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A Study on the Development of Korean Safety Ladder (K-Ladder) for the Prevention of Accident for Portable Ladder Workers

Jong Moon Hwang, Kyung Boo Chang, Hyung Su Moon

400, Jongga-ro, Jung-gu, Ulsan, 44429, Republic of Korea

Corresponding Author: Hyung Su Moon; overseas@kosha.or.kr

ABSTRACT

Objective: Development of Safety Ladders to prevent accidents for portable ladders using workers. **Method:** In-depth analysis of the cause of accidents, investigation of using conditions, analysis of safety ladders in home and abroad, and gathering opinions on safety ladder development from stakeholders. **Findings:** Development of a Korean safety ladder (K-Ladder) to prevent accidents for portable ladder using workers. **Conclusion:** Use of portable ladders is varied as they are used as a substitute for work platforms to work in the high place and a pathway to go up and down to the places where work is performed. Due to the structural instability of ladders and users' negligence in safety measures, 176 accident deaths and 19,900 accident injuries occurred at industrial sites in Korea over the past five years. Thus, its countermeasures are urgently required. In particular, the Korean Occupational Safety and Health Act (Article 24 of the Industrial Safety and Health Standards Rule) stipulates ladders are defined only as a pathway and their use as work platforms is restricted. However, 'Portable ladder safety work guidelines' of the Ministry of Employment and Labor enforced in 2019 allows ladders can be used as a work platform in some works Then many workplace understand a portable ladder can be used as a substitute for a work platform, and this has become a common practice. It is important to prepare an improvement plan so that the current laws and regulations can operate in the industrial field and induce the correct use of workers, but preparing effective preventive measures that go beyond regulatory compliance It has a positive function that can increase acceptance and maximize the effect of reducing industrial accidents. In other words, it seems that the effect of preventing accidents appears temporarily by implementing strengthened regulations and mobilizing administrative power for users to comply, but accidents are likely to last for a long time, and in order to eliminate the risk factors of these high-risk ladder work, rather than regulatory measures, the development of new safety technologies specialized in preventing accidents on ladders can be effective. Therefore, in this study, we set the direction for new safety technology development, focusing on the problems identified through the in-depth analysis of the causes of accidents by portable ladder workers and the fact-finding survey of workplaces, and analyze domestic and foreign safety ladder product groups and reflect stakeholders' opinions in the development of safety ladders. We would like to introduce research on the development of Korean safety ladders (K- Ladder) that can replace existing ladders and securing safety for portable ladder work.

Keywords: Portable Ladder, Step Ladder, New safety technology, Work Platform, Scaffolding, Korean Safety Ladder, Industrial Accident