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Japan's recent tendencies of accidents in building facilities and workers' accidents in the environment of extreme temperature

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Abstract

This is the study on safety and quality improvement technique for construction and maintenance of building facilities. In this paper, the tendency of accidents in building facilities for the past ten years is discussed. Among workers' accidents in Japan, which occur in the environment of extreme temperature, vibration induced white fingers (VWF) or Raynaud's phenomenon observed during particular works in the cold region and the occurrence condition of fatal accidents by heatstroke in the hot sultry region are summarized. Finally, it is about the prevention measures for heatstroke in Japan.

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1. Introduction

Few researches and studies have been conducted in such fields as safety activities, trainings/exercises, danger/risk prevention measures and analysis/evaluation methods for building facilities or the current state of safety/danger in building facilities is not fully comprehended either. Under these circumstances, the purpose of this study is to examine safety and quality improvement technique for construction and maintenance of building facilities. In addition, among workers' accidents which occur in the environment of extreme temperature, vibration induced white fingers (VWF) or Raynaud's phenomenon observed in the cold region as well as fatal accidents caused by heatstroke during particular works in the sultry region of Japan are reviewed.

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2. Recent tendency of accidents in building facilities

The transitions of the number of fatalities in all industries, the construction industry and works related to building facilities for ten years from 2004 to 2013 is shown in Fig. 1. and the transitions of casualties in Fig. 2., Fig. 1. was completed on the basis of yearly data from the statistics of occupational accidents “Fatal accidents according to the type of works /Conditions classified according to types of accidents in the construction industry” of The Japan Construction Occupational Safety and Health Association. In these data “building facilities” under the category of the construction works and “utility construction works (electro-communication, machinery and others)” are distinguished as two different types of works, but they were added in this study to present works related to building facilities.

Fig. 2. was completed on the basis of yearly data from the statistics of occupational accidents “Occurrences of life-threatening disasters according to types of industries and accidents (fatal accidents and four days-off or longer) of the Japan Advanced Information Centre of Safety and Health in the Japan Industrial Safety and Health Association. In these data “works on building facilities” under the category of the construction works and “other construction work(electro-communication, machinery and equipment installation, and other construction works)” are distinguished as two different types of works, but they were added in this study to present works related to building facilities.

According to these outcomes, the number of fatalities in all industries declined gradually from 1,600s in 2004 to 1,000s in 2013. A sharp fall is observed in 2009 and 2011, which can be attributed to economic slowdown in the construction industry as a result of Lehman Shock in September 2008 and the Great East Japan Earthquake in March 2011. The number of fatalities in the construction industry dropped below 400 for the first time in 2009, whereas no big difference was seen for works related to building facilities where the trend continues to be almost leveling off.

The number of fatalities in the construction industry accounts for about 34% of the total number of fatalities in all industries, out of which nearly 20% is represented by works related to building facilities. Fatalities in works related to building facilities comprise nearly 7% of the total fatalities in all industries. As for number of casualties, that of the construction industry accounts for about 16% of the total number in all industries, out of which nearly 19% is represented by works related to building facilities. Casualties in works related to building facilities comprise nearly 3% of the total casualties in all industries. The proportion of casualties in the construction industry to those in all industries is about 16% whereas the proportion of fatalities in the construction industry to those in all industry is 34%, suggesting that accidents in the construction industry are likely to lead to fatal disasters.

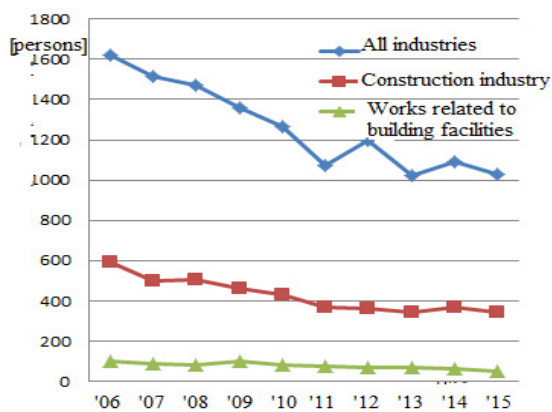


Fig. 1. Transitions of the number of fatalities between 2003 & 2012

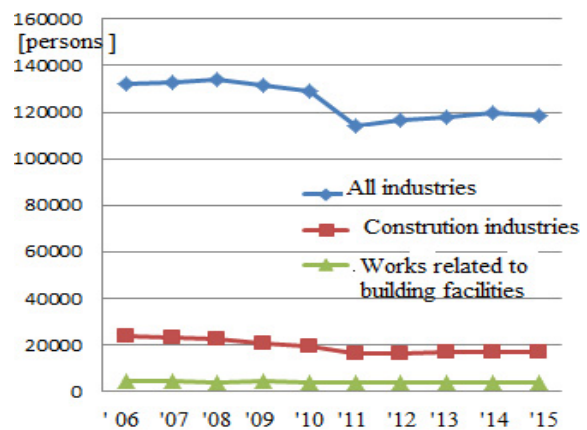


Fig. 2. Transitions of the number of casualties between 2003 & 2012

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