The national food safety control system of China — A systematic review

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A B S T R A C T

In recent years, there have been increasing concerns over the safety of the Chinese food supply. Although many of these have only raised concern internally within China, several major food safety issues have had international repercussions. In response, China has implemented new food safety laws and management systems to improve its national food safety control system and reduce public and international concerns. This paper describes and discusses the components of the Chinese system using the five key elements of a national food control system identified by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) as essential for an effective system. The latest Chinese national food safety control has made significantly improvement on its regulation framework, however, more work need to be done on standards, law enforcement, and information exchange.

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1. Introduction

Food safety is a significant public health issue for all the governments around the world. It is estimated that each year up to 30% of the world’s population suffers from some form of food-borne disease (WHO, 2007). In response to this, governments recognize a responsibility to establish an effective national food control system. This usually involves the integration of a mandatory regulatory approach with preventive and educational strategies that ensures food safety from farm to table (WHO & FAO, 2003). Effective national food control systems are not only necessary to maintain the safety of food so as to protect domestic consumers, but also to ensure the safety and quality of exported and imported food (FAO & WHO, 2006).

With increased foodborne disease and threats to food safety, governments developing more rigorous and meticulous food safety control systems. Examples include:

- In 2000, the European Union (EU) Commission published the ‘White Paper on Food Safety’ to control and monitor food safety ‘from farm to table’ which led to significant new legislation and administrative procedures (COTEC, 2000).
- The United States (US) Congress approved ‘Food Safety Modernization Act’ in 2011 which expanded the rights and responsibilities of Food and Drug Administration (FDA) (FDA, 2011).

However, the types of food incidents occurring in developing and developed countries vary. The developed countries’ food safety problems are mainly due to the application of new technology, new craft, and new materials in agriculture and food manufacturing. Lack of controls results in microbiological contamination providing a large proportion of the problems. In the least developed countries, especially those in Sub-Saharan Africa, the biggest problems are a shortage of food and overall poor quality. In developing countries, both chemical and microbial contaminations are significant challenges, e.g. Escherichia coli 0104 H4 in fenugreek seeds from Egypt. The globalized food supply means that problems readily and rapidly become international.

In recent years, incidents food related to food safety have occurred frequently in developing countries. In China, the biggest scandal came in 2008 when almost 40,000 infants were hospitalized following the deliberate contamination of milk powder with melamine (nearly 300,000 ill and 6 deaths) (MOH, 2008). Apart from this incident, others have included the finding of pesticides in “Jinhua” ham in 2003; non-approved color (Sudan) was used in the certain meat products in 2005; Staphylococcus aureus was found in boiled dumplings in 2007. International concern at the number of problems has damaged the reputation of China’s export resulting in numerous safety alerts and even bans on certain imports. In 2002, the European Union blocked all imports of animal origin from China because of residues of veterinary drugs in imports from China. In 2003, Japan banned Chinese frozen spinach due to high levels of pesticide residues. In 2007, dogs and cats in the United States began dying because of the use of adulterated ingredients imported from China (Thompson & Ying, 2007).

With the country’s economic development and increased role in the global market, the concern over Chinese food safety has been growing both inside and outside of China. International concerns led to the publication in 2008 of a paper based on the expertise of various United Nations bodies (UN in China, 2008). This proposed key priorities for the enhancement of the Chinese food safety system. A rapid change was when the Chinese government enacted a new and tougher Food Safety Law in February 2009, in order to improve the Chinese food safety. The new Food Safety Law raised food safety standards, increased punishments and instituted a system of risk evaluation. The Law was an attempt to create a more modern food safety control system which would meet international expectation and would provide confidence in the safety of Chinese food.

Although the new Food Safety Law came into effect on 1 June 2009, food safety incidents have continued. Milk powder contaminated with melamine was again found in Qinghai province in 2010 (Xinhua News, 2010). In 2010 cowpea contaminated with, isocarbophos, a highly toxic pesticide, was found in Hainan province. Clenbuterol, as one kind of unapproved veterinary drug was added into fodder to feed pig, result in the risk of flustered, trembling, headache, nausea and vomiting for human who eat the contaminated meat (He, 2011).

China has become a major player in the global food supply system and it is appropriate to attempt to analyze its strengths and weaknesses. This paper provides an initial analysis of the food control system in China based on the international guidance provided by the FAO and WHO in its “Guidelines for strengthening national food control systems”. This document, provided by Food and Agriculture Organization (FAO) and World Health Organization (WHO) in 2003, described five key elements of a national food control system (FAO & WHO, 2003). These five components are: food law and regulation, food control management, inspection service, laboratory services and information, education, communication and training (IECT). In 2006, FAO and WHO provided guidelines to assess capacity building needs for strengthening national food control systems. In this document, FAO deemed that government agencies and authorities should take the responsibility to assess the capacity building needs for each components of a national food control system, and it provided an integrated structure and steps for assessment. FAO also developed a quick guide to assess capacity building needs in 2007 in order to provide a fast approach to assess what is needed to strengthen in the food control system (FAO, 2007). Consequently, in this paper, each core component will be assessed based on this guidance. Material contained in this paper, has been collected from publications, websites and interviews with related government agencies and authorities.

2. Food law and regulation in China

“Food legislation (or food law) is the complete body of legal texts (laws, regulations and standards) that establish broad principles for food control in a country, and that governs all aspects of the production, handling, marketing and trade of food as a means to protect consumers against unsafe food and fraudulent practices.” (FAO & WHO, 2006)

In other words, all legal provisions having to do with food at national level, whether directly or indirectly would come within the extent of food law. Falling into this category would be specific food safety laws as well as consumer protection or fraud deterrence laws, laws on weights and measures, customs laws, import and export rules, meat inspection laws, fish products inspection rules, laws on pesticide and veterinary drug residues and laws controlling fertilizers and animal feeds, among many others (FAO & WHO, 2006).

According to the ‘Guidelines to assess capacity building needs’ recommended by FAO and WHO, the procedure for assessing the food safety laws are: profile the current legal and regulatory framework for food control in the country; identify gaps in the current national framework of food law, regulations and standards, and capacity building needs to address these gaps; and increase awareness about the role of food legislation within a national food control system.

2.1. Food legislation of China

Generally, Chinese food legislations can be divided into three main levels (Liu, Wei, Han, Luo, & P, 2007). The first level constitutes...
the basic laws: the Food Safety Law (1st June 2009), the Agri-food Quality and Safety Law (1st November 2006), the Product Quality Law (1st September 2000), Agriculture Law (1st March 2003), Law of Standardization (1st April 1989), Law on the Inspection of Import and Export Commodities (1st October 2002). The basic laws are made by the National People’s Congress (NPC) which is China’s top legislature. The basic laws have the highest legal validity compared with other laws and regulations. The second level is made up by subordinate laws and regulations, such as the Supervision Methods of Quality and Safety in Food Enterprises, Regulation of Food Labels, the Administrative Regulation of Food additives and a great number of national standards establishing food safety requirements. Article 64 of the Constitution of the People’s Republic of China amended in 2004 states that every ministry and committee at the ministry level could enact laws and regulations which rely on the basic laws and order from State Council. The subordinate laws and regulations are made for guiding and regulating the activity for a specific food, for food production and during trade. The third level consists of various regulations promulgated by provincial governments, for example, the ‘Administrative measures of local food safety standards of Shanghai’ (OW, 2011). The provincial regulations are made by the provincial governments (or certain municipalities having provincial status) based on the basic and subordinate laws and regulations. The local regulations mainly consist of the measures, detailed rules and regulations for the implementation of controls. The local regulations are the largest in number and the most detailed regulations.

In China, the basic applicable principles of laws and regulations conflicts are: that higher legal ranked laws have priority, new law has priority over an old law, ‘special’ law (i.e. a law applying to a specific food or foods) has priority over a general law, (Gu, 2010, chap. 1). In many of the food safety laws and regulations, the basic laws take priority over the other levels. Among the basic laws, the Food Safety Law is considered to have the highest priority.

2.1.1. Food Safety Law

The Food Safety Law (FSL) of the People’s Republic (PR) of China was enacted by China’s National People’s Congress Standing Committee on 28 February 2009. The FSL came into effect on 1 June 2009 after five years of drafting. The FSL is the core regulation used to ensure the safety and quality of food and protect the health of consumers. It is based on a long period of improvement and replacement.

In 1965, the State Council issued the first food regulation which was the Food Hygiene Regulations on Administration (provisional). This regulation mainly dealt with the unsanitary conditions in which food products were stored, manufactured and transported (Bian, 2004). It did not set forth requirements for food content because China was still recovering from a famine, in which an estimated thirty million people died of malnutrition between 1960 and 1962. The government’s primary concern was how to maintain an adequate food supply.

In 1983, China enacted a trial implementation of the Food Hygiene Law, which aimed to regulate the growing number of privately owned food manufacturers and vendors emerging from the economic reforms (FHL, 1982, Art.3). It set forth standards for food content, additives, containers, manufacturing conditions and equipment. The law also prescribed penalties for violations of the Food Hygiene Law, ranging from fines to criminal prosecution (FHL art 37–41, 1982). The People’s Congress completely updated the Food Hygiene Law (FHL) in 1995. The updated FHL designated the Ministry of Health as the primary enforcement agency (FHL, 1995, Art 3).

Compared with the FHL, the FSL has made six significant changes (Liu, 2009). The FSL integrates the inspection system and defines the responsibility of each authority. It set up the system of surveillance and assessment of food safety risks. It requires building up the unified national food safety standards. The FSL clarifies the food producer as having the main responsibility. It enhances the legal sanctions on food production enterprises and marketing enterprises that infringe the rights and interests of consumers. The FSL increases the punishment on law enforcement authorities in violation of their responsibilities on protecting the safety of consumer.

Even though the FSL have made lots of improvements, it still retains several shortcomings in the current structure of food safety management. It is hoped that the FSL will better define the responsibilities of departments for each step of the food chain (Li, Song, Wang, & Tong, 2009). Although the FSL appears to highlight the responsibilities of different departments, it has been noted that within the Departments there are subdivisions which have ambiguous regions and there are some gaps (Chen, 2011). To give an example: there is a small bread workshop which is producing and trading in the same area. According to the FSL the responsible authority would be the Quality Supervision Department with respect to food production but the Industry and Commerce Department with respect to food trading. However no department would like to actually take the task as they are concerned about possible incidents occurring. Therefore, there is no specific government with clear legality responsibility to supervise the small workshops and food vendors (Wang & Xie, 2012). Another point is that although the penalties for illegal activities have been increased, they are still not enough to worry a big enterprise (Liang, 2011). The fines are too little when compared to potential illegal income (Li, Qi, & Liu, 2010). The provision of punitive compensation which is 10 times of paid amount is nowhere near enough (Xing, 2011). Liang (2011) considered the suspected food safety perpetrators should be ejected from food industry regardless of the extent of the illegal activities. The amount of punitive compensation should depend on the actual damage (Xing, 2011). Although in general the fines under the food law are low, it can be noted that appropriate criminal laws may be used in serious cases. The execution of two people involved with the contaminated milk scandal is an extreme example of this.

2.1.2. Other related basic laws and legislation

The Agri-food Quality and Safety Law, which was formulated by the Ministry of Agriculture (MOA), came into force from 1st November 2006. The law mainly prescribes the quality and safety standards for agri-food, the producing areas, production, packaging, marks, and the legal duties related to supervision and inspection. It is the first law which focuses on the quality and safety, and fills the gap of safety supervision (Wang, 2010).

The Law of Product Quality (2000) applies to the processing of all food products for sale (see FSL, 2009, Art 2). It is a major law aiming to strengthen the supervision of product quality, and to improve product quality where needed, while protecting consumers’ legitimate right and maintaining social and economic stability.

The Agriculture Law (2003) gives the government authority to take measures to improve the quality of agricultural products, build and improve quality standards systems as well as providing quality inspection and supervision systems for agricultural products. It also allows for mandatory standards to be set for agricultural products to ensure consumer safety and to protect the environment. This law also bans the production and selling of agricultural products that are not in accordance with the mandatory standards.

The Law of Standardization (2003) prescribes standards for all industrial products including food and defines the relevant legal responsibilities for the formulation of standards and their implementation.

2.2. Subordinate laws and regulations

The Subordinate Laws consist of administration regulation of State Council, regulations of government at ministry level, and food standards. The administration regulation of state council and ministry always named as ‘regulation’ and ‘measures’ (Wang, 2010). The ‘regulation’ is used to comprehensively and systematically supervise a particular aspect of the food chain, for example, the Implementing Regulations of the Food Safety Law. The ‘measure’ named as the rules specifically focus on detailed foods or food related products, for example, Food Additive Hygiene Supervision Measures. In China, the State Council and related ministry have the right to enact subordinate laws and regulations.

According to FSL, it indicates that national food safety standards are normally developed and published by the Ministry of Health (MOH). However limits of pesticide and veterinary drug residues in food and the associated testing methods and procedures will be made jointly by the MOH and the MOA and the testing methods for slaughtered livestock and poultry will be made jointly by the MOH and related departments. The new Food Safety Law also required the national food safety standards should be reviewed and approved by the national food safety standard evaluation committee which consists of expert in medicine, agriculture, food, nutrition and representatives for relevant departments. The first evaluation committee is under the charge of the Minister of Health, and is supported by a staff of around 350 people (GOV, 2010). The committee also solicited and took opinions from food producers, traders and consumers before enacting the food safety standards.

2.3. Provincial government regulation

Local government regulations are enacted by the governments of the various provinces, autonomous regions and four municipalities having enhanced status (Beijing, Shanghai, Tianjing and Chongqing). These regulations only apply to the local area, and must not conflict with the Constitution, basic food safety laws or subordinate laws (Wang, 2010). The local government regulations come into effect when they are recorded by the Standing Committee of the National People’s Congress. The local regulations are more suitable for the actual situation. They are often used to strengthen supervision and enforcement following a food safety incident. For example, in June 2011 Shanghai enacted a regulation to require all related department should strengthen supervision of crops as a result of a ‘staining bread’ scandal in Shanghai which had exposed the loopholes in supervision and administration (OW, 2011).

3. Food control management

The precondition to control food safety is to construct a sound legal system. The next important key to enforce the food safety control system is food control management. The coordination of legislation and operation at the national level decides the effectiveness of food control system (FAO & WHO, 2003).

In China, a food control management system has been established according to Article 4 of the FSL. This includes the State Council’s Food Safety Committee, the Ministry of Health (MOH), the Ministry of Agriculture (MOA), the Administration of Quality Supervision, Inspection and Quarantine Department (AQSIQ), the Industry and Commerce Department (IAC) and the State Food and Drug Administration Department (SFDA). The relationship between the responsibilities of these departments and the different stages of the food chain is indicated in Fig. 1. It is hoped that this new system of supervision and administration will better define the responsibilities of departments for each step of the food chain (Li et al., 2009).

The responsibilities of these departments are stated in Fig. 2:

The coordination of legislation and operation at the national level are clearly defined. All the departments at national level were performing their respective duties since the FSL came into effect in 2009. The State Council’s Food Safety Committee was set up in February 2010. It consists of 3 vice premiers, 15 ministerial-level officials which stand for 15 departments, including the minister of MOH, MOA, AQSIQ, IAC and SFDA (State Council, 2010). It published a ‘Food Safety Promotion Education Works Programs (2011—2015)’ in 2011 (FSC, 2011). Up until February 2012, it had convened four times in plenary session. The State Council’s Food Safety Committee played a role in analyzing the current situation of food safety and planning joint action by the departments.

The MOH has mainly focused on two aspects: boosting surveillance and assessment of food safety risks and completing the food standards. The first food safety risks assessment committee was appointed by the MOH in December 2009 and consists of 42 specialists. In January 2010 the Ministry of Health issued the ‘Food Safety Risk Assessment Administrative Regulations (Provisional)’ which specified the details of food safety risks assessment (MOH, 2010). The first national food safety risk surveillance plan was completed in May 2011 (MOH, 2011a,b). According to the Ministry of Health report, by 2012 this national surveillance had been implemented by 100% of the provinces, 73% of the cities and 25% of the county disease prevention and control centres for determining food-borne diseases, food contamination and harmful factors in food (MOH, 2012a). Chen (2011) stated the results of surveillance and assessment are showing that the food safety situation of China is improving. The national food safety standards should be reviewed and approved by the national Food Safety Standard Evaluation Committee which consists of experts in medicine, agriculture, food, nutrition and representatives of relevant departments. This committee consists of 10 professional subcommittees, including food product, microbial, the production and business operation standard, nutrition and special dietary food, method of inspection and procedures, pollutants, food additives, food related products, pesticide residues and veterinary drug residue (MOH, 2010). In 2011, the MOH announced 21 new food safety standards, including maximum mycotoxin levels, pesticide residue limits, and blends with the food additives. The food safety standards also solicited and took opinions from food producers, traders and consumers before enacting (MOH, 2011a,b).

![Fig. 1. Food safety control management during the food product chain.](image-url)
The MOA, AQSIQ, IAC and SFDA developed their own specific plans, took concrete action, and worked hard to ensure that the FSL was performed. The MOA in company with the MOH developed limits of pesticide and veterinary drug residues in food and the associated testing methods and procedures. Although this system appears to highlight the responsibilities of different Departments, it has been noted that within the Departments there are subdivisions which have ambiguous regions and there are some gaps (Chen, 2011). The allocation of responsibilities has however created some problems. Gu (2009), the Director of Food Safety Supervision Office at the Shanghai SFDA Office has pointed out that departments can be so worried about undertaking responsibility that they just focus on respective supervision area. The subsection supervision of all the Departments depends on profit and risk (Yu, 2011). Because the food incidents could have significantly bad effects on the promotion of the officials, all the Departments prefer to supervise standard and qualified producers and traders.

The National Food Safety Assessment Centre (NFSAC) was established in October 2011 as an independent agency to perform science-based risk assessment. NFSAC is going to support food safety risk assessment committee as professional technical authority (MOH, 2011a,b). It goes to assess and monitor food safety risk, collect and analyze related data, submit risk assessment results to food safety risk assessment committee, provide pre-alert, communicate with media and public, and develop scientific research.

4. Inspection

In China, the central Governments (MOH, MOA, AQSIQ, IAC, and SFDA) take the responsibility of administrative management, but not the inspection services which have the direct contact with food industry, trade and public, which are stated in the Constitution of the People's Republic of China's (1982). According to the Constitution, local Governments are subordinate to the central government and take the responsibility to implement the legislations. Responsibilities for food safety at local government level are set out in Article 5 of the FSL which allocates responsibilities for

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<table>
<thead>
<tr>
<th>State Council's Food Safety Committee</th>
<th>The head authority in food safety management</th>
<th>Analyze the situation of food security and planning the national food safety operation; develop the policies and regulation for food safety inspection; supervise the responsibility of related authorities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOH</td>
<td>Overall coordination for food safety</td>
<td>Risk assessment for food safety; Development of food safety standards; Dissemination of food safety information; Development of the qualification requirements and inspection regulations for food inspection and testing agencies; Dealing with serious food safety events; Licensing for new food raw material, new food additives, and new food-related products; Licensing for new types of food additives and/or food-related products imported for the first time or food imported for the first time which are not covered by existing national food safety standards; Development of a list for the substances conventionally deemed as both food and Chinese traditional medicine</td>
</tr>
<tr>
<td>MOA</td>
<td>Edible agricultural products</td>
<td>Routine supervision and administration for edible agricultural products; Administration of the utilization of the substance used during agricultural production; Report risk information of food safety, propose risk assessment activity, and provide other related information to MOH; Working with MOH to develop concentration limits of pesticide residues, veterinary medicine residues, testing methods and inspection procedures; Report food safety events in time and cooperate with MOH for investigation; Disseminate routine supervision and administration information of edible agricultural products, and report to other related departments.</td>
</tr>
<tr>
<td>AQSIQ</td>
<td>Food production</td>
<td>Issue food production license; Supervision and administration for food production activities; License, supervision and administration for production of food additives; Supervision and administration for food related products; Supervision and administration for food import and export; Authenticate the qualifications of agencies for food inspection and testing; Assist MOH in dealing with food safety events; Disposal of food-related illegal activities</td>
</tr>
<tr>
<td>IAC</td>
<td>Food distribution and retail</td>
<td>Issue food distribution license; Routine supervision and administration of food distribution activities; Assist MOH in dealing with food safety events; Disposal of food-related illegal activities</td>
</tr>
<tr>
<td>SFDA</td>
<td>Catering and restaurant services</td>
<td>Issue catering service license; Routine supervision and administration of catering service activities; Supervision and administration of health foods; Assist MOH in dealing with food safety events; Disposal of food-related illegal activities</td>
</tr>
</tbody>
</table>

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Fig. 2. The responsibility of supervision and administration departments.
supervision and administration at the county level or above on food safety. This specifies that the regulatory responsibility of the executive departments of each government section (e.g. health, agriculture, quality supervision, industry and commerce, and food and drug administration) shall be in accordance with this Law and the State Council Regulations. At local level, there exists a hierarchy of three levels of government which are involved in the food safety control system (in descending order): provinces, cities, and counties. Each level reports to the next higher level. The relationship of supervision and administration of departments at all levels is shown in Fig. 3.

With respect to local responsibilities, the FSL specifies that governments at the county level and above are in charge of food safety administration in their respective jurisdictions (FSL, 2009, Art 5). Within each level of local government, the FSL mandates departments of health, agriculture, quality control, industrial and commercial, and food and drug to coordinate with each other to implement the law. These departments at county level provide the main inspection services. Line authority and budgets are local, but technical supervision in how to implement the FSL comes from national level, like reviewing annual plans. According to the food control management, each department takes the responsibility to supervise the relative section and coordinate with the others to inspect the whole chain. Whether the new FSL succeeds in securing food safety ultimately depends on the effectiveness of local government enforcement (Liu, 2011).

There is one Chapter, consisting of 8 articles, of the FSL which focuses on the supervision and administration of the authorities. It states the local government at the county level or above shall organize the annual plan of supervision and management with the departments of health, agriculture, quality supervision, industry and commerce, and food and drug administration. These departments then implement the supervision and management within their respective jurisdiction according to the annual plan (FSL, 2009). Article 77 of the FSL states that departments of quality supervision, industry and commerce, and food and drug administration at the county level or above have the right to (1) enter producing and trading site for field inspection (2) inspect samples (3) review and record any relevant information (4) seal up and detain food, raw materials, food additives, and food-related production, equipment, contaminated tools which violate food safety standards and legislations (5) close down places where produce and trade food illegally.

However, there remain problems and gaps in the supervision and administration system. The melamine milk scandal in 2008 reflected the problem of divided supervision and lack of supervision standards (Li et al., 2009). The ‘staining bread’ scandal in Shanghai also exposed the loopholes in supervision and administration (OW, 2011). An example will illustrate the difficulty in trying to allocate responsibility. “Potions Bean Sprouts” were found in the city of Shenyang, there was not any department took the responsibility for this accident. The AQSIQ declared that its responsibility focused on production processing and that the IAC should take the responsibility for tackling the problem. Before the FSL came into effect, the food supervision and administration was the responsibility of all related departments of the State Council, including MOH, SFDA, IAC, Environmental Protection Ministry, Commerce Ministry, Communication Ministry, and so on. The responsibilities of these departments were not clear. Food Business Website (FBW, 2010) stated there were four problems existing in the old inspection and supervision system. Firstly, the food safety supervision system was not perfect, especially the cooperation of governments departments. Secondly, there were frequent problems with import and export food safety. Thirdly, the awareness of quality and safety requirements by import and export enterprises was not enough. Fourthly, the staff and technology could not meet the requirements. The FSL has made improvements to of the import and export food safety monitoring and supervision system and has declared the inspection and quarantine department of exit—entry to be the main supervision department. It also now states that food enterprises are responsible in the event of food safety problems.

5. Laboratories

The FAO and WHO stated in their 2003 document on the strengthening of food safety control systems that laboratories are an essential component of a food control system. Their planning needs to be carefully considered as they involve expensive capital investment and maintenance.

FAO defined more precisely the responsibilities of food safety control laboratories in their 2006 publication:

‘Laboratories are responsible for analyzing food samples to detect, identify and quantify contaminants (such as pesticide residues or heavy metals), and for analyzing specimens from humans and foods implicated in food-borne illness outbreaks to identify the causes and sources. They also provide support for food law enforcement. The scientific information produced by food control laboratories also informs and supports policy and decision making processes related to food safety and quality, for instance to design surveillance and monitoring programs that target priority hazards or to investigate adulteration, misleading information, fraud,

**Fig. 3.** The supervision and administration departments at all levels.
Secondly, these laboratories lack sufficient support and funding. Most highly-skilled graduates prefer to stay in the big cities, such as Beijing, Shanghai or the provincial capitals. The inspectors at the county level tend to lack the necessary education and training. Secondly, these laboratories lack sufficient financial support resulting in test instruments not being maintained due to lack of staff and funds. Thirdly, it can also be difficult to determine the legal requirements because not all standards are clear or consistent. A recent announcement from MOH (2012a,b) stated that national and industry standards overlap; some important standards do not exist and some standards are outdated. Therefore, the MOH promulgated the Twelfth 5-Year Plan for National Food Safety Standards in August 2012. These official food examination institutions have however met with a crisis of credibility since these institutions belong to government. Results which indicate a public health problem could damage the Governments’ reputation, (Yu, Wang, & Hu, 2011). Therefore, the third party test institutions are more trusted by consumers and external governments due to their objectivity and professional results. In recent years, several international and independent third-party test organizations have set up set up branches in China (Jiang, 2011).

Article 60 of the FSL states there is no exemption on food inspection. Previously some food products could be exempted from food inspection due to their good record and the operation of a factory’s own inspection services. After the FSL came into effect, both systematic and random testing of food samples should be conducted by the departments of quality supervision, industry and commerce, and food and drug administration at the county level or above without testing fees. A risk based surveillance system involving the systematic sampling of priority foods and contaminants is under development. If there is dispute for the testing result, re-testing could be conducted according to the law. The abolition of exemption is a significant alteration introduced by the FSL (CCC, 2009). The exemption from inspecting was started from December 1999 and was approved when products were considered to be of high-quality and stable and continuous qualified by supervision agencies (Zheng, Liu, & Xu, 2009). It aimed to encourage enterprises to improve the quality of their products. However, the range and quantity of exempted products rapidly increased (Zheng et al., 2009). It can be noted that the use of these exemptions was considered to be a major factor in the scandal of melamine contaminated milk (CCC, 2009).

6. Information, education, communication and training

FAO & WHO (2003) stated it is more and more important to deliver information, education and suggestion to all the stakeholders from farm to table. Food control authorities should train their staff as professional inspectors.

In China, the State set up a unified food safety information release system in 2009. The MOH should publish a report on the overall food safety situation in the country; food safety risk assessments and alerts; information on major food safety incidents and other important food safety information from the State Council. The various government departments at the county level or above should publish information on routine supervision and administration of food safety. When food safety problems occur and information on this is released, the media information may be unscientific and incorrect and can lead to panic in the population (Li et al., 2009). Also the amount of false information on the Internet and other media is also becoming a serious problem. In October 2005, the PVC cling film are reported by Media could cause cancer, which leads to a panic in China. In fact, Ministry of Health declared the standard PVC cling film is harmless to the human body. In August 2011, a newspaper claimed that the “Shanxi aged vinegar” was blended with cheap acid; and it put consumers back on edge after a string of food safety scandals. The MOH declared the “Shanxi aged vinegar” consistent with national standards (Xinhua News, 2011). On the other hand, the update of food safety information is not timely and complete. The Chinese Academy of Social Sciences (CASS) released ‘Chinese Law Development Report No.9’ in 2011. The report pointed out food safety information published situation is not ideal. There are only 22 out of 43 quality and technology supervision departments of local people’s government have published food production license information on their websites. There are only 23 out of 43 local governments and their subordinate departments’ websites contain the food safety information in 2010. An assessment of a range of government websites demonstrated that most of the information on them, particularly departmental websites at city and county level, are mainly about the related laws and regulations, work plans, and inspection notification. There was rarely information on the food safety risk assessments and alerts, and food safety incidents.

Therefore, in 2011 the State Council’s Food Safety Committee notify established a ‘Food safety promotion education works programme (2011–2015)’. This programme describes three main tasks for the related governments (FSC, 2011). Firstly, it boosts public to understand food safety science. This program requires related governments to carry out food safety promotion activity in community, village, and school. It also states the related authorities should promote the food safety sciences to society. Secondly, the governments should conduct vigorous campaigns to increase awareness of the food safety regulations and to make public the information on supervision and law enforcement. Finally, it requires enhanced training of food safety inspectors, food producers and traders. However, the release of food safety information by governments, especially local governments, has not received sufficient attention. More information published from governments could improve the authority and credibility of the government.

Furthermore, it is the responsibility of the national inspection and quarantine department of exit–entry to collect and consolidate safety information about imported and exported food and notify them to relevant departments, agencies and companies. The quarantine department of exit–entry should establish and publish the credit records of food importers, exporters, and exported food enterprises. It should tighten inspection and quarantine on traders and producers who had an unhealthy credit record. In 2007, Wen Jiabao, the prime minister, explicitly required the government departments to actively communicate information. The credit records system could encourage enterprises to manage and restrain themselves (Li et al., 2009). To support this, the ‘Catering service food safety regulatory credit archives management approach (exposure draft)’ was published by the SFDA in June 2011.

According to the FSL, industries and industry association take the responsibility to deliver information, education and training to
the food related producers and traders. The responsibilities of food producers are to establish a food safety management system, training the employees on food safety knowledge, assigning food safety management personnel, and inspecting the food production and trading (see Article 32, FSL). ‘Food safety promotion education works programs (2011–2015)’ required that the employers and employees of food producing and trading should accept no less than 40 h training on food safety policies and scientific knowledge. There are three kinds of food safety training in China: Government administration training, professional training organization, and enterprise internal training (Luh, 2012). According to a review paper (Yu & Zhang, 2010), there are four problems of the food safety training. Firstly, the training mechanism and system is not sound. Lots of food safety training plans lack scientific and reasonable arrangement which only focus on immediate interests and short-term demands. Secondly, the training mode is not appropriate for modern food industry. Compared with the ‘case study’, ‘group discussion’ and ‘module training’ of western countries’ training style, the China’s training style mainly is ‘classroom taught’. Thirdly, the effectiveness of training is not satisfactory. Fourthly, the funding from enterprise or government is inadequate. Gu (2009) reviewed the thirty years improvement of Shanghai food hygiene and stated the acceptable ratio of food safety knowledge of food related employees is a significant indicator to assess the food safety level of city.

7. Discussion and conclusion

The food control system in China has made great improvement after the FSL was enacted in 2009. However, there continue to be problems with food safety which cause the public concern. This study has identified some significant areas where problems and challenges remain in the current China’s food safety control system.

7.1. Legal requirements

The food control system for food safety in China has been based on a segmented supervision model since 1980s. The FSL defined the responsibility of related governments, set up a new food safety committee, and enhanced the communication and cooperation within the involved departments. The new law reduced the numbers of relevant governments and specified the responsibility for each government. It has made improvements to the management system. However, this new food safety management still followed the old segmented supervision system. The current food management has vulnerabilities in the following aspects. The responsibility of relevant governments is not clear, especially in small food workshops and vendors. Communication and cooperation between the various departments and regions is not good. There is no effective information sharing mechanism among these departments. A consequence of this is that resource allocation is often not appropriate and results in wastage of facilities and a shortage of professional inspectors.

The relationship between central governments and local governments requires further clarification. The responsibility of ministries and governments at local level need to be more clearly defined. There is relatively less supervision on the management authorities. Media, consumers and third parties do not play an important role in supervising the management authorities. Compared with the management system of many countries, there are some ideas to improve the current food safety control system of China. Based on the management system of United Kingdom, Germany and Canada, the central government could set up a new independent food safety management authority to take responsibility for food safety supervision. However, examples of alternative systems can be seen in USA, Japan and France where responsibility for food safety management is divided into several departments based on the type of food.

7.2. Food control management

The food safety management system of China has been based on a segmented supervision model since 1980s. The FSL defined the responsibility of related governments, set up a new food safety committee, and enhanced the communication and cooperation within the involved departments. The new law reduced the numbers of relevant governments and specified the responsibility for each government. It has made improvements to the management system. However, this new food safety management still followed the old segmented supervision system. The current food management has vulnerabilities in the following aspects. The responsibility of relevant governments is not clear, especially in small food workshops and vendors. Communication and cooperation between the various departments and regions is not good. There is no effective information sharing mechanism among these departments. A consequence of this is that resource allocation is often not appropriate and results in wastage of facilities and a shortage of professional inspectors.

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7.3. Penalties

The FSL increased the penalties for illegal activities. The maximum penalties for food producers and traders are:

- relevant authorities should have the illegal benefits, food or food additives illegally produced or trade, tools, equipment and food raw material;
- a fine of RMB 2000–5000 if the total value of the food or food additive is less than RMB 10,000;
- a fine between 5 and 10 times of the total value if it exceeds RMB 10,000;
- the license could be revoked if the case is serious.

These legal liabilities caused wide discussion in academic field and society. Although the penalties of illegal activities are obviously increasing with FSL, it is still not enough to concern a big enterprise (Liang, 2011). A comparison between the fines and illegal income shows that the fines are too little (Li et al., 2010). The provision of punitive compensation which is 10 times the paid amount is considered insufficient (Xing, 2011). Liang (2011) considered the suspected food safety perpetrators should be ejected from the food industry regardless of the extent of the illegal activities. An alternative approach is for the amount of punitive compensation to depend on the actual damage (Xing, 2011). The Criminal Law Amendment (8) enacted in May 2011 stated that anyone in violation of this law and causing serious damage to human health or other serious circumstances involved, should be sentenced to 5–10 years imprisonment. If they cause death or if other especially serious circumstances are involved, they should be sentenced to 10 years’ imprisonment, life imprisonment or even death.
However, food businesses vary greatly in size and although penalties may be too low for large enterprises, the reverse is often the case for the larger number of small businesses. An inspector was willing to describe the practical situation at the county level when considering the penalties. The inspector mentioned that there were rarely big food companies or enterprises at the county where he worked. Most of the food producers were small food workshops and vender. They don’t have the corresponding scientific food safety knowledge and legal consciousness; they could not afford the fine, even RMB 2000. Providing greater flexibility in the level of fines imposed might be a way to ensure that large businesses can receive penalties which are significant.

The legal requirements are difficult to enforce at the county and township level. Therefore at this level the inspection services should improve the food safety knowledge and legal awareness of the public. The communication between legislature at the central level and enforcing authorities at the local level should also be enhanced.

7.4. Access to information

In recent years, food safety has been a concern and a serious problem for both governments and the public. A simple food safety incident can result in a national panic. With a lack of reliable information released and completed as the reason for ‘some food safety related information causing people excessive panic’. 47% of respondents trusted the information from professional and authoritative food safety information systems. Therefore, an authoritative food safety information system could meet the requirement of part of consumers. It could invite the consumers to take a part in supervising food safety and reduce the panic on the food safety. The article 82 of FSL stated the department of health at all levels should publish the food information. Other relevant departments released information on routine supervision and administration of food safety. Therefore, the food safety information had been flooded to other uncorrelated information. The related governments always updated their information without supervision. The consumer could not obtain information timely. According to the information release system in United Kingdom, the state council of China could construct individual food safety information website in order to integrate the information of central governments and local governments.

It is clear from our study that there is still much to do to enhance the Chinese food safety control system and to make it effective in providing consumers with a supply of food which is both safe and fraud-free. There are many similarities in the above comments to those contained in the UN document from 2008 (UN in China, 2008). Although there have been significant changes, much remains to be done. This has been recognized by the Chinese Government itself which has recently published a new 5-year plan on national food safety control systems (GOV, 2012). This has identified 10 key areas for future work: laws, regulations, and standards; surveillance and assessment; inspection and testing; processing control; export and import food safety control; emergency management; Comprehensive coordination; scientific support; food safety integrity; education and training.

Much has already been achieved and the new 5 year plan should make significant further progress. China is however a large country with a huge population and very varied economic, cultural and geographic circumstances. The task is therefore very great and simple solutions are unlikely to exist. It will take time to build a better system but with both goodwill internally and further research, education and evaluation using international best practice, progress can be made.

References


