

## Review of Studies on Just Culture

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### 1. Introduction

Safety culture represents patterns of behavior and ways of thinking on safety for both individuals and organizations. Besides nuclear industry, many fields such as transport and healthcare have focused on the value and effectiveness of safety culture.

In this paper, the definition and characteristics of just culture, which is one component of safety culture, and related studies reported by other researchers are described. We hope this review will serve to understand the current condition and underlying problems of the just culture of nuclear industry in Korea.

### 2. Safety Culture and Just Culture

The Chernobyl disaster in Ukraine in 1986 had led to the development of the concept of safety culture. International Nuclear Safety Advisory Group (INSAG) emphasized the importance of safety culture as the primary element to effectively implement a defense in depth strategy [1]. In Korea, the collapse of Sampoong department store, occurred on 29 June 1995, aroused people's attention to safety. This accident had killed 502 people and injured about a thousand, and it is reported as the biggest loss of human life in Korean history since the Korean War. After this accident, the Safety Management Advisory Committee under the Prime Minister's office gave a definition of safety culture for the first time in Korea. Nuclear safety culture can be explained as the behavior patterns, core values, and basic belief shared among organizational members about the importance of nuclear safety.

According to the Reason's study [2], safety culture is composed as follows: just, reporting, learning, and flexible cultures. Of these, just culture aims to provide members of organization with the environment in which they can report the information related to safety issues spontaneously and easily. It is a crucial factor for just culture to establish a clear-cut line between acceptable and unacceptable behaviors when an individual makes an error [3]. The GAIN report expresses that determining the culpability of a particular behavior is important, however, the boundaries between blameless and culpable behaviors are vague (Fig. 1). The report also underlines that just culture encourages individuals and organizations to learn lessons from errors and incidents and therefore organizations should consider safety-related events as valuable opportunities to enhance standards of operation.

Malevolent damage Substance abuse for recreation	UNACCEPTABLE BEHAVIOUR
Substance abuse with mitigation Negligent error	"ACCEPTABLE BEHAVIOUR"
Unsafe acts	BLAMELESS BEHAVIOUR

Fig. 1. Defining the lines of behaviors (from Ref. [3])

As illustrated in Fig. 2, Reason described the process of determining whether a particular action of an individual is blamable and needs to be penalized. According to his explanation, in order to decide the culpability of unsafe acts, the following factors should be considered:

- (1) Intentionality of acts
- (2) Usage of drugs or alcohol: The stringency of punishment needs to be different in accordance with the purpose of drug use.
- (3) Violation of rules
- (4) Substitution test: To see whether a different but comparably well-qualified person makes a same mistake under similar conditions
- (5) Repetitiveness of acts

### 3. View on Criminalization of Human Error

Dekker searched the effect of criminalization of human error on system's safety [4]. According to the research, employees in system have seen criminal prosecution of professional mistakes as the threat to safety. Many investigations conducted in aviation and healthcare fields demonstrate that criminalizing the human error have made individuals hesitate to report their errors, eventually the system has missed the learning opportunity from failure. In the review paper, Dekker considered the effect of criminal prosecution of human error on safety reporting and emphasized the need for further investigation from the psychological point of view.

### 4. Establishment of Just Culture in Korea

The significance of establishing safety culture in the nuclear industry has recently been recognized also in Korea. The research about nuclear safety culture under the regulatory view has been investigated [5]. In addition, the Nuclear Safety and Security Commission (NSSC) established its first comprehensive plan in 2013 and planned the oversight and assessment of licensee's

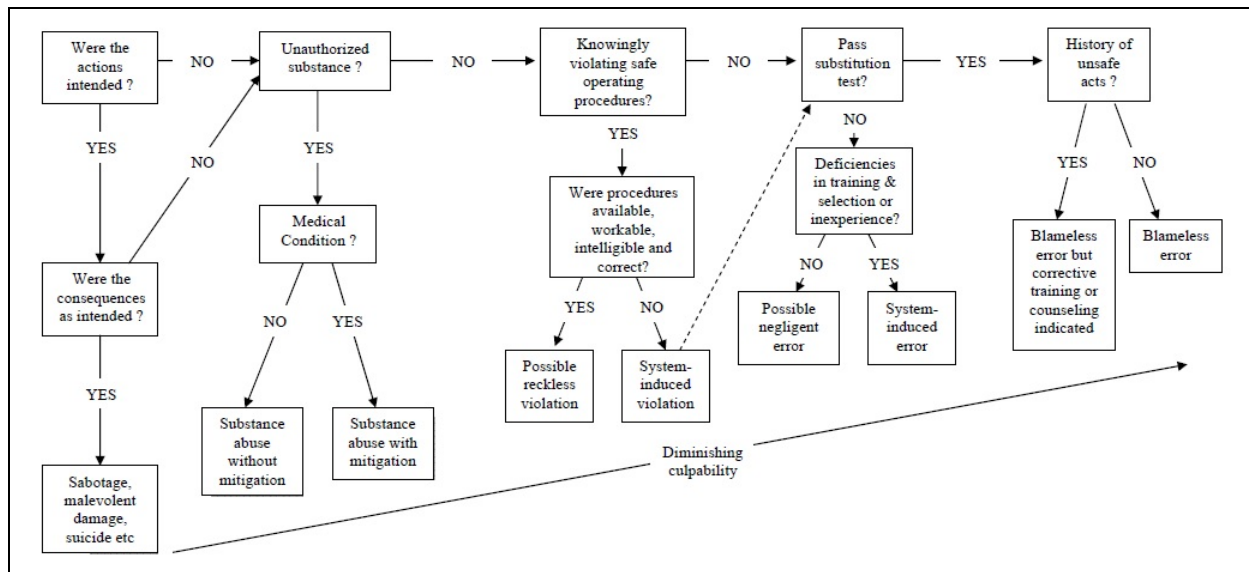


Fig. 2. Reason's culpability decision tree (from Ref. [2])

safety culture. Based on that comprehensive plan, the Korea Institute of Nuclear Safety (KINS) conducted special inspection on safety culture at headquarters of Korea Hydro and Nuclear Power (KHNP) and nuclear power plants (NPPs) in 2010 and 2014.

The need to set up just culture in nuclear industry is emphasized, but it is not systemized yet in Korea. However, after the Fukushima accident in 2011 and the station black out (SBO) incident at Kori Unit 1 in 2012 served as an opportunity to raise the safety consciousness. The implementation of programs such as corrective action program (CAP) and employee's concern program (ECP) can be interpreted as the expression of sympathy with the significance of just culture. However, most workers still lack the understanding of just culture and corrective actions identified after assessment have not been taken sufficiently.

As explained in the Heinrich's Law, severe accidents accompany many minor events, which could prevent accidents after sharing common root causes. If errors and failures by individuals are reported and shared in organization, it can have the opportunity to avoid more serious accidents. In other words, nuclear safety can be enhanced under the atmosphere in which individuals can report their errors easily and comfortably. To support workers to report the safety-related information, the compensation and disciplinary policies should be clarified. Above all, by making sure that minor human errors like slips and mistakes are not blamed, in contrast with negligent error or reckless conduct, the organization should attract voluntary participation from individuals on reporting.

The regulatory body can assist licensee in establishing the just culture through a series of

inspections, but it is only the second best. The operator should enhance nuclear safety culture spontaneously and continuously through the sympathy and implementation.

## 5. Conclusion

This paper describes the definition and basic principle of just culture in nuclear industry based on the review of researches on safety and just culture in various fields. To establish just culture solidly in organization, each individual needs to understand the nature of the just culture first. And it is necessary to create an atmosphere encouraging to report and suggest safety-related issues. Most of all, to draw clear lines of blame and punishment for human error is essential. The standards for intentionality or culpability of unsafe acts need to be studied more deeply.

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