

STUDY TREND OF SLIP, TRIP, FALL(STF) IN KOREA

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Now a day, the accident rate shows 0.6% in Korea. The fatal injuries are of 461 cases from construction industry and 336 cases from manufacturing industry. Our goal of accident rate is 0.5% and that of fatality rate per 10,000 persons is 0.7 in 2014. There are many accidents caused by human errors as can be seen in slip accidents. We will also focus on the research for the prevention of falls caused by human errors especially in the construction industry. Unless one commit suicide, falls are results of accidents. The primary cause of a fall can be a slip, trip or misstep. So far, construction industry has implemented the accident prevention plan only for misstep as a primary cause. There were no analysis items and no analyzed data about fall by the slip and trip accidents in the construction. We will analyze construction accidents by primary causes and endeavor to prevent accidents in future.

Introduction

The number of occupational injuries in Korea was 92,256 in 2012. Among these, occupational diseases were 7,472 cases and injuries were 84,784 cases. The accident rate shows 0.6%. The accident rate has been stagnant around 0.7% for recent 10 years. However, it reduced to 0.65% in 2012. Also, the fatal injuries have exceeded 2100 cases every year. The deaths of illnesses were 730 and fatal injuries were 1,435 in 2012. The fatal injuries are of 461 cases from construction industry and 336 cases from manufacturing industry.

In order to reduce the stagnating industrial accidents in Korea, Ministry of Employment and Labor and KOSHA had tried various approaches. The goal of the KOSHA is reducing 5% both for the accident rate and fatality rate for every year. Our goal of accident rate is 0.5% and that of fatality rate per 10,000 persons is 0.7 in 2014. (fatality rate, OECD 0.4 in 2008, Korea 0.96 in 2011, 0.4 in 2030)

Measure

The major measures for reduction of accident rate are encouraging risk assessment, OSHAS 18001 safety management system, etc., mainly to motivate implementation of self-regulating system at workplaces. This means that the essential philosophy for accident prevention was changed from regulation to autonomy. The autonomy can achieve more than simply keeping rules but regulation has a certain limitation. The measures against fatalities are rare in Korea. The fatality rate per 10,000 persons of Korea ranked 27th among 27 member countries of the OECD. We set a goal of reducing of fatality rate from 2012 and try a lot of the efforts.

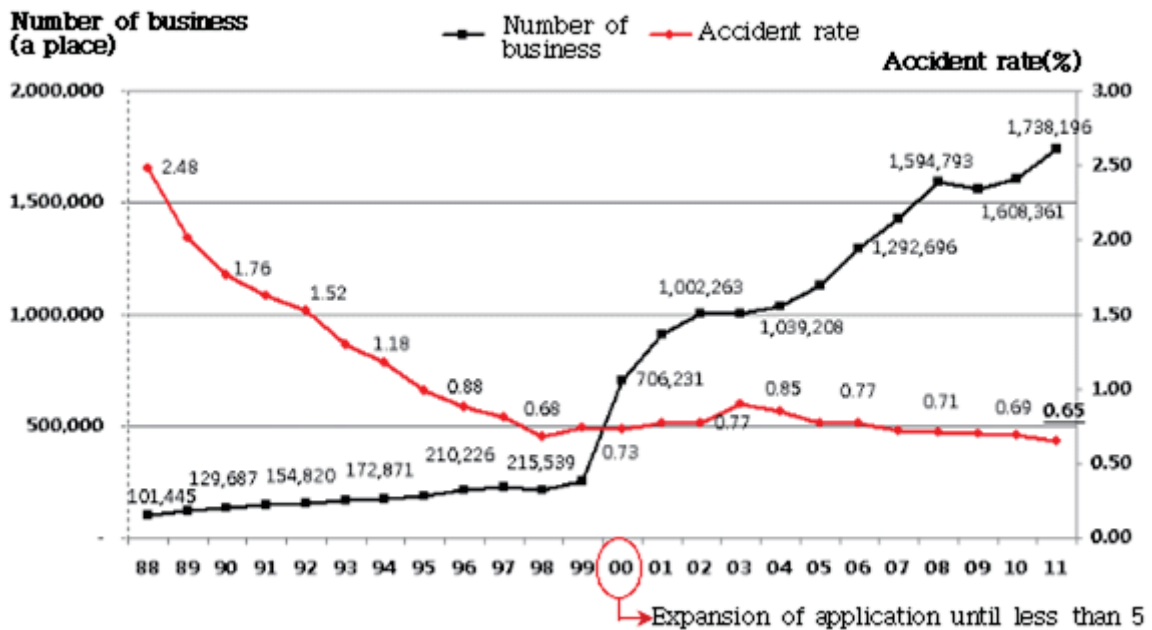


Figure 1. Accident rate and number of businesses by years

Existing researches for the reduction of accident rate were hardware-oriented such as protection devices of machines. There are many accidents caused by human errors as can be seen in slip accidents. We will research more for human error in the future. The type of accidents are classified into STF, caught-in or between, and fall from higher level, etc. Investigation of individual case of STF accidents shows that prevention measures targeting to human factors need more attention. The unsafe act with its counterpart unsafe condition can be seen everywhere in accidents causation analysis. However, it could not be used as a concrete prevention measure because of lack of detailed items. In the future, we will use the Fool proof(P) or Fail safe(S) to supplement unsafe act relating to human factor. The analysis for fatality injuries about 1100 cases in 2011 shows that P could be solution for 80% cases, S for 20% cases. The main causes relating to human factors appear to be visibility or communication problem. STF accidents reaches around 30% of all occupational accidents. We have studied STF for recent seven years. STF accidents are consist of about 50% by slip, 20% by trip, 30% by fall from same level. Main factors causing STF accidents are floor materials, contaminants, shoes, and human as treated in biomechanics. These four main factors can be combined into lots of different factors. So, biomechanics has difficulties to take role of main measure of controlling industrial accidents. In my humble opinion, the history of individual can be regarded as variable. Because the study targeting human reflects the whole history of human beings who have lived since three million years ago. The results of these studies have contributed to the accident prevention to a certain degree, but not remarkably.

Some of the researches performed by our center are as follows.

1. The suggestion of technique of risk assessment for STF accidents at workplaces.
 - The evaluation factors were floor materials, contaminants, floor conditions, type of shoes, worker's postures of work.
 - Shows the most dangerous part of the whole floor area.
2. The draft of Korean governmental notification "criteria of slip characteristics of safety shoes"
 - development of measuring tool
 - Suggestion of standard for frictional resistance of floors; Less than 0.5 : risky floor 0.5~0.6 : normal floor, More than 0.6 : safe floor
3. Development of measuring tools of various friction factors.
 - Reflects human factors

- Drag-type tool containing load cell is easy to use and make measurements.
- The measuring tools about slip developed such as portable push-type, robot, tool of trip and fall, etc.

We are going to study for prevention of the caught-in or between type accidents focusing on the human error. Similar to the this year's study of prevention for the woods and veneer manufacturing industry focusing on human behavior's characteristic. We are going to pay more attention to ergonomics for accident prevention similar to the studies of STF in Korea. We want to share and exchange of papers, opinions, and other informations with Japan in this field too.

