

Corporate Occupational Exposure Limits: The Current State of Affairs*

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It has been claimed that the implementation of occupational exposure limits has been instrumental for the near elimination of serious occupational disease in the Western world. Although exposure limits or guides for most large volume chemicals have been established, the majority of the 10 000 chemicals which are routinely used in industry do not have them. As a result, many firms have chosen to establish internal limits to protect their employees as well as the persons who purchase those chemicals. This paper reviews the most important issues discussed in a 2-day symposium on corporate exposure limits which was sponsored by the AIHA Workplace Environment Exposure Limits Committee (WEEL). Thirteen representatives of industry and professional organizations presented papers which addressed various aspects of the process for setting internal exposure limits. The various policies and methodologies used by large American companies which have set limits for many years and their benefits were discussed. The history and function of Threshold Limit Values (TLV s⁹), Maximum Allowable Concentrations (MAC s), Permissible Exposure Limits (PEL s) and Workplace Environment Exposure Limits (WEEL s) also were reviewed. Some of the legal aspects of setting corporate limits and their role in the Product Safety arena were discussed.

Introduction

The Environmental Protection Agency (EPA) Toxic Substance Inventory List contains approximately 65 000 materials. Of these, occupational exposure guides or limits have been established for less than 1,700.^(1,2) Although numerous countries have, during the past 15 years, established committees to set occupational exposure limits, the recommendations of the American Conference of Governmental Industrial Hygienists — Threshold Limit Values (ACGIH-TLV) committee and Germany's Maximum Allowable Concentration (MAK) committee are the most widely used. These limits have been gradually adopted by most countries and regulatory agencies, especially in the developing and third-world countries. Notable exceptions include the Soviet Union and other bloc countries, as well as Japan and Sweden. The American Industrial Hygiene Association — Workplace Environmental Exposure Limits (AIHA-WEEL) committee, although formed only ten years ago (1976), is slowly becoming recognized as another source of consensus exposure guides. Since 1970, numerous countries have promulgated legal limits for airborne chemicals in the work place. In the United States, violation of OSHA's Permissible Exposure Limits (PEL s) as found in CFR 1910.1000 can result in fines or imprisonment for responsible parties.

The usefulness of establishing employee exposure guides for potentially harmful agents in the working environment has been demonstrated repeatedly since their inception in the 1940's. It has been reported that whenever ACGIH-TLV s

have been implemented in a particular industry, employees have sustained no serious adverse health effects as a result of exposure to these concentrations of the toxicants.^(3,4)

The Threshold Limit Values of the ACGIH were first established in 1946 from a list prepared by Warren A. Cook.⁽⁵⁾ The history of the ACGIH-TLV committee and a review of the critical manuscripts which describe the process has been written by Marshall E. Lanier.⁽¹⁾ During the past 40 years, the ACGIH-TLV committee has established occupational exposure limits, known as Threshold Limit Values, for approximately 600 compounds.

From the perspective of the industrial hygienist, engineer, businessman and worker, the benefits of setting exposure guides are manifold. The establishment of exposure limits, by their very nature, implies that at some level, exposure to a toxicant can be expected to be safe and pose no undue concern to exposed persons. By incorporating this fundamental toxicological principle into the realism of business management, the practice of industrial hygiene has been able to make large strides. The key to the success of limits is not that they are established on solid scientific principles or because they represent the difference between safe and unsafe levels of exposure; rather, the setting of any goal gives a sense of purpose and direction to occupational health programs which heretofore were very difficult to evaluate.⁽⁶⁾

The setting of goals, such as meeting a TLV, establishes an objective which can then be mutually pursued by the occupational health team, engineers and management. By introducing the concept of "safe level of exposure" and by establishing a kind of "management by objectives", the focus of an occupational health program can be identified. In fact, some believe that the use of limits remains relatively rare in the area of preventive medicine and, therefore, separates indus-

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