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Effect of Packaging Materials on Food Safety

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Abstract: Food packaging provides convenience to people's life to some extent, however, food safety accidents caused by packaging materials occur from time to time. Therefore, it is necessary to attach importance to and improve the safety of food packaging materials. This paper systematically sorted out the safety status and problems of food packaging, categorized and introduced the more common packaging materials and analyzed their advantages and disadvantages. On this basis, some corresponding measures and methods to solve the safety problem of food packaging are proposed, in order to provide some ideas for food safety.

Keywords: Packaging materials; Food safety; Issue; Tactics

1. The impact of packaging materials on food safety

Different food products are usually packaged with different packaging materials and packaging techniques. Food packaging to a large extent to protect the quality and safety of food, extend the shelf life of food. At the same time it also provides greater convenience for the transportation of food. Obviously, food packaging makes food from leaving the production line to the consumer throughout the circulation process, with the characteristics of packaging materials and packaging technology to effectively avoid the food itself by the outside world microorganisms as well as the influence of external physical factors, so as to maintain the original composition of food and nutrition. However, in this process, the packaging material is in direct contact with the food, which also has an impact on the safety of the food.

1.1 Beneficial effects

At present, food packaging materials can be mainly divided into plastics, paper, metals, glass and other materials. Among them, the more common packaging materials are mainly plastic and paper. Plastic is a polymeric material composed of resin and some additives. Plastics are widely used as food packaging. Due to its abundant raw materials, good chemical stability, and easy processing and production, packaging manufacturers prefer to use plastics. At the same time, consumers are more accustomed to using plastic because of its lighter texture, barrier properties, heat resistance and permeability, as well as its different colors.

1.2 Adverse Effects

The disadvantage of plastics is the presence of free monomers, pyrolytes, lubricants and colorants, etc., which are the main factors affecting food safety. In addition, plastic is difficult to degrade, relatively troublesome to handle, and the environmental pollution is also relatively serious. The application of paper materials is also relatively wide. Especially in recent years, people's awareness of environmental protection has improved, and paper packaging materials account for about 40%-50%. The basic components of paper materials are wood and grass, and the raw materials are relatively abundant and the price is low. For paper-based packaging, paper-based packaging is generally more economical. It has good protection performance, convenient storage and transportation, and has no pollution. However, microbial contamination is inevitable during the production process. At the same time, the use of fluorescent brighteners, sizing agents, bleaching agents, fillers, dyes, etc. have also become the main influencing factors affecting the safety of paper packaging materials. Glass is an inert material that is odorless, non-toxic, colorless and transparent, and has less pollution to the environment. As a packaging material, it has good stability and good appearance. However, due to its bulky texture and easy breakage, it is not conducive to transportation. And for some tinted glass, colorants will have an impact on food safety. Metal has high mechanical strength, and it is relatively strong as a packaging material, with good moisture resistance, air tightness and high and low temperature resistance. It is pressure-resistant in transportation and storage, and at the same time easy to recycle and dispose of, and its waste pollution is small. However, its production is complex, the cost is high, the chemical stability is poor, and the acid and alkali resistance is poor.

2. Measures to improve the safety and quality of food packaging

2.1 Establishment of a practical market access system

The safety of food packaging materials is a systematic project. On the basis of establishing the corresponding laws and regulations and

improving the inspection, the market access system should be strict. Only by controlling the market access, can the unqualified products flow to the market effectively. To this end, the relevant functional departments shall fully integrate the relevant laws and regulations. The food packaging industry shall be subject to the administration of "chain-linking", the links of production, processing and packaging, etc.. The relevant enterprises shall be subject to the all-round inspection, the production, processing and packaging procedures shall be regulated. And the production qualification and conditions of the relevant enterprises shall be strictly controlled. In the link of market access system, the production licensing system shall be improved, the inspection system shall be strengthened, the market access sign system shall be improved, and the supervision and inspection system shall be regulated. The relative market access system shall be implemented for different types of packaging materials and packaging tools, so as to lay a solid foundation for the safety of food packaging in the link of market access.

2.2 Development of new packaging materials and packaging technologies

Under the background of economic globalization, China's food packaging industry is gradually in line with national standards. In recent years, with the green development concept vigorously promoted, in the food packaging industry can also develop green environmental materials[2]. Therefore, the relevant departments should increase the research and development of new materials based on the combination of traditional materials. And research institutes, universities and enterprises and other organizations should be encouraged to carry out technological research and development to improve the production and packaging process, and reduce the loss of materials and harmful residues. Experts predict that the future use of intelligent packaging technology packaging bags will account for 20% to 40% of the total number of food packaging, food packaging materials to functional, intelligent, environmental protection is a general trend, such as air conditioning packaging, antibacterial packaging, nano composite packaging materials. From the source of food packaging, through the research and development of new packaging materials and technology, we can more effectively improve the safety of food packaging.

2.3 Enhancing the Awareness of Enterprises and Consumers on Food Safety

For enterprises, there should be a strong industry self-discipline, to enhance the understanding of food safety food. In the production and processing process to establish and improve the food safety management system, improve their own inspection capabilities, the implementation of food inspection, consciously assume legal responsibility. For consumers, awareness-raising in the consumer chain, can effectively improve food safety. Consumers in the purchase of food should pay attention to the integrity and cleanliness of food packaging, through sensory identification to enhance food safety [3]. Therefore, the relevant departments to carry out publicity and education to enhance business and consumer awareness of the safety of food packaging materials, focusing on sensitization of general knowledge of food packaging safety, to create a good atmosphere of food safety awareness.

2.4 Establishing and improving laws and regulations on food packaging material safety

Due to the inadequacy of laws and regulations led to the relevant government departments do not play a due role, some food safety management regulations are not well implemented. However, with the development of science and technology, food packaging materials are increasing. For this reason, the composition and nature of the existing packaging materials should be for the establishment of sound and perfect the relevant safety regulations and standards. Such as, for food packaging materials, additives, colorants, inks and other components of the composition of the corresponding standards. At the same time, the establishment of food packaging materials market access system, improve food packaging safety guarantee system. In view of the existing food safety problems, administrative intervention should be carried out from the national macro level, requiring the relevant regulatory units and technical departments to adjust the existing packaging material standards, to add, revise and abolish various standards. On this basis to establish a packaging material quality standard system that can meet international standards, so as to form an all-round and multi-level protection of food safety system.

2.5 Improve the quality of food packaging technology testing system

Food packaging materials should have a set of perfect quality and technology testing system. For packaging materials of different molecular structure, elemental composition and different processing techniques and additives to establish a systematic testing system. It is because of the differences in packaging materials, its detection is more complex. For this reason, you can establish a perfect food packaging testing center for different materials and packaging in accordance with national standards for its classification and testing. Of course, in this process, it is necessary to improve the inspection technology, the detection method, and the detection level of residual monomers, heavy metals and other substances in food packaging [4]. For example, it can be screened by strengthening sensory detection for packaging materials with odor and damage, as well as labels, trademarks and safety signs of packaging. On this basis to improve the level of instrument detection technology and develop multi-functional detection equipment in order to efficiently and timely detect toxic residues and heavy metals in packaging materials. By perfecting the detection system and improving the detection technology can effectively curb the flow of unqualified packaging materials to the market, thus improving the safety of food packaging.

3. Conclusion

In conclusion, strengthening the research on the impact of packaging materials on food safety can help to further improve packaging technology and ensure people's health. The start and development of China's food industry is relatively late compared with developed countries, and the research on the safety of food packaging materials is not perfect. At the same time, people have relatively little knowledge of food packaging safety issues. In recent years, with the continuous improvement of people's living standards and the rapid development of science and technology, food safety problems caused by packaging materials have attracted people's attention.

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