



The follow-up evaluation of “General Hygienic Regulation for Food Production” in China

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ABSTRACT

This paper reports the findings on the implementation of compulsory food safety standard General Hygienic Regulation for Food Production (GB14881) in China. 18 of regulatory agencies (17.1%), 11 of research institutions (10.5%) and 76 of food enterprises (72.4%) were involved in this study. Overall, food enterprises had a higher awareness rate of GB14881 and there was an high level of satisfaction among the local regulatory agencies, research institutions and food enterprises. The results indicated that the major difficulty encountered during GB 14881 implementation was lack of finance. The most important motivation for implementing GB14881 was to comply with regulatory requirement. Structural changes to plant, investment in new equipment and product investigation/analysis were the biggest cost. The most important identified benefit was regulatory approval. The comprehensive data obtained from the implementation of compulsory food safety standards in China would be valuable consultation for substantial improvement to the policy makers on the standards.

1. Introduction

Several trends are bringing greater attention to food safety regulation in many countries. It is estimated that each year up to 30% of the world's population suffers from some form of food-borne disease (WHO, 2007). Management of microbiological food safety is largely based on good design of processes, products and procedures. Effective hygiene control is vital to avoid the adverse human health and economic consequences of foodborne illness, foodborne injury, and food spoilage (Codex, 2003). The General Principles of Food Hygiene lay a firm foundation for ensuring food hygiene and should be used in conjunction with each specific code of hygienic practice (Codex, 2015). The food codes of hygienic practice have always been part of the compulsory standards in China. The lack of coordination amongst regulatory agencies and inconsistencies in the development, interpretation and enforcement of food standards in China significantly weakened regulatory oversight and created systemic vulnerabilities (Wu & Chen, 2013). In response to this, the government recognizes 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 (FAO and WHO, 2003). According to the “National Food Safety Standards Clean-up and Integration Plan”, published by the Ministry of

Health in 2010, the previous food standards in China would be gradually integrated, and all the previous food standards should be revised if necessary, such as contaminants, food additives, food labels and so on (Shao, Wang, Chen, & Wu, 2014).

Now China has released more than 1000 new national standards on food safety after consolidating some existing standards. According to the “Food Safety Standards Follow-up Evaluation Regulation (for Trial Implementation) (2012) released by Ministry of Health (now the National Health and Family Planning Commission) on December 19, 2012, the food safety standards evaluation is an important part of the food safety standards regulation, the national food safety standards should be revised timely if the evaluation results suggests. The main task of standards evaluation is to investigate the implementation and collect revision suggestions.

The newly revised national standard for food safety (GB 14881) was released in 2013 and was officially implemented on June 1, 2014. Many specific requirements in GB 14881 are proposed under the “Food Safety Law”, emphasizing the hazard analysis and process control and making the technical contents more versatility and scientific, all kinds of food production facilities shall imply the new standard which making the stand basis of the whole food safety standards system. In order to evaluate the impact of the implementation of this standard, an on-line survey was carried out and in this paper, the opinions received were

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collected and performed statistical analysis.

2. Material and methods

This research was performed from January to December 2016 and an on-line survey system was set up, participants can submit their choices and comments to GB14881, participants includes local regulatory agencies, food production enterprises, and research institution.

2.1. Questionnaire design

A written questionnaire in 5 parts was developed specifically for this study. Part 1 asked for general information on the participants such as age, educational level and years of experience, Part 2 included three questions regarding awareness, satisfaction and maneuverability of GB14881, Part 3 included several questions about difficulties motivations, costs, benefits in implementing GB14881, Part 4 was an open section meant to collect suggestions from the participants and capture any other information that would not have been captured in the other four parts.

The questionnaire was pre-tested by asking two experts from the food industry and another two from the regulatory agencies to complete the questionnaire. This was meant to improve the reliability and validity of the questionnaire.

3. Results

3.1. General characterization of the respondents

The comments from a total of 105 participants were collected and made statistical analysis (Table 1). Among them, 18 were from local regulatory agencies (17.1%), 11 from research institutions (10.5%) and 76 from food enterprises (72.4%). It is found that out of total respondents 3.8% are 25 years old and below, 61.9% age between 26 and 35, 29.5% belongs to the age group of 36–45 and 4.8% are above 45 years. 58.1%, 19.0% and 2.9% of respondents have a Bachelor, Master Ph.D. respectively. 80% of participants have received higher education. Regarding work experience in the food sector, 25 (23.8%) of all participants had between 5 and 10 years of work experience, 45 (42.9%) < 5 years and 22 (21.0%) had between 10 and 15 years of work experience.

Table 1
General characterization of the respondents.

Particulars	Classification	Local regulatory agencies	Research institution	Food enterprises	Overall
		n(%)	n(%)	n(%)	n(%)
Age	Age 25 and below	2(11.1)	1(9.1)	1(1.3)	4(3.8)
	Age from 26 to 35	10(55.6)	7(63.6)	48(63.2)	65(61.9)
	Age from 36 to 45	3(16.7)	2(18.2)	26(34.2)	31(29.5)
	Age above 45	3(16.7)	1(9.1)	1(1.3)	5(4.8)
Educational Qualification	School Level	1(5.6)	1(9.1)	19(25.0)	21(20.0)
	Bachelor	11(61.1)	7(63.6)	43(56.6)	61(58.1)
	Degree	6(33.3)	2(18.2)	12(15.8)	20(19.0)
	Master Degree	6(33.3)	2(18.2)	12(15.8)	20(19.0)
Years of experience	Ph.D. degree	0(0.0)	1(9.1)	2(2.6)	3(2.9)
	5 Years or fewer	8(44.4)	0(0.0)	37(48.7)	45(42.9)
	5–10 Years	4(22.2)	0(0.0)	21(27.6)	25(23.8)
	10–15 Years	2(11.1)	5(45.5)	15(19.7)	22(21.0)
	15 Years	4(22.2)	6(54.5)	3(3.9)	13(12.4)

n = 105.

3.2. Results of participants awareness, satisfaction and maneuverability of GB14881

In the second section of the survey respondents were asked to rate their awareness, overall satisfaction and maneuverability of the GB14881. Overall, Food enterprises have higher awareness rate of GB14881 than local regulatory agencies and research institutions (Table S1 and S2).

Respondents were asked to identify the extent (“very poor”, “poor”, “general,” “good,” or “Very good”) for the satisfaction and maneuverability questions. Table 2 ranks the average scores. The low score (“very poor” response) was coded as “1” and the high score “5” (“Very good”). The results indicated that the some requirements about “location and plant surroundings” (4.42 points), “management system and personnel” (4.41 points) and “product recall” were easier to implement (4.35 points), while “raw material, food additives and food contact materials” (3.95 points), “process controls” (3.95 points) and “environmental monitoring” (3.89 points) were considered difficult to put into practice.

There is an high level of satisfaction among the local regulatory agencies, research institutions and food enterprises, the mean scores were 4.11, 4.28, and 4.23 respectively.

3.3. Difficulties of implementing GB14881

The respondents highlighted many difficulties (Fig. 1) that are impeding them from implementing GB14881. The results indicated that the major difficulty encountered during GB14881 implementation was associated with the finance, 81% (85/105), namely the fact that some companies were not able to recoup costs related to the implementation of GB14881. Employees’ turnover and resistance responsible for implementation of GB14881 was cited as the second, 75% (79/105). Education and trainings of employees are very important for the successful implementation of GB14881 in food processing company. An understanding of GHP and the related programs must be established to make GB14881 come into effect. This includes breaking old habits and learning new rules and behaviors in food production, for both production employees and managers (Panisello & Quantick, 2001). The results from this study confirm that employees associated difficulties are very important restrains toward GB14881 implementation in food companies. Employees related difficulties were also found as restrains of great importance for both Mexican meat producers and UK dairy producers (Caswell, 2004; Henson, Holt, & Northen, 1999), while the requirement of professional management was one of the major problems for Polish food sector (Konecka-Matyjek, Turlejska, Pelzner, & Szponar, 2005). The other major difficulties to implementation of GB14881 was reported to be inadequate infrastructure and facilities, 65% (68/105), microbial contamination during processing, 54% (57/105), insufficient cleaning and disinfection, 41% (43/105), and deficient record management, 31% (33/105).

A point to note is that in China it is a legal requirement for food manufacturing companies to implement GB14881. China's version of the FDA, or CFDA, began conducting unannounced inspections of food companies' manufacturing and development efforts starting April. 1, as it looked to step up its oversight of the industry. It stated that the purpose of unannounced inspections was to standardize and strengthen inspection and supervision over the food manufacturing process in China. Manufacturing facilities of all types of food were subject to unannounced inspections. The CFDA may carry out unannounced inspections if the food manufacturer has a suspicious event, such as a significant product quality accident or illegal activity. Companies should keep a record internally of any inspection they have received. The inspection team may notify the local FDA of violations in order to sanction the manufacturers for administrative liability. That means that violations of GB14881 could lead to warning letters, investigations or food recalls. Once a manufacturer's inspection has led to punishment by the authorities, the manufacturer will be subject to the risk of more

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