MAXIMUM ALLOWABLE CONCENTRATIONS

H. H. HUDSON, M.D.
NASHVILLE, TENN.

IF THIS symposium had been presented a few decades ago, the discussion of maximum allowable concentrations would have presented new and novel ideas to many in the audience. Even less than a decade ago it might have been entitled "The Case for Maximum Allowable Concentrations." [1] Today, after years of careful research and practical application in field work, maximum allowable concentrations are used extensively in the evaluation of working environments.

As changes in industrial production have occurred, and as the relations of employer and employee have changed, principles of industrial health necessarily have advanced. When slave labor was used in the mercury mines of Almaden Mountains, in Spain, the working time of the slaves was reduced to 34 hours a month as a control. This practice existed as recently as 1920.[2] An industry using this method of control of a health hazard would find it most difficult to compete in the world markets today. With the increasing value of human labor, other preventive measures have been developed.

For centuries, data concerning the toxicity of substances taken by mouth have been available; however, until rather recently there was an absence of information about the toxicity of most substances which gained entrance to the body through the respiratory tract. In the literature there are frequent references to the Kobert article,[3] "The Smallest Amounts of Noxious Industrial Gases Which are Toxic and the Amounts Which May Perhaps be Endured," which was published in 1912. In most of the early work the investigators were interested primarily in concentrations which were rapidly fatal or those from which severe poisoning resulted within an hour. As the science of weighing and measuring minute quantities developed, more interest was manifested in unraveling the secrets of occupational diseases.[4] In 1935 Sayers and Dalla-Valle [5] used the phrase "maximum allowable

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Dr. Hudson is director of the Industrial Hygiene Service, Tennessee Department of Public Health.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

1. Elkins, H. B.: The Case for Maximum Allowable Concentrations, Am. Indust. Hyg. A. Quart. **9**:22-25 (March) 1948.

2. Teleky, L.: History of Factory and Mine Hygiene, New York, Columbia University Press, 1948, p. 7.

3. Schrenk, H. H.: Interpretation of Permissible Limits, Am. Indust. Hyg. A. Quart. **8**: 55-60 (Sept.) 1947.

4. Teleky, L.: Toxic Limits, Indust. Med., Indust. Hyg. Sect. **1**:68-71 (Oct.) 1940.

5. Sayers, R. R., and Dalla-Valle, J. M.: Prevention of Occupational Diseases Other than Those That Are Caused by Toxic Dust, Mech. Engin. **57**:230-234 (April) 1935.