

## REVIEW ARTICLE

**Zero Accident Vision: Literature Review and Future Directions in Indian Context**Jai Narain<sup>a</sup>, Yogesh Mishra<sup>b</sup>, Manoj Kumar Sain<sup>c</sup>, M.L. Meena<sup>d</sup>, G.S. Dangayach<sup>e</sup>, P.N. Rao<sup>\*f</sup><sup>a, b, d, e</sup> Department of Mechanical Engineering, Malaviya National Institute of Technology, Jaipur, Rajasthan, 302017, India<sup>c</sup> Department of Mechanical Engineering, Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur, India<sup>f</sup> Department of Technology, University of Northern Iowa, Cedar Falls Iowa, USA

**Abstract:** Industrial accidents are grave mishaps that result in injuries and fatalities to people, and damage to property as well as environment. The impact of accident is exorbitant and a society has to pay for decades. In most of the developed countries, wellbeing of people and environment is a top priority. The noble mission for every nation should be to reduce the level of accident to "Zero" by adopting the Zero Accident Vision (ZAV) to prevent the same. The Zero Accident Vision is the spirit and commitment to create and ensure safe workplace and prevent significant accidents in order to achieve safety excellence. This review paper aims to explore the research work performed towards ZAV and to study the status of present safety regulatory mechanism in details, safety culture and awareness in the Indian context. In the first stage of study, a systematic review approach was adopted using Scopus database to explore past research on ZAV. In the second stage, various policy documents available from government regulatory bodies including their functions and adequacy of accident prevention have been studied. Literature revealed that no significant research has been carried out on ZAV in India. From the study of various policy documents, it is evident that the country is far behind to achieve the ZAV and it will require efforts from government, private and non-government organizations to reduce the same. The planned and phase wise efforts are needed to reduce the accidents and finally to achieve the ZAV. The Changes in national safety policy, various acts regulating the occupational health and safety are need to be amended suitably to incorporate the core values of ZAV. The mechanism of motivation by giving suitable grading to the industries adopting ZAV as vision in their safety policy need to be devised and followed.

**Keywords:** accident prevention, hazards, safety culture, safety management, zero accident vision.

## ARTICLE HISTORY

Received:  
Revised:  
Accepted:

DOI:

## 1. INTRODUCTION

Accidents are unforeseen events, which not only cause harm to human and environment, but also reduce the productivity of the nation. Initially it was deemed that the accidents are inevitable during the works, but now various theories established that all accidents could be avoided by establishing proper safety management system. As per the reports of the International Labour Organization (ILO), about 2.34 million deaths are caused by work-related problems every year. Among them, 321,000 are due to accidents whereas the remaining 2.02 million deaths are caused by various types of work-related diseases, which correspond to a daily average of more than 5,500. The ILO states "The inadequate prevention of occupational diseases has profound negative effects not only on workers and their families but also on society at large due to the tremendous costs that it generates; particularly, in terms of loss of productivity and burdening of social security systems". According to the International Social Security Association,

\*Address correspondence to this author at the Department of Technology, University of Northern Iowa, Cedar Falls Iowa, USA; E-mails: [posinasetti.rao@uni.edu](mailto:posinasetti.rao@uni.edu)

270 million workers meet non-fatal workplace accidents every year with 160 million new cases of occupational illnesses. The financial burden of compensation, health care, rehabilitation and invalidity is a huge amount, equivalent to four percent of world GDP. Moreover, in some developing countries, the cost is as high as 10 percent of GDP.

The costs of occupational accidents may not be measured only in financial term but can be better judged by grouping into three categories: direct costs, indirect costs, and human costs. Direct costs consist of medical costs. Direct cost data are usually quite easy to obtain and do not require the use of special estimation methods. Indirect costs are considered costs related to the lost opportunities for the injured employee, the employer, the co-workers, and the community. They consist mainly of salary, administrative costs, and loss of productivity. Comparison with direct costs, indirect costs are usually more difficult to measure and are