

# Take Effective Measures to Promote the Development of Food Safety Science

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**Abstract.** Food safety concerns people's health, life, even social harmony and stability. Also, it is an important scientific problem of the development of mankind. How could we strengthen our national food security? Firstly, a long-lasting scientific system of food safety should be formed. Only by enhancing the construction of this scientific system, building up the development platform of food safety, improving the science and technology level in this field, carrying out the rapid detection skills of food safety, controlling technology research, forming a joint force of government regulation and public surveillance, we could ensure food security fundamentally. Secondly, we need form a management system with strict legal liability and clear public responsibility, and need establish a food safety warning system and risk assessment system, strengthen the food information construction, improve the international standards of food quality, and constantly increase the level of food safety, so as to control the food pollution, reduce the foodborne diseases, and ensure the consumer's health.

**Keywords.** Food safety science; Food safety measures

## 1 Introduction

Food safety, as the term suggests, implies the food contains the necessary nutrients of human body, should be avirulent, harmless and should not cause any acute, subacute or chronic health hazards. It is also a scientific discipline about exploring how to ensure food hygiene and safety, to reduce foodborne diseases and prevent food poisoning in the process of food producing, processing, storing and selling. The current status of food security in China is generally stable. However, there are many problems. During recent years, a number of food accidents were frequently exposed by media, such as the successive outbreak of mad cow disease, foot and mouth disease, avian flu, sudan red and melamine events. We are paying more and more attention to food safety now. The issues have threatened the life and health safety of Chinese, and have impaired the interests of consumers. In addition, our food has been continuously refused, detained, returned and claimed; even the sale contracts are terminated by the importing countries<sup>[1]</sup>. This has caused the huge economic losses and

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social impacts. The urgent need of improvement of food safety was highlighted now by the present of poisoned vegetables, rice, ractopamine-laced meat, illegally recycled waste cooking oil, and genetically modified food, by the abuse of food additives, non-food substances and so on. What is more important, food safety is related to the stability of society. People might panic on the whole social security due to the declining in consumer confidence.

China is still a developing country with large food production and consumption. But the scale, organization, standardization and integrity of the food industry are far more perfect. The food industry in China are mainly comprised with a huge number of small to medium size enterprises, workshops, vendors and restaurants. Planting and breeding links are small, scattered. Restricted by the levels of economic development, science and technology, by not perfected system and etc., food enterprises cannot meet the requirements of the developed countries in many aspects compared with our trade partners from these countries. This directly leads to our lower international competitiveness, to the blockage of the 'green barrier' and disadvantages in foreign trade. Based on the above situation, we are trying to put forward to some food safety measures.

## **2 Solutions to the food safety problems**

Since the 80's of last century, the food safety problem has become more and more serious and has seriously threatened the consumer's health. It contains the initial exposure of abuse of dioxins, mercurochrome, formaldehyde, hormones, flour additives and brightener, sudan red, faked liquor, aged grain, clenbuterol, fried dough sticks with detergent, and iron-fortified soy sauce, soy sauce with hairs, to the widespread use of melamine in dairy, antibiotics in breeding, abuse of food additives, hydrogenated oil (trans fats) in food industry, dangerous residue levels of pesticide, commercialization of genetically modified food and so on. In face of the severe situation, China has promulgated a series of policies and regulations, and has taken many measures to ensure the safety of food. Since then, the whole country has widely understood the importance of food safety, and has made great achievements. Overall, the food issue is improving in China. However, to further solve the problems, the following steps should be taken.

### **2.1 Setting up a long-acting scientific system of food safety firstly which includes the establishment of universities, scientific research system, personnel training plan, and legislative updates, etc.**

The specialty of food safety should be established in universities and colleges. The students may be allowed to engage in the product analysis, lab work at the relevant national supervision departments of food quality, customs, commodity inspection, epidemic prevention and trading sectors. They may teach and do research about food quality & safety at universities and institutes. They are also welcome to embark on food processing, analyzing, testing, food safety evaluating and quality managing in other food related dustries. This is an important step of personnel training to fundamentally solve problems of food safety. By establishing the science discipline and training personnel, a platform for rapid development of food safety science will be built.

We need strengthen the introduction of high-level talents from overseas. With the development need of food safety under the new situation, we should actively open the door to attract them coming back, establishing key laboratories of food safety, training innovative talents, and carrying out the basic front line science research in this field. So they may play an important leading role in key skills and research development, and to provide the technical support for the national policy of 'prevention first, scientific management', to integrate the advantages of course resources, and to provide the theoretical guidance and decision basis for promoting the safe food production and sales.

The promulgation of Food Safety Law has provided the legal safeguard for the prevention and treatment of major food accidents. At the same time, the Law also revealed the renewal of the legislation thought from food hygiene to safety. With the continuous development of the society and the popularity of food safety, the legislative regulations need update continuously.

## **2.2 Publicity and popularization of food safety knowledge**

The healthful diet should be advocated. The consumer awareness of food safety and capability of self-protection should be strengthened. The media such as TV, newspaper, internet should be made full use to regularly publicize food safety knowledge and consumption warning, to guide rightly the healthful consumption. The food operators should also be educated with the food safety laws, regulations, and responsibilities. Breeding and planting knowledge about the edible produce should be propagandized in the forms of that farmers love to see and hear, to help them master the basic safety knowledge of agricultural inputs so as to consciously control the source pollution, understand the common sense of storing, producing, cooking and consuming raw materials of food, change the poor diet habit and enhance the self-protection ability. All service providers of food production or marketing must be trained professionally and morally. The propaganda about environmental protection need be strengthened to enhance the environmental protection consciousness and level up the ethical standards of the whole society, to improve the quality of life. Only by this, might the food problems be solved radically.

## **2.3 Perfecting the management system of strict legal liabilities, clear supervisory duties**

The Food Safety Commission is responsible for general affairs and making all kinds of safety standards, coordinating and supervising the authorities, check and implement the regulatory responsibilities. The Ministry of Health and Ministry of Agriculture take care of the food quality. The meat inspection bureau and the Centers for Disease Control and Prevention will deal with safety of meat, hygiene of slaughterhouses. Supermarkets, restaurants and food retail stores are under the jurisdiction of local authorities. Spot examiners are required to enter food processing factories and farms, to check all links from raw material acquisition, producing, distributing, to marketing and customer service. The licensing procedures of food producing should be strictly implemented. No food and additives are allowed to add and licenced unless proved safe and necessary technically. Once breaking the law, any enterprises and person responsible have to not only undertake the civil liability for compensation, but also receive the corresponding administrative penalty and criminal sanctions based on the degree of seriousness of illegality and the specific situation. Any person selling the meat not meeting standards of quality and being pathogenic should be fined without stint and imprisoned. We should set up the food tracing and withdrawing system. Once the food was found out problematic, its source can be quickly found out through the system. The food on sale will be withdrawn urgently and the public be informed to ensure their health. The unlicensed meat processing centers (workshop) should be renovated. Meat processing with dead and diseased poultry, unedible raw materials and abuse of additives should be investigated and punished. The supervision and examination of the country fair trade market, supermarkets and other circulation links should be strengthened. Illegally selling the private-slaughtered, watered, dead and diseased poultry meat should be cracked down strictly. So is the usage of not quarantined, dead and diseased poultry meat by restaurants and canteens.

## **2.4 Promoting the standardization of food safety, increasing the financial investment of research, improving the level of science and technology in this field and innovation capability, providing strong technical support for the scientific control of food safety.**

We should make full use of the instrument, equipment and research ability from universities, colleges and institutes, to set up the scientific quality-testing & Assurance system. We also should invest more on the research about rapid detection skills of food safety, and carry out more research on the crucial testing technology. The study results should be rapidly popularized and applied so the rapid detection equipment and instruments with independent intellectual property right will be made. At same time, the standards of food quality should be improved in line with the international standards and relevant technical standards. Plenty of research work on the interference with human endocrine activity by

pesticide residue on food will be carried out. The food safety evaluation system should be established so as to control the food contamination, to reduce the foodborne disease, to ensure the consumer's healthiness.

## **2.5 Playing the role of Industry Association**

The Food Industry Association will be set up in cities and counties to promote the healthy development of the industry. The Association should work actively on professional ethics education and legal system education of practitioners to push forward the construction of the integrity, to cultivate the self-discipline. It will regularly organize the mutual check, visit, study and review between members, will carry out the exchange activities with other countries, hold the large and medium-sized festival of food, eating contest and other folk activities every year to promote mutual supervision among members. The Association will develop the standards and norms, supply the technical help, guidance and behavior standards of food industry. The Consumer Association will play a supervisory role. The joint forces of the management by the government and supervision by the masses will be formed and the food safety level will be constantly improved.

## **2.6 Establishing a warning system of food safety and strengthening the construction of food information**

In Canada each cow is numbered by dairy farmers and has its electronic file. It contains the continuous information of the daily food intake, milk production, milking time and activity condition etc. This is the most effective way to ensure the food safety from farm to dining table and should be spread to all poultry such as every pig, sheep in each village. This will provide guarantees for fundamentally controlling the meat contamination and food borne diseases. It is necessary to develop and establish the tracing system of the poultry meat production and processing, and the rapid warning system of food and feed. So are collecting the surveillance data on food contamination and food-borne diseases and recording the pre-warning system of food safety<sup>[3]</sup>. We need set the monitoring site of food contaminants and foodborne microorganism in every city and town to assess the patient from different areas, to assess whether the diseases were caused by the same kind of food microorganism in order to prevent early and to protect the public. This warning system can be used to analyze the dynamic security of production, circulation and trading of different varieties in all regions. It can scientifically forecast food information and propose a specific warning proposal to the emergency response. Meanwhile, we should pay close attention to and study the impacts of major natural disasters on food safety, prepare well ahead of time, take effective measures and ensure the national food safety.

## **3 Conclusions**

Food safety is related to people's health, life, social harmony and stability, is an important subject in the development of human beings. To ensure the food safety, we must comprehensively strengthen the construction of its scientific system. The government also must attach great importance to food safety work, take powerful measures, strictly control and check the quality of food, implement the Project of Food Safety Assurance, continuously and solidly develop the Special Rectification of Food Safety, constantly enhance the supervision level. We must strengthen the consciousness of food safety, make the food operators and farmers realize that consumers are paying more attention to food safety, and even the grain-producing area, hygiene standards of processing and the impacts on the environment. Only this way, can the food security be greatly improved.

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