxic materials. He should, however, have knowledge of the materials which have been proved harmful, should be fairly well informed of how these materials may be used safely, have some understanding of basic control measures which are normally recommended when such materials are used.

The intention is not to present a highly technical discussion of fume and dust exposures or detailed information, regarding ventilation systems, as such matters are of interest to the professional industrial hygienists and of comparatively little value to safety engineers. This discussion will be limited to the more basic principles of industrial hygiene as they relate to fume and dust exposures, to indicate what control measures are available or used to protect the employee's health, and, to call to your attention operations and materials which are commonly used in the automotive and allied industries, at the same time indicating the generally accepted opinion as to their effect on health.

Many conditions are corrected or improved because of reasons other than their effect upon the health of the employees. Better products, better employee relationship, reduction in maintenance of equipment may be cited as justification for management's decisions for such correction or improvement.

Generally speaking there are two means of entrance of toxic compounds into the human body under industrial conditions, namely, by ingestion or via the respiratory tract through the inhalation of fumes, dusts, mists or gases. Ingestion is of importance if toxic materials which have a systemic effect are used and adequate washing facilities are not provided, or, where the employees are slovenly in their personal habits. Inhalation is considered the most important portal of entry of fumes or dusts and the particle size, therefore, becomes significant in evaluating an exposure. The particles which cause the physiological changes are those which are small enough to remain suspended in the air and not those which immediately fall to the floor. Flying particles, which are of concern to a safety man and for which he advocates the use of goggles, are not of hygienic significance since they are not of respirable size. To judge the seriousness of an exposure by the quantity of detritus adjacent to an operation is often misleading. This is especially true where mechanical ventilation has been provided which will remove the fine material but is inadequate to trap or convey the larger particles.

In evaluating an exposure it is necessary to consider the toxicity of the material, the duration of the exposure, the average concentration of the contaminant with special attention being paid to those operations which produce high concentrations at some phase of an operating cycle, and the measures which have been provided to control the exposure.