

Construction of Emergency Culture and Safety Evaluation Index System Based on Behavioral Safety "2-4" Model

Sun Shimei^{1,2}, Zhu Yuqiao^{1,2}, Feng Ziyang^{1,2}, Sun Zuhang^{1,2}

¹Jilin Jianzhu University, Changchun, 130018, Jilin, China

²Jilin Jianzhu University, The Accident Prevention Research Institute, Changchun, 130018, Jilin, China

Abstract: With the frequent occurrence of production safety accidents in enterprises in China, it has become a broad consensus of the whole society to attach importance to the emergency management of production safety in enterprises. Taking the coal mine as an example, the frequent safety accidents in coal mine enterprises have seriously affected human health, safety and environment, highlighting the fragility of safety management and safety culture construction in coal mine enterprises. To fundamentally reduce or eliminate the occurrence of safety accidents in coal mining enterprises, the most important and effective safety management strategy is to build a long-term safety culture. The "2-4" model of behavior safety is introduced into the construction of coal mine emergency culture, hoping to further reduce coal mine safety accidents and build an evaluation system of enterprise culture construction with the characteristics of coal mine industry. In the development stage of coal mine, a reasonable mining plan should be made, and comprehensive preparations should be made. In the tunneling stage, the construction safety and progress should be strictly managed and supervised. It will be beneficial to the standardization and scientific development of coal mine commercial enterprise culture, is the inherent requirement of building advanced enterprise culture, and promotes the safe and healthy development of coal mines.

Keywords: Behavior safety, "2-4" model, Construction of emergency culture, Safety evaluation index system

1. Introduction

In recent years, with the frequent occurrence of safety production accidents in Chinese enterprises, it has become a widespread consensus in society to attach importance to emergency management of enterprise safety production. Taking coal mines as an example, frequent safety accidents in coal mining enterprises have had a serious impact on human health, safety, and the environment, highlighting the fragility of safety management and the weakness of safety culture construction in coal mining enterprises [1]. The most important and effective safety management strategy to fundamentally reduce or eliminate the occurrence of safety accidents in coal mining enterprises is to carry out long-term safety culture construction. Coal resources, as an important energy source for maintaining the normal operation of China's socio-economic system, play a very important role. Meanwhile, in the past decade, due to the profiteering nature of the coal mining industry, a large number of individual and private coal mines have emerged, making the safety issues of coal mines a focus of social attention [2]. With the increase in national safety supervision of coal mining enterprises and to ensure the safety production of the company, starting from 2008, the enterprise has comprehensively implemented refined management, with safety production as a focus and first and second line production as a breakthrough point, comprehensively strengthening team construction. Safety behavior culture is the sum of concepts that regulate human safety thinking and behavior. Strengthening the construction of safety behavior culture captures the main contradictions in safety production, the foundation and foundation of safety production, and is the spiritual driving force and intellectual support for achieving a fundamental improvement in safety production situation. This has very important practical significance for coal mining enterprises. People, equipment, and environment are the three elements of safety production work, and people are the most active and important among them. The position and role of people in safety production are crucial, and their level of safety is directly related to the quality of food industry safety production work. Safety production management, especially emergency management, is an important function of the government, and it is necessary to do a good job in safety production emergency management [3]. Here, the behavioral

safety "2-4" model is introduced into the construction of coal mine emergency culture, hoping to further reduce coal mine safety accidents and promote the safe and healthy development of coal mines. Firstly, it is necessary to strengthen the supervision of enterprises' own safety production emergency management, and the construction of coal mine safety production emergency culture and safety evaluation index system are important contents of government supervision of enterprises. Therefore, to enhance the safety awareness of production personnel, establish effective safety production ideological defense lines, and strengthen the construction of coal mine safety culture is a more effective method and approach.

2. Research on the Construction of Emergency Culture Based on "2-4" Model of Behavioral Safety

2.1 Safety management of coal mine behavior

From a large number of coal mine accidents, it can be known that coal mine accidents are almost invariably classified as liability accidents, not "natural disasters" but "man-made disasters", which are mainly caused by loopholes in management. In the development stage of coal mine, it is necessary to make a reasonable mining plan and make comprehensive preparations. In the tunneling stage, it is necessary to strictly manage and supervise the construction safety and progress, and pay attention to the protection of the surrounding environment of coal mine in the mining stage. The transportation stage is to get in touch with the later work of coal production [4]. Behavior safety management is a kind of management aimed at people's behaviors, a kind of safety management based on human reliability analysis and behavior analysis theory, and a kind of safety management method that guides and solidifies the required behaviors in a regular and step-by-step way. The cornerstone of safety production in coal mining enterprises is the team, which is also the source of increasing economic benefits and the foundation of safe and smooth development of coal mining enterprises [5]. In terms of personnel training and teamwork, the best training position is the team. In order to give full play to the functions of teams and groups, coal mining enterprises have created a good management environment for them. As shown in Figure 1.

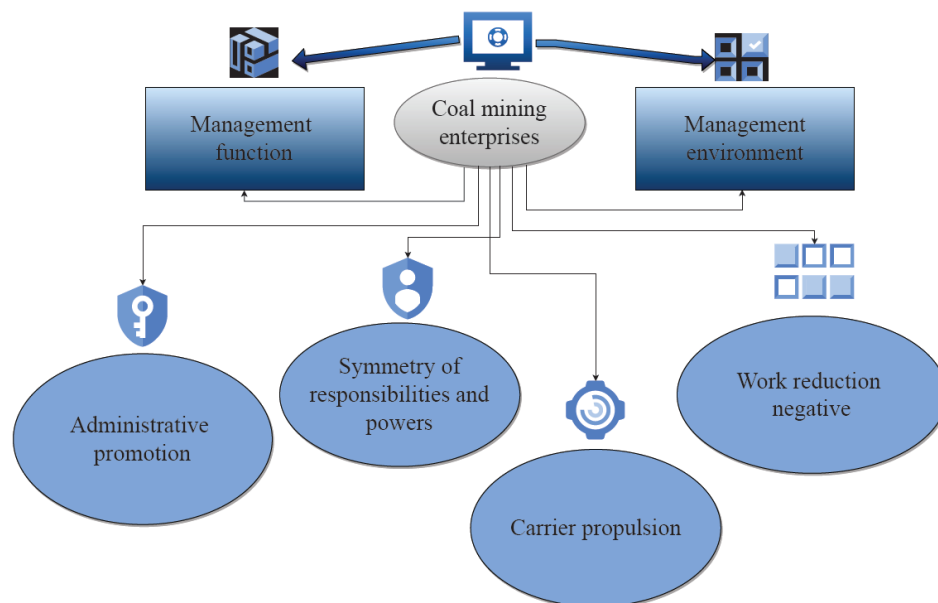


Figure 1: Management environment diagram

In the production process, let the middle and senior leaders have on-site production experience and assume the position of vice squad leader. See the actual mine mining with the miners and the squad leader four times a month, and conduct technical exchanges and discussions with employees to help employees solve practical difficulties in the process of production and life, set an example and carry out administrative work [6]. By strengthening the management of safety service verification, the implementation of service window safety system, the mental outlook of employees, the running status of equipment and the quality of construction and installation have all made great changes.

2.2 Establishing the mechanism of coal mine emergency culture construction

The construction of safety culture in coal mining enterprises is not a temporary measure, but an effective way to ensure safety production, stable power supply, and long-term stability, which is related to enterprise reform and development. Therefore, it is necessary to incorporate the establishment and improvement of an effective emergency culture construction mechanism for coal mining enterprises into the important agenda of sub bureau management, establish a new concept of safety culture construction, and effectively play the important role of safety culture in safety production [7]. The goal of cultural construction and management is to improve the safety cultural quality of employees in petroleum enterprises. Based on the "2-4" model of behavioral safety, this article advocates for "love" and "care", establishes correct safety values and safety behavior norms within the enterprise, and encourages employees to have a dedicated spirit in safety production. On the basis of improving the emergency plan, training and assessment on safety prevention knowledge were conducted for all employees. In addition to conducting a series of training courses within the sub bureau, the education and training department is also entrusted with conducting full staff training [8]. Through the behavior safety "2-4" model, maintenance personnel are arranged to conduct comprehensive maintenance on all lines and equipment as early as possible every year, and maintenance responsibilities are implemented. Maintenance responsible persons are registered for each line and equipment to ensure maintenance quality [9-10]. The construction and management of safety culture in coal mining enterprises reflect the respect for human rights, the protection of the safety and health of coal mining enterprise employees, and the advanced culture of protecting the productivity and development of coal mining enterprises themselves.

3. Scheme of safety evaluation index system for coal mining enterprises

3.1 Principles of safety evaluation index system for coal mining enterprises

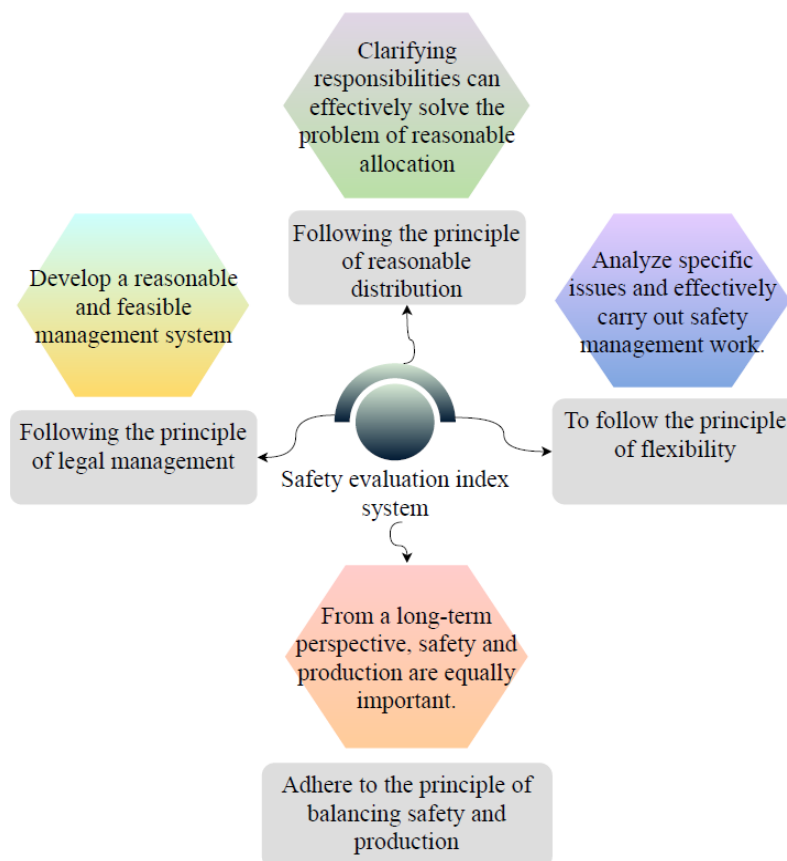


Figure 2: Safety evaluation index system

With the continuous development of society, the role of safety culture is becoming more and more prominent. How to analyze and evaluate the safety culture of coal enterprises qualitatively and quantitatively reasonably and effectively has become a hot research topic at present. Combined with the

actual case of a coal mine safety accident, the application of behavior safety "2-4" model in coal safety evaluation is analyzed and discussed [11]. In order to comprehensively, scientifically and accurately evaluate the overall picture of the safety culture of Shanxi coal enterprises, so that the evaluation results can truly reflect the safety culture level of the enterprises. Based on the existing coal mining laws and regulations in China, combined with the government's requirements and guidelines for coal mining, and fully considering the actual situation of coal mining enterprises, a set of reasonable and feasible safety evaluation index system is formulated, as shown in Figure 2 for details.

As can be seen from the above figure, the safety evaluation index system is mainly divided into four safety evaluation index systems:

- ① to follow the principle of management according to law

Based on the existing laws and regulations of coal mining in China, combined with the government's requirements and guidelines for coal mining, and fully considering the actual situation of coal mining enterprises, a set of reasonable and feasible evaluation system is formulated.

- ② Follow the principle of rational distribution of responsibility and power.

The problem of safety evaluation in coal mining is largely due to the unreasonable distribution of rights and responsibilities of various departments and personnel in enterprises. Re-division of rights and clear responsibilities can effectively solve this problem.

- ③ Follow the principle of paying equal attention to safety and production.

In the process of coal mining, there are often contradictions between safety and production efficiency. Enterprises should pay equal attention to safety and production from a long-term perspective in order to realize the long-term development of enterprises.

- ④ Follow the principle of flexibility.

The system and regulations will not change because of the problems in the process of coal mining, but the behavior of managers can be flexible. In the evaluation, we should analyze specific problems and do a good job in safety evaluation.

Therefore, building an evaluation system of enterprise culture construction with the characteristics of coal mine industry will be beneficial to the standardization and scientific development of coal mine commercial enterprise culture, which is the inherent requirement of building advanced enterprise culture.

3.2 Content of safety evaluation index system for coal mining enterprises

At present, the progress of cultural construction in coal mining enterprises is not balanced enough, and the cultural construction of each enterprise has its own characteristics. After understanding the current situation of cultural construction in coal mining enterprises through the evaluation system, it can provide a decision-making basis for implementing dynamic adjustments, so that the cultural construction of coal mining enterprises always moves forward along the established development direction of the industry. In the development stage of coal mines, it is necessary to formulate a reasonable mining plan and be fully prepared; During the excavation phase, strict management and supervision of construction safety and progress should be carried out; During the coal mining stage, attention should be paid to protecting the surrounding environment of the coal mine; During the transportation phase, it is necessary to coordinate with the later stages of coal production. When selecting safety culture evaluation indicators, principles such as systematicity, scientificity, operability, comparability, economy, non redundancy, and quantification should be followed.

3.3 Operation of safety evaluation index system for coal mining enterprises

The effect evaluation of coal mine enterprise culture construction is mainly reflected in enterprise management level, enterprise core competitiveness, employee cohesion, employee's recognition of enterprise culture, enterprise innovation and development ability, enterprise image strength and so on, among which enterprise core competitiveness and enterprise management level are the evaluation focuses. Optimize the whole process of coal mining, make rational use of existing human and material resources, and combine with the specific environment in coal mines to achieve the best coal mining method. At the same time, the operation of the safety production management system of coal mining enterprises can not be separated from the supervision and guidance of the government. Only when the

enterprises and the government cooperate with each other can the safety management of coal mining be truly realized. Of course, different industries have different indicators that affect safety culture. Firstly, according to the definition of safety culture, this paper summarizes the evaluation indexes selected in the past by referring to domestic and foreign literatures. Secondly, the elements are summarized and sorted according to the selection principle of safety culture evaluation index.

4. Conclusions

Safety management issues in coal mining enterprises. By continuously optimizing this management system and strengthening the management of various departments and elements in the mining process of coal mining enterprises, the overall safety operation of coal mining can be achieved. This article constructs an emergency culture construction and safety evaluation index system based on the behavior safety "2-4" model. The construction of coal mine enterprise culture is a continuous process of improvement and innovation, and the enterprise culture evaluation system should also continuously improve and adjust itself according to the development direction and level of enterprise culture. The construction and management of safety culture in coal mining enterprises reflect the respect for human rights, the protection of the safety and health of coal mining enterprise employees, and the advanced culture of protecting the productivity and development of coal mining enterprises themselves.

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