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Research Article

Safety Production Supervision of Industrial Enterprises Based on Deep Learning and Artificial Intelligence

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Since the beginning of the 21st century, with the continuous growth and improvement of the comprehensive strength of our national economy and the continuous improvement of our modern industrial machinery and equipment, the level of safety technology, production level, and quality management level see continuous steady improvement, resulting in the rapid economic growth of chemical industries in China in recent years. In recent years, chemicals have been widely used and demand is increasing. However, the physical properties of some chemical substances are very unstable and vary according to process conditions, making it difficult to control. At the same time, safety issues have become a major "red warning" for industrial enterprises. Various safety incidents have attracted social attention, and the chemical industry has also learned from them, sounding the safety alarm for itself and reviewing its own shortcomings, and taking improvement measures. Therefore, it is obviously necessary to always emphasize the concept of "safety first, prevention first, and comprehensive management" to prevent enterprise safety accidents. It is necessary to regularly investigate and analyze the situation of safety accidents to summarize and continuously improve. This is the most important thing for enterprises to prevent the continuous occurrence of safety accidents in a good and effective way. Regularly analyzing, summarizing, and improving safety issues are the best way to prevent accidents. Deep learning mainly relies on letting computers or other electronic devices perform iterative learning on a large number of data samples according to the rules defined by the program. The computer after learning will have the analysis ability similar to humans, but its analysis ability is limited to the range of the sample data to be learned. Artificial intelligence technology realizes an operation system that simulates human thinking through the definition of algorithms and programs. The use of deep learning and artificial intelligence in industrial enterprise safety production supervision can realize enterprise safety production supervision, early warning, and intelligent operation. Without the security of the production chain, a business cannot develop. Based on the basic theory of safety supervision and early warning in the field of enterprise safety production and related knowledge of artificial intelligence, this paper studies the work safety in the supervision and early warning mechanism abides by the selection principle of the management system, safety production indicators and indicator system, and conducts work based on the production work data of industrial plants. Reasonable safety supervision and early warning mechanism provide technical assistance for effectively controlling safety accidents in production and management measures to improve enterprise safety.

1. Introduction

1.1. Artificial Intelligence. The current artificial intelligence technology is used in many fields such as robotics, intelligent driving, and medical diagnosis, but in fact, engineers are required to regularly perform operations such as product maintenance and code upgrades [1, 2]. China's focus on AI is how to apply AI widely in industry and contribute to China's productivity strategy. Common deep learning algorithms are shown in Table 1.

A world-renowned photovoltaic cell-based company like Trina Solar, which cited artificial intelligence in the business phase, found the most basic connection points and increased its output by 7%. In the United States, artificial intelligence is currently mainly used for intelligent driving and robot orientation [3, 4]. Tesla, for example, has trained a fully self-

driving-level navigation system. And Boston Dynamics, a robotics company, has been able to create humanoid robots that surpass human combat and off-road capabilities [5, 6]. The agency predicts that the application of artificial intelligence and deep learning technology to the safety production of industrial enterprises will become a trend in the future. The specific situation is shown in Figure 1.

1.2. Safe Production in Industrial Enterprises. Statistical data released by the state show that there have been many major accidents in industrial enterprises in recent years, which undoubtedly makes the implementation of standardization even worse, confirming that my country needs to make progress in the formulation of standards and evaluation [7, 8]. Safety production supervision and management are the most important in the construction of supervision and early warning. The safety production status of the enterprise must be qualitatively analyzed according to the system software and corresponding data, and the same is true within the enterprise. Carefully analyze the safety production supervision and early warning system of the State Administration of Work Safety, update the enterprise safety standards from point to face promptly, and establish the company's safety production goals from the actual situation. Safety learning and training represent the soft power of enterprise safety. It can reduce the occurrence of unsafe behaviors [9, 10]. Repeated, high-demand safety learning and training can also consolidate the safety production level of enterprises. Combining artificial intelligence and deep learning with the construction of a supervision and early warning system can standardize the work mode of on-site supervision and safety management personnel and workers, and bring an information-based operation mode to the safety production management of industrial enterprises.

1.3. Research Status at Home and Abroad. Since ancient times, my country has attached great importance to the monitoring and prevention of natural disasters [11]. My country's Meteorological Administration has set different supervision and early warning signals according to different times and intensities of lightning, strong winds and typhoons, laying the foundation for the classification of common lightning and strong wind warnings [12]. In the 1980s, the relevant departments of the Chinese government, relevant scientific research institutions, and universities jointly participated in the research on the safety evaluation of major hazards. This applied research has greatly changed our country's ability to manage safety in advance, and can objectively and fairly evaluate the safety status of enterprises that are accompanied by major dangers. Since then, various industries such as the metallurgical and chemical industries have formally implemented safety evaluations. The safety evaluation is the qualitative acceptance evaluation of the enterprise's production projects in advance and the status quo evaluation, which is a combination of quantitative and qualitative aspects [13, 14].

In order to reduce safety incidents, the former Ministry of Coal Industry announced that since 1986, safety

Table 1: Common deep learning algorithms.

Number	Algorithms
1	CNN
2	RNN
3	LSTM

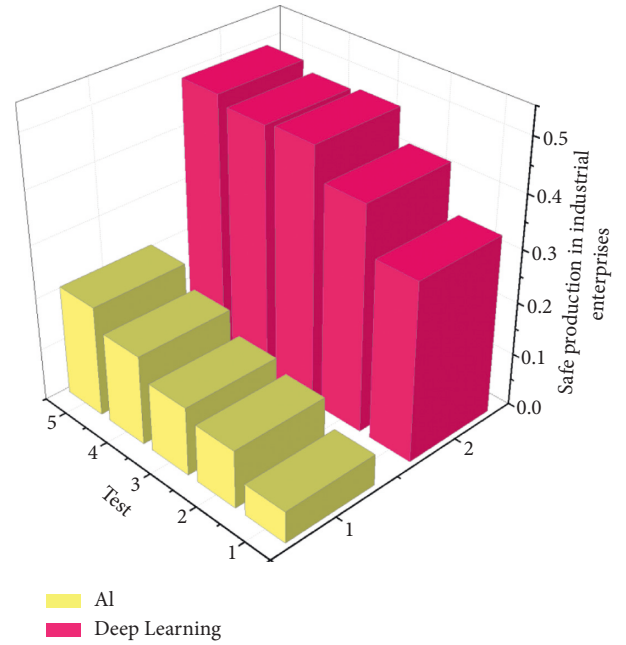

Figure 1: Artificial intelligence and deep learning applied to safety production in industrial enterprises.

standardization operations and production supervision, and early warning will be piloted in coal mines across the country, from low to high to restrain the behavior of managers. Safety supervision and early warning can respond to various emergencies, promote safe production and reduce accidents. After the 1990s, with the popularization of information and Internet technology around the world, power and chemical companies have also emerged in the work of safety standardization and production supervision, and early warning [15, 16]. The emergence of large-scale centralized decentralized control systems (DCS) can not only monitor and control production during the process, but supervision and early warning can also be issued in time, which is convenient for the management of various emergency operations in emergencies, and greatly improves the safety level of the enterprise [17].

The benefits brought by the integration of the world economy did not stop the economic crisis in the early twentieth century. The unstable world situation promoted early regulatory warnings. The research in this field made a leap forward in 1930. In the twenty-first century, Western developed countries have taken the lead in the ability to apply regulatory warning knowledge. In the past decade, European developed countries like to rely on information technology and big data analysis in terms of public security and accidents and share security data for the comprehensive monitoring technology of block security. There is spare

capacity. The current focus is on the establishment and maintenance of information platforms, and the development of software service systems, to provide more extensive technical support for subsequent manual or automatic intervention, so that the safety technology is more perfect [18].

1.4. Research Content. Safety production maximizes cost-effectiveness, and the impact of disasters can be applied to safety systems engineering. The viewpoints and methods of systems theory bring convenience to how to analyze hazard sources and the environment. For production safety, early-warning enterprises should identify, diagnose, and evaluate various accident signs, and use the analysis results as a benchmark to predict the trend of accident signs. It also needs to reflect the characteristics that are different from other supervision and early warning tasks. The focus of this paper is "Combining deep learning and artificial intelligence to establish a safety production supervision and early warning management system for industrial enterprises." Taking sewage industrial enterprises as an example, in the process of establishing an early warning mechanism for enterprise safety production supervision, the following tasks need to be completed. First, it must be based on a supervisory early warning management system for the production safety of wastewater treatment equipment. Summarize the corresponding research status at home and abroad, clarify the problems existing in the current supervision and early warning management system, and solve the relationship between key points and regions, not only focusing on key points but also avoiding one side and ignoring the other side. The second is to be familiar with the safety production system of industrial plants and conduct in-depth investigation and research on the enterprise supervision and early warning system. In addition, it is necessary to be aware of the relationship between social sensitivity and actual harm. Even if there is a certain correlation between them, a socially sensitive public emergency is not necessarily harmful, and vice versa. Although accidents occur frequently, not all accidents are high-risk accidents. While accidents occur frequently, the risks are not necessarily high. In addition, some situations are not necessarily high risk, and there is no unavoidable relationship.

2. The Basic Theory of Safety Production Supervision and Early Warning

Warnings of crises and dangerous situations before the accident are early warnings, that is, regulatory warnings of safety risks. The security risk supervision and early warning of Chinese enterprises are still in the stage of security risk assessment, and this supervision method is usually carried out in stages, except for the safety evaluation of the process (annual or three-year safety status evaluation according to the production characteristics of the enterprise, etc.), these long-term general evaluations or specific time evaluations. The final task of the evaluation is to identify and evaluate these inherent long-term risks and to implement countermeasures to reduce or eliminate them. For the purpose of this task, the boundaries of security risks and security warnings can be imagined. At this time, the investigation of hidden dangers in safety can eliminate hidden dangers in time, and carry out emergency safety training for departments at all levels, which can effectively improve the safety skills of employees. The above statements can predict whether the enterprise's regulatory warning system is comprehensive. In addition to this, a professional organization needs to conduct more than two safety evaluations, and it is also necessary to manage the production process and environment, the safe behavior of workers and leaders, and the use of the equipment and other dangerous states. Data analysis management can provide regulatory warnings to safety management within a certain period (monthly or weekly).

Table 2: PDCA implementation steps.

Step	Details
1	Warn rule planning
2	DO
3	Cheek warn rule
4	Action warn rule

2.1. Early Warning and Mechanism of Work Safety Supervision. The advance warning is to predict in advance a dangerous event with a high probability of happening in the future and to call attention to it. This supervision and early warning mechanism are both sensitive and accurate. The foundation of safety production supervision and early warning is the overall safety production management information sharing platform proposed by the government safety supervision department, but its disadvantage is that the basic data is updated slowly, requiring multiple enterprises and supervision departments. A joint investigation by multiple companies and regulators is required. In order to efficiently predict the actual status of safety management in a certain area, it is necessary to link with the internal mechanism of the enterprise and the data output by the production safety supervision and early warning system. Regulatory warning systems cannot be established overnight. At this time, from the team leader to the employees, the enterprise must clarify the regulatory and early warning requirements from the top down. Only by mastering the lifeline of enterprise production safety supervision and early warning can it be effective in actual situations. The target of supervision and early warning must be established as soon as possible, so that different situations have different requirements, reasonably consider the characteristics of supervision early warning indication and arrange the corresponding supervision warning level and degree, timely feedback on the safety production data of the enterprise, conduct index analysis of the data, and prescribe the right medicine. In the above four aspects, it is necessary to continuously optimize and adjust relevant elements in accordance with the principle of "PDCA" to achieve the effect of premonitoring, early warning, and effective control. The execution steps of PDCA are shown in Table 2.

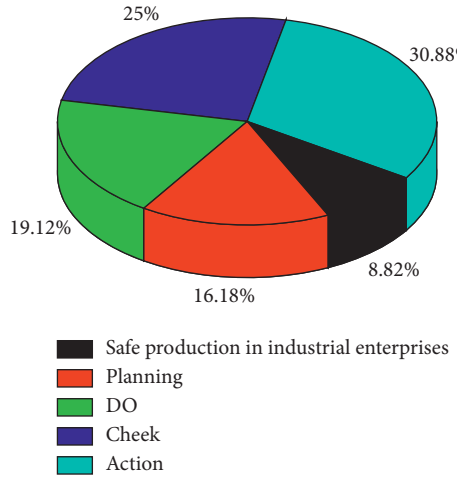

Figure 2: PDCA principles for the supervision of safe production in industrial enterprises.

The PDCA principles for the supervision of industrial production safety are shown in Figure 2.

2.2. Supervision and Early Warning Management of Safety Production. Select the person in charge to inform the relevant personnel, which can be a system user, or can send weekly reports through information exchange, corporate office platform, or corporate mailbox. According to the workshop requirements and the safety management measures of the enterprise, reasonably arrange the index interval value of the corresponding level, and pay attention to be consistent with the situation of the enterprise. For example, serious violations, frequent common accidents, and hidden dangers are not rectified in time, and safety training and emergency training are not carried out, etc. At this time, it is necessary for the safety supervision department and the production organization department to strengthen management measures to restore safety production to a normal state.

2.3. Definition of the Number of Safety Production Supervision and Early Warning Indicators. The experience summed up from the indicator system can play a huge role. It can not only reflect whether the safety production of the enterprise meets the standards but also reflect whether the safety evaluation work of the enterprise is objective. Through this friendly interface, the enterprise can respond more quickly. It is concluded from the literature survey that the cause of the accident is composed of one of the following four elements:

(1) The staff made mistakes in operation or did not work properly

(2) The working safety of the equipment is not good

(3) The environment is not suitable for the current working state

(4) Defects in the management of safety production by staff

Table 3: Four elements of accident occurrence.

Number	Factor
1	Personnel
2	Equipment
3	Surroundings
4	Manage

Its specific summary is shown in Table 3.

According to the principle of four elements of accidents, the supervision and early warning of enterprise safety production are one of the important steps for the effective operation of enterprise production. Only by selecting appropriate index elements and reasonably evaluating the forecast value of supervision and early warning, can enterprise safety production supervision and early warning be truly effective. Specifically, it should be established according to the following principles:

(1) Safe production is related to the latest construction requirements, and Jian has a positive attitude toward the establishment of a supervisory early warning system.

(2) Enterprise personnel actively participate in safety work, link with their own work, and maintain the supervision and early warning system.

(3) It is necessary to regularly check and repair the operation of the early warning system. Identify loopholes in daily management, confirm the effectiveness of regulatory warning instructions, and improve and optimize the operating status of the system. The AI algorithm formula used for safety production supervision this time is shown in

$$P(QE) = P(Q)P(Q \mid \mathrm{E}), P(UY) = P(U)P(U \mid \mathrm{Y}), \quad (1)$$

$$P(C) = P(C_1)P(\mathrm{O} \mid \mathrm{C}_1) + P(X_2)P(\mathrm{Q} \mid \mathrm{X}_2) + \cdots + P(QN)P(\mathrm{Q} \mid \mathrm{G}N), \quad (2)$$

$$P(B_i \mid \mathrm{H}) = \frac{P(B_i)P(\mathrm{B} \mid \mathrm{G}_i)}{\sum j = 1np(D_j)P(\mathrm{F} \mid \mathrm{B}_j)}. \quad (3)$$

3. Establishment of Industrial Enterprise Safety Production Supervision and Early Warning System Combining Deep Learning and Artificial Intelligence

3.1. Enterprise Safety Production Supervision and Early Warning

3.1.1. Necessity of Enterprise Safety Production Supervision and Early Warning. Taking a chemical factory as an example, the company's safety production department was established at the beginning of the company's establishment, to supervise and manage to ensure the realization of safety supervision guarantee, safety production guarantee, and safety technology guarantee. To ensure the basic

safety management work of safe production, in particular, pay attention to safety training and education, investigation of potential safety hazards, and emergency plan management. From 2013 to 2021, the company experienced no injuries or fatalities of all types, mostly fire and equipment incidents.

The safety acceptance evaluation in the operation process will analyze and evaluate the safety of the production machinery and equipment. At the same time, in some special safety management assessments of some enterprises, by assisting the safety technology production management supervision, inspection and management administrative departments to grasp the safety technology production management status and safety implementation management status of the enterprise production safety management institutions through the cleared data, it can make it more It is good to provide a basis for safety management evaluation for the cooperation between production safety management institutions of enterprises and local government safety production supervision, inspection and management administrative departments.

Safety is not absolute, it is relative, there can be no environment without any danger. Minimize accidents as much as possible, prevent possible dangers at all times, learn to identify sources of danger, and increase vigilance. We can avoid it entirely by direct human action control. The current situation of safe production is closely related to the development of our country. Therefore, from another perspective, safe production is another effective method for our country to speed up the pace of development, which makes safe production the fundamental guarantee for the sustainable development of our economy. Try to reasonably use the least resources, reduce the occurrence of accidents, to achieve a relatively safe industrial production system. Only in this way can we prevent and control dangers more effectively, so as to ensure the precision and accuracy of the operation, prevent the occurrence of safety accidents or minimize the losses and impacts after the accident occurs.

3.1.2. Analysis of Main Risk Factors. Deep learning and artificial intelligence must first be able to identify the source of danger before they can further determine the way of supervision and early warning. Hazards are places, areas, premises, equipment, and accident sites that may release energy and substances: some triggers under the system can lead to injuries and accidents. The essence of this approach is the concentration of potential hazard centers or sites, i.e., the site of accident sources, energy cores, hazardous materials, and energy transfer or release; this identified system is at risk, and the hazard area varies from system to system. So, for example, from a national perspective, some companies in hazardous industries such as oil refineries (eg, petroleum, chemical) have hazardous sources. From the perspective of different company management system types, the workshop and company warehouse systems may often generate different risks at the same time, and the workshop management system may also have certain types of risk equipment. Therefore, the system risk assessment and analysis should generally be performed at different functional levels of the system. Hazard sources are generally divided into four levels: the first and second levels refer to negligible hazards that will not cause personal injury and systemic damage; the second level is critical, which may cause personal injury and major damage. The system damage can be excluded and controlled; the third level is dangerous, which refers to a hazard source that may cause personal injury and serious systemic damage and must be controlled immediately; the fourth level is a destructive hazard source, can cause serious effects on people and systems. At present, the main risk factors for safe production in industrial enterprises are divided into the following directions:

(1) Staff. Various electrical appliances and equipment are required to be used together in the industrial processing process. In these corresponding processes, the demand for mechanization and automation is high, and there are high requirements for the safety functions of safety facilities. The staff must have a good understanding of the process and equipment. . Due to the mutual influence of each link, the active microorganisms in the industrial process will die or fail to meet the standard due to the failure of one of the links, thereby affecting the subsequent treatment process.

(2) Working Environment. Many chemical substances and special gases are used in industrial processing, among which liquid chlorine is an explosive and corrosive chemical substance, and volatile gas is toxic, flammable, and very dangerous. There is a problem with the combination of storage and transportation. It may cause various accidents such as human poisoning, casualties, and fire.

(3) Working Equipment. Projects including transformer (distribution) power stations, air compressors, suction pump units, various pipelines, chemical storage warehouses contain strict electrical safety management and require strict management.

After a follow-up survey of industrial enterprises using deep learning and artificial intelligence technology, it was found that after combining deep learning and artificial intelligence algorithms, the identification efficiency of risk sources and risk factors for safe production in industrial enterprises has been greatly improved. The specific situation is shown in Figure 3.

3.1.3. Status of Safety Supervision and Early Warning. Sewer safety production supervision and early warning, on-site fire early warning (fire management center), liquid chlorine monitoring and early warning system (gas monitoring and alarm), production equipment safety supervision and early warning, for example, using infrared for real-time surveillance and regulatory alerts. As the company's safety production supervision and early warning technical standards have not yet been issued, the supervision and early warning mechanism is limited to the supervision and early warning of local links (fire prevention, special gas), and there is no safety supervision and

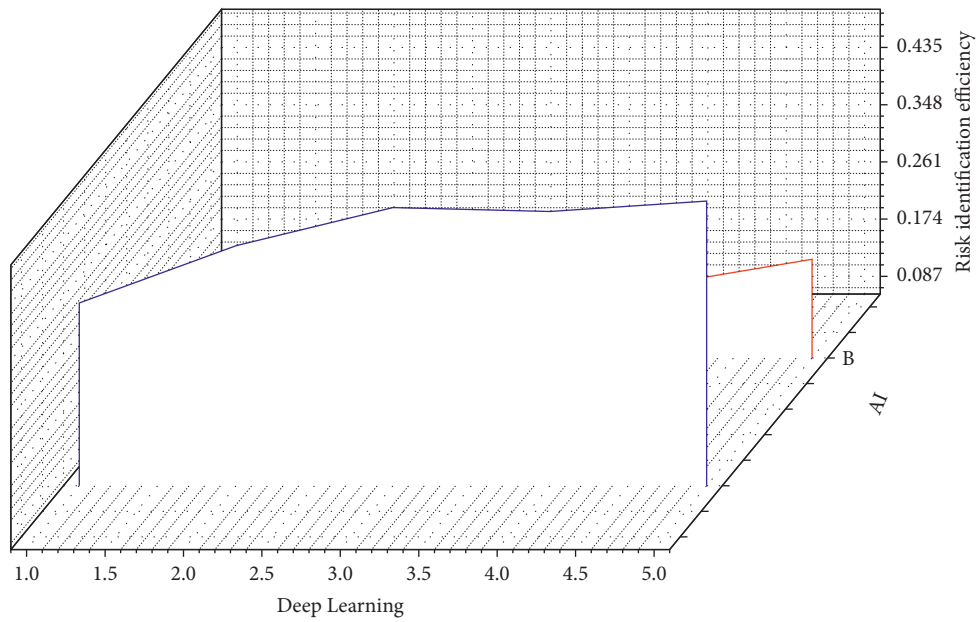

Figure 3: Efficiency of identification of risk sources and risk factors for safety production in industrial enterprises.

early warning system for staff and key equipment on the process production line.

3.2. Problems Existing in Enterprise Safety Production Supervision and Early Warning. Improving enterprise safety management is an important guarantee for safety production supervision and early warning. The relevant supervision and early warning standards promulgated by the state put forward specific requirements for this work. However, most enterprises are still in the conceptual stage of safety production supervision and early warning and do not know how to carry out supervision and early warning. The safety production supervision and early warning of enterprises should not only focus on the prevention of safety accidents such as fire prevention, gas leakage, and production equipment but also pay attention to the prevention of chemical accidents and production accidents.

3.3. Establishment of Enterprise Safety Production Supervision and Early Warning System

3.3.1. Establishing Principles. While combining artificial intelligence and deep learning to realize the intelligence of supervision, through intelligent control, it solves some processes that require a lot of manpower to repeat operations, and it also solves some complex supervision work that requires a lot of manpower, and finally establishes a stable intelligent supervision system.

The supervision and early warning system should cover the processing structures of each process section of the industrial plant, and set up safety production supervision early warning in the places where odors are easily generated, sludge is prone to poisoning, electrical equipment is prone to aging, long-term failure of equipment is not allowed, and fire and explosion are prone to occur. It establishes a complete safety production supervision and early warning system, realizes central control, and monitors the operation status of each production line in real-time. Based on the problems existing in the safety production supervision and early warning of industrial plants and enterprises, a supervision and early warning system is established to provide technical support for the safety production of industrial plants.

Table 4: Regulatory warning locations.

Number	Locations
1	Disinfection workshop
2	Structure
3	Electrical equipment
4	Public equipment

3.3.2. Regulatory Warning Locations. The specific summary of regulatory warning locations is shown in Table 4:

(1) Disinfection workshop: establish deodorization and ventilation systems for the disinfection workshop, and set up gas detection instruments and chlorine concentration monitoring tables

(2) Structures: fire extinguishers, breathing masks, and other devices are arranged next to the sampling ports, escape passages, and electrical equipment control boxes of each structure; flow velocity and pressure gauges are set up in the water pipelines of each structure to monitor the on-site operation in real-time

(3) Electrical equipment: configure special water-based fire extinguishers for various electrical equipment of structures, and regularly check the safety functions of safety facilities

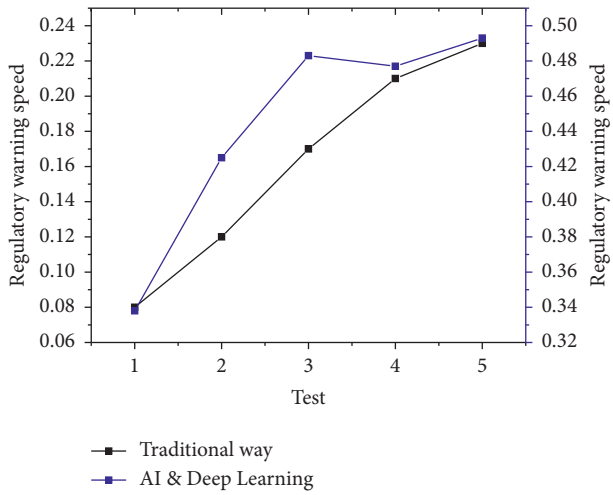

Figure 4: The response speed of the location prompt of the supervision and early warning of the safety production of industrial enterprises.

(4) Public equipment: strictly implement electrical safety management for public equipment, and regularly test its safety

After a follow-up survey of industrial enterprises using deep learning and artificial intelligence technology, it was found that after combining deep learning and artificial intelligence algorithms, the response speed of industrial enterprises' safety production supervision and warning location prompts has been greatly improved. The specific situation is shown in Figure 4.

4. Safety Production Evaluation Method of Industrial Enterprises Combined with Artificial Intelligence

4.1. Safety Evaluation. With the rapid development of society and economy, the production scale of each chemical plant has also increased, and the emergence of various new processes, new equipment, and new chemical products has also made the production process of chemical plants increasingly complex. In such a complex process, safety issues have gradually become difficult to control.

4.1.1. Significance of Safety Evaluation. Since production begins to develop towards large-scale production, once an accident and safety problem occurs in an enterprise, it will affect the development of the enterprise if it is small, and it will have an impact on the current economic situation of our country. Its main meanings are as follows:

(1) To achieve better management. Carry out correlation analysis and evaluation of engineering projects or accidents through the scientific evaluation and analysis methods, and then use mathematical models to calculate the probability of occurrence. Starting from the discovery of safety technology and management operations in the entire production process, identify hazardous and harmful factors to ensure the management of enterprises.

(2) Principle of logical analogy. Analogy is a definition of logical thinking, and analogical thinking is a logical way of thinking often used by people now. Many new knowledge and technology are also reasoned out through this logical way of thinking. It has a kind of contingency, and one phenomenon infers another phenomenon. The analogy can also be divided into certainty and quantitative.

(3) Following the principle of inertia, the large influence of inertia may become larger during the evaluation, and the smaller the inertia, the smaller the influence may be.

(4) Realize the relatively safest system environment and standardization and science to ensure safety. Under the premise of safety norms, ensure safety norms and science. Form regular safety education, safety supervision, and safety operation.

4.1.2. Principles of Safety Evaluation. By studying and analyzing the interdependence relationship and the degree of mutual influence between systems, we can better explore the changing characteristics and trends of the system. There are many factors in the accident. In the safety evaluation, find out the relationship between them and learn from the existing evaluation, then the evaluation will achieve better results. Many new knowledge and methods are also reasoned out in this logical way of thinking.

4.2. Division of Evaluation Units

4.2.1. The Concept of Evaluation Unit. Deep learning technology relies on the learning of multiple safety evaluation methods to realize enterprise safety production supervision. A complete system is composed of multiple different individual projects. In terms of safety evaluation, there are overall evaluation and module evaluation. On the basis of safety analysis In order to better achieve the goals of safety assessment and the requirements of evaluation methods, a complete production process is divided into several different projects in a way that is conducive to safety analysis and evaluation standards and meets scientific standards. These individual projects complement the whole system, but exist independently of each other. These divided items are then called evaluation units.

4.2.2. The Purpose of Dividing the Evaluation Unit. Deep learning needs to start from smaller objects to learn its samples, and when the safety production-related regulatory factors are divided enough, it will help the accuracy of deep learning. When the entire system is used as the main evaluation object, it is generally According to a special principle, the evaluated object is divided and combined into several evaluated units, and then these units are integrated into the main evaluation of the whole system. The main

Table 5: Units for deep learning requirements.

Number	Unit
1	Certificate unit
2	Equipment unit
3	Material storage unit
4	Personnel management unit

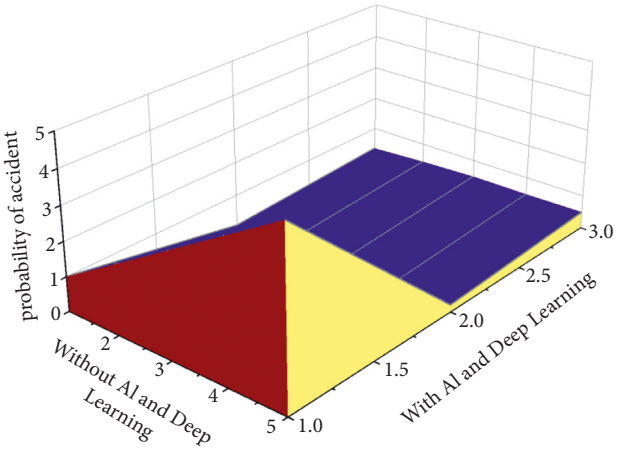

Figure 5: Changes in the probability of occurrence of safety accidents in industrial enterprises.

purpose of dividing the evaluation unit is to carry out the evaluation work more conveniently and improve the accuracy and comprehensiveness of its evaluation. Reasonable division of various evaluation systems to form different types of evaluation units can not only simplify various evaluation work, reduce their workload, and avoid their omissions, but also obtain the concept of comparing (injury) risks between various evaluation system units, so as to avoid risks and the most dangerous factors to express the risk of the whole system in time, exaggerate the risk of the whole system, improve the accuracy and accuracy of its assessment, and reduce the countermeasures of safety investment. According to the standard, each unit is required to conduct a safety evaluation. In the whole system, the evaluation units of the whole system are subdivided into different kinds of systems and evaluation units. The main purpose is to reduce the workload of the evaluation as much as possible while ensuring the accuracy and precision of the safety evaluation, so as to achieve efficient evaluation operations. The accuracy of the evaluation is improved, the security investment is reasonably estimated, and the effectiveness and pertinence of the countermeasures are enhanced. The specific situation of the units divided for deep learning requirements is shown in Table 5.

(1) Certificate Unit. Every qualified industrial manufacturer needs to have a series of certificates in line with laws and regulations before it can be put into production. These licenses and qualifications, certificates, and various other procedures are required by the state to have and pass the audit before they can operate legally.

(2) Equipment Unit. In chemical plants, the storage of various materials and the processing reactions between materials require a lot of chemical equipment to support, There are prescribed methods and prescribed inspection dates for daily use and maintenance, and the locations of equipment with different materials also have different impact and many other issues.

(3) Material Storage Unit. For example, in addition to urea, synthetic ammonia, methanol, the main products of a chemical plant have many related by-products. These many materials with different chemical properties can be regarded as a system during the storage process. This unit is also the easiest Safety accidents such as explosion, poisoning, and corrosion occur.

(4) Personnel Management Unit. In the process of safe and good production, the standardized operation and prudent work attitude of personnel play a decisive role. The responsibility of management personnel and the good cooperation of operators are all necessary to form a relatively safer production environment. After a follow-up survey of industrial enterprises using deep learning and artificial intelligence technology, it was found that the combination of deep learning and artificial intelligence algorithms greatly reduced the probability of safety accidents in industrial enterprises. The specific situation is shown in Figure 5.

5. Conclusion

A leaf also has two sides. Industrial products not only bring a lot of convenience to some of our daily work, but also bring a lot of troubles to some of our daily work due to the many risks and huge hazards in the production and operation of industrial products. . Therefore, in order to promote my country's industrial products to better serve the protection of human health, a systematic technical statistical data analysis should be carried out on the causes of production safety accidents in my country's industrial enterprises, and the laws of technological development and changes in its own existence should be summarized. Finally, the research proposes a more targeted technical improvement and effective preventive measures to gradually improve the safety technology production management level of my country's chemical enterprises.

The fundamental purpose and purpose of safety management risk assessment is to comprehensively evaluate unpredictable safety risk factors through statistical analysis and comprehensive evaluation, and what harmful safety risk factors may exist in risk management projects and financial management systems, which may exist indirectly What safety risks, hazards and adverse consequences, and put forward reasonable and feasible safety risk assessment management countermeasures, guide them to correctly monitor the risk safety of the sources of these risk safety factors, prevent the occurrence of risks and reduce the accident rate, so as to truly achieve safety The fundamental purpose of risk evaluation is to directly reduce the risk

accident rate to the greatest extent, to minimize the indirect reduction of personal economic losses, and to directly affect the legitimate interests of venture investors in the safest way.

The traditional enterprise's safety management-oriented management method often leads to the unsafe accidents centralized management, safety management, and accident control. In other aspects, the daily management of the enterprise is due to the uncertainty of the company's potential safety hazards, which is often caused by the accident. Only then can supervision and early warning be carried out, which belongs to the passive safety management mode.

Based on the theoretical research on supervision and early warning, this paper summarizes the main risk factors that may occur in enterprises. Then, combined with artificial intelligence and deep learning technology, taking the safety production supervision and early warning management system of an industrial plant as an example, it deeply analyzes the production line of the industrial plant. The main hazard sources and the current status of safety supervision and early warning are analyzed and discussed, and precautions are put forward to ensure the smooth operation of the industrial plant. Only by doing a good job in the production supervision and early warning of disinfection workshops, structures, electrical equipment, and public equipment can we ensure the smooth operation of industrial plants. The supervision and early warning involving the establishment of multiple systems in the field of safe production is an innovative measure of the safety management model and relies on a large amount of data to analyze the basic management status quo through numerical analysis, and quantitatively evaluate the safety situation in the next stage. Safety management at the core of work lays the foundation for companies to more strictly control work safety.

Data Availability

The datasets used and/or analyzed during the current study are available from the author on reasonable request.

Conflicts of Interest

The author declares no conflicts of interest.

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