

# The Concept, Connotation and Characterization of Safety Culture and Safety Climate

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## Abstract

Safety culture and safety climate has long been a proposed for its research also has entered the mature stage. In order to differentiate the two ideas more clearly and better describe the production activities in the social security in the application, this article will through the narrative background of the two, and in the research process in the evolution, analyze its structure and dimension, to explore the relationship and difference between the two, so that the concept of safety culture and atmosphere of these two kinds of materialization, better construction safety production system.

## Keywords

Safety Culture; Safety Atmosphere; Connotation; Characteristic; Levels and Dimensions.

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## 1. Introduction

In 1980, Zohar in the manufacturing of Israel security in the process of investigation and research, first proposed the safety concept of atmosphere, and in 1986, the report on the accident at chernobyl in the former Soviet union leak by IAEA, the international atomic energy organization of international nuclear safety information group first proposed the new concept of safety culture .The concept of safety culture and safety climate both put forward has been for decades, to make a research on both the discrimination is much like the stars, the this article main work is to predecessors' research simply summarized and discussed, and give your own opinion and summary, in order to more clearly know intuitively understand safety culture and safety atmosphere.

## 2. The concept and connotation of safety culture and security atmosphere are analyzed

### 2.1 The concept and connotation of safety culture are analyzed

There are differences in the terms of a safety culture. The definition of safety and culture is different, which naturally brings many connotations to safety culture. From the research results at home and abroad, the British Health and Safety Commission (HSC) regards the safety culture as the values, attitudes, cognition, abilities, behavior patterns and the safety and health management style and image of the organization[1]. An active corporate safety culture can be expressed as mutual trust, shared awareness of the importance of security, confidence in the effectiveness of preventive measures, and so on. In 1998, Reason defined a safety culture as an organization's core values about the importance of security and its basic beliefs and assumptions that guide behavior and decision-making[2]. Then look at the domestic, China's security management community believes that the safety culture is human in all areas of their lives, in order to ensure the physical and mental safety and health of mankind, and enable it to safely, comfortably and efficiently engage in all activities; To prevent, avoid, control and eliminate accidents and disasters; In order to build a safe, reliable, harmonious and harmless environment and matching operation of the safety system; The sum of the material and

spiritual wealth created for human well-being, longevity and world peace[3]. Professor Luo Yun of China University of Geosciences, in his study of the management of safety culture, also put forward his own point of view: safety culture is the sum of the spirit and material of safe production and safe life created by human safety activities[4]. Professors Cao Wei and Yuan Xu of Southwest Jiaotong University describe the safety culture in two points: 1. Safety culture is the sum of safety values and safety codes of conduct. 2. A safety culture is a standard of conduct and thinking patterns related to safe production.

From the above-mentioned scholars on the concept of safety culture to make the connotation of interpretation, we can know that although the connotation interpretation is different, but there are certain commonality, that is, safety culture is a combination of material, behavior plus spirit, and can be a high degree of unity between personal spirit and social code of conduct.

## **2.2 The concept and connotation of safety atmosphere are analyzed**

In terms of time, Zuhair first used the concept of a safe environment in his 1980 study and defined it as a shared awareness of a risky work environment shared by employees within an organization[5]. Since then, Mearns and Flin have viewed the safety climate as a collection of employees' perceptions, attitudes, and beliefs about safety and risk. At home, Fu Gui and Zhang Jiangshi put forward in 2009 that the safety atmosphere is the safety attitude, safety beliefs and safety values of employees, is a side of the safety culture, is the specific performance of the safety culture at a point in time, that is, the safety culture at this moment decomposed products.

In this way, the security atmosphere mainly reflects the security characteristics of the organization and individuals, there is a characteristic individual for even the state of the security awareness of the atmosphere.

## **3. A sign of a safety culture and a safe atmosphere**

### **3.1 Safety culture**

The security culture shapes not only the elements that are visible outside an organization, but also the things that are "unobservable" or reflected only in symbolic actions[6]. For these reasons, the safety culture is often described as "deep" and the security climate is described as "superficial". The safety culture is manifested in concrete forms, systems and entities and is hierarchical. Guldenmund identified a three-tiered safety culture in 2000. Thus, it can be clear that the characteristics of the safety culture is the layer it shows, through its core layer, middle layer, outer layer of the three layers of cultural output, as well as its internal processing transformation, to convey the message to the outside world[7]. These three layers have their own meaning, the core layer is mainly about the basis of security and basic assumptions, the middle layer is the values and attitudes believed in, while the outermost layer is often described as artifacts, it represents the underlying security culture of behavior and physical symbols, such as safety posters and signs. To better understand the level of safety culture, the following table is clear.

### **3.2 Safe atmosphere**

The security atmosphere can be understood as the perception of the middle and outer layers of the security culture at a given point in time. From this point of view, the safe atmosphere is the mental level as well as the psychological level of cognition[8]. The study of the security atmosphere continues the tradition of social psychology or organizational psychology, assuming that a variety of different security atmospheres can be depicted in a limited dimension. Zohar, Guldenmund, Glennon, Brown, Homels, Neal, Griffin and others have also made a variety of dimensions of the security atmosphere, distinguish between these dimensions of the security atmosphere, we can more clearly make a corresponding judgment of the security atmosphere[9]. Therefore, the dimension is the objective reflection of the security atmosphere, on the other hand, it is also the object of the further processing of the security atmosphere activities[10].

In 1980, Zohar used exploratory factor analysis to find that there were eight dimensions to the safety climate in the study of the security climate of industrial organizations such as food processing, steel, chemicals and textiles in Israel, while in 1982 Glennon also used Zuhra's method to develop the Safety Climate Questionnaire in various industrial organizations in Australia, resulting in seven dimensions [11]. In 1986, Brown and Homels used questionnaires in the United States in the form of three dimensions, and later Neal, Griffin and others based on the concept and definition of the security atmosphere of the organization of the high-order factors, found that the security atmosphere consists of four dimensions[12].

### 3.3 Security climate dimension difference analysis

Differences in the dimensions of the security climate can be explained by many explanations, such as differences in survey tools, sample differences, method differences, etc. Guldenmund reviews the dimension structure of the security culture obtained from the questionnaire approach over a 20-year period, from 2 to 16 dimensions[13]. The dimensional difference of the security atmosphere is related to the difference of the definition of the connotation of the security atmosphere by scholars, each person has his own opinion and focus on the security atmosphere, but from the root cause, even if the new definition of the security atmosphere dimension appears again, it is also an objective reflection of the security atmosphere in his environment and the object that needs further processing in the activities of showing the security atmosphere.

## 4. Conclusion

Safety culture is a social phenomenon, is a product of the long-term creation of human beings, is after the accumulation of time precipitation, can still be transmitted inherited material, code of conduct, ideological spirit. It has been 34 years since the concept of safety culture was put forward, and although it has achieved fruitful results, it still needs a lot of study, research, creation, precipitation, and then dissemination, making it a universally accepted ideology that can be passed on for human communication with each other.

The security atmosphere is different from the security culture defined by a wide range, mainly reflects the security characteristics of the organization and individuals, is characteristic of the individual for even the state of the security awareness of the atmosphere. In the previous summary, the security atmosphere is also regarded as the safety culture snapshot, that is, as a snapshot of the security culture. And in the author's personal understanding is that countless snapshots of the security atmosphere form the long lens of safety culture, shaping the values with the attributes of the whole society and the products of social life on the identity of safe behavior. It can be seen that a macro, a micro, safety culture is theoretical research and guidance, and the security atmosphere can be regarded as the organization and individuals of security even if the state of cognitive evaluation of the scale. Therefore, in the construction of safe production, grasp the relationship between the two, make it complement each other, so as to promote the construction of safe production.

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