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Using a semi-quantitative exposure risk assessment model to identify the a national-wide change in chemical exposure risk factors in Taiwan during the periods of 1996-1999 and 2006-2009

In this study we proposed a semi-quantitative exposure risk assessment model, Exposure Hazard Index (EHI), to access the potential chemical exposure risk of workers in various occupational environments. The model was applied to two national-wide workers' chemical exposure databanks, which were established in 1996-1999 and 2006-2009, respectively, to examine the change in various industrial hygiene measures national wide during the above two periods of time. Results show that potential chemical exposure risks had been significantly reduced. The top two major causes for the reduction of the exposure risk were the "reducing exposure time" and "conducting more effective industrial hygiene management system". Nevertheless, results also show that "application of effective engineering control strategies" was slight deterioration. The above results suggest that the governmental industrial hygiene inspection should focus more on the installation of engineering control devices of industries, rather than on management issues. In conclusion, using the semi-quantitative exposure risk assessment model could not only be used for accessing the potential chemical exposure risk, but also could serve as a tool for identifying the exposure hazard factors which should be improved. The information is useful for both industrial hygienists and the government agencies to assess the effectiveness of the adopted industrial hygiene control programs and to initiate an effective strategy for the abatement of workers' exposures.

Keywords: Semi-quantitative risk assessment model, Chemical exposure databanks, Exposure hazard index, Exposure hazard factor

Biography

Perng-Jy Tsai is a professor and dean in the department of Occupational Safety and Health, College of Public Health, China Medical University. Prof. Tsai completed his Ph.D. in Environmental and Occupational Health from University of Minnesota, USA. He published more than 100 research papers in the reputed journals including 1 patent. He has specialization in Occupational and Environmental Health, Industrial Hygiene, Environmental monitoring, Industrial safety and Noise control.

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