Food Safety Situations in China – past, present and future

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FOOD SCARE in
– Chinese consumers

“I do not want foods with any pesticides and GMO foods”

“Artificial colors? Preservatives? Bleaching agents? Sudan red?”

“There is nothing we can eat!”
### Criteria for the assessment of national food safety situation

- Whether national food safety management system is sound and reasonable
- Whether national food safety standards are based on science, practical and with adequate coverage
- The application of risk analysis framework (risk assessment, risk management, risk communication)
- Compliance rate of food sampling and testing
- The qualification and working process of government inspectors
- Level of laboratory testing

### Evolution of national food control system

**1982 (Food Hygiene Law)**
- MOH had the overall responsibility for food safety control, including imported food;
- MOA responsible for the control of primary agricultural products production (planting and breeding)

**2004 – (Product Quality Law, Anti-Unfair Competition Law)**
- MOA - planting and breeding process
- AQSIQ - food manufacturing
- SAIC - food distribution
- MOH - restaurants and canteens
- SFDA - comprehensive supervision, coordination among ministries and management of major food safety events

### Evolution of national food control system

**Problems of fragmented control system**
- “when there is no problems, every ministry is in charge; however, when there is problems, no ministry is in charge” Obvious regulatory loopholes, such as the melamine incident.

- Repeat inspection, repeat samples testing.

**2009 – 2013 (Food Safety Law)**
- MOH – responsible for comprehensive coordination, monitoring/surveillance, risk assessment, and standards development and promulgation, information release, qualification recognition of food testing laboratories and development of laboratory testing regulations, as well as the investigation and management of major food safety incidents.
  - AQSIQ – food manufacturing
  - SAIC – food distribution
  - SFDA – restaurants and catering
  - MOA – planting and breeding process

**2013 – now**
- SFDA – manufacturing, transportation, storage, distribution and restaurant control;
- Standing Office of the State Council Food Safety Commission – policy formulation and planning, comprehensive coordination, handling major incidents and major information release;
- MOH (now NHFPC) – risk monitoring/surveillance, risk assessment and standard development and promulgation;
- AQSIQ – export & import control, food contact materials manufacturing.

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*did not solve the problems of fragmentation*

*improved, but with rooms for future reform*
Development of national food standards system

1990 – 2009 (food hygiene standards, MOH)

- After joined WTO in 2001, China tried to use Codex standards as the main reference for the development of Chinese food standards.
- As the results, a new set of standards were promulgated in 2003-2005, which are more applicable based on risk assessment, and also more consistent with Codex standards.
- As of October 2008, the number of food hygiene standards reached 454. Among them, there were: 8 categories of basic standards, including food contaminants, food additives, mycotoxins, pesticide residues, packaging material additives, and others. There were also 128 standards for specific food and related products, and 275 official laboratory testing methods, including 21 toxicological testing methods and procedures. There were 22 food enterprises hygiene practices, and 19 food poisoning diagnostic criteria. All these standards formed a food hygiene standards system complimented to the Food Hygiene Law.

2009 – 2015 (food safety standards, MOH)

- According to the Food Safety Law, the currently existed 4800 over-lapped and contradicted standard were cleaned-up and integrated into one set of mandatory national food safety standard. At the same time, around 500 new standards were promulgated. Some of the highlights are:
  - The new standard system is basically in compliance the Codex standard system. It has about 1,000 standards, divided into several categories, i.e. general (horizontal) standards, product (vertical) standards, code of practices and laboratory testing methods, with more than 11,260 indicators, and maximum limits for all the major hazards (chemical and biological) affecting food safety were set up; the use of risk assessment results as the scientific basis for standards development was strengthened.

- New category of standards - three FSMP standards were promulgated, i.e. General Standard of Food for Special Medical Purposes (GB 29922-2013), Food for Special Medical Purposes Intended for Infants (GB 25596-2010), and Good Manufacturing Practice for Food for Special Medical Purposes (GB 29923-2013).

- The new “Standards for Uses of Additives in Food Contact Materials and Products, GB9865-2016” is much better than the original standard “Hygienic Standards for Uses of Additives in Food Containers and Packaging Materials, GB 9685-2008”. It is more in line with the international standards and more practical in implementation. e.g.: the name of the standard; total specific migration limit (SML (T)) is added; the number of permitted additive increased from 958 to 1,316; and the use of 6 additives in contact materials for infant and young child foods was restricted, etc.
Learning and initial application started after China joined WTO in 2001. Risk analysis framework was not mentioned in the 2009 Food Hygiene Law.

A nationwide food contamination monitoring network was established by MOH, including Chemical Contaminants Monitoring Network (17 provinces), Microbial Pathogens Monitoring Network (22 provinces), Foodborne Disease Surveillance Network (18 provinces), and the Chinese Total Diet Study (12 provinces).

Begin to learn about risk assessment, and tried to apply the results of risk assessment in the development of food safety standards (e.g., contaminants limit in foods).

Application of risk analysis framework (cont.)
2009 – 2015

Food Safety Law stipulated specific provisions on the risk monitoring and risk assessment.

- Monitoring/surveillance network covers whole country. Food samples: 507 foods/29 food categories; 286 chemical and microbiological indicators; 2.5-3 m data points annually. Active surveillance on FBD and etiological investigation started.
- First National Food Safety Risk Assessment Expert Committee established in at 2009. So far, 13 priority projects completed, e.g. iodine, aluminum, trans fatty acids, Salmonella in chicken meat and Listeria monocytogenes in ready-to-eat foods. Results served as important basis in the development of the corresponding food standards.
- Risk communication is the weakest component. The great efforts of the government and the industry in improving food safety in China were generally not recognized by the consumers.

Case example: Assessment on Al intake triggered the major revision of food additive standards

Aluminium in various foods

Detection rates of Al in foods (%)

Dietary Al intake in total population

75% Al intake from additives

32.5% > PTWI
**Dietary Al intake in different age groups**

- 2-3 yr. M
- 4-6 yr. M
- 7-10 yr. M
- 11-14 yr. M
- 15-17 yr. M
- 18-59 yr. M
- 60 yr. M
- 18-59 yr. F
- 60 yr. F

42.6% of 4-6 year-old children exceeded PTWI

**Main food contributors to Al intake**

- Flour 44%
- Steamed bread 24%
- Noodles 7%
- Puffed food 4%
- Jellyfish 1%
- Vermicelli 3%
- Others 7%

**Revision of Food Additive Standard (GB 2760)**

- Reduce the scope of use of potassium aluminum sulfate and aluminum sulfate ammonium
- “wheat flour and products” limited to “fried wheat flour product”, no change in limit;
- Remove the use in extruded products;
- “salted aquatic products” limited to “jelly fish”, maximum residue level 500 mg/kg (as AI);

Delete 7 aluminum lakes used in extruded products

Delete sodium aluminum phosphate-acidic, sodium aluminosilicate, starch aluminum octenylsuccinate

**Dietary Al intake: northern vs southern**

- Intake (mg/kg bw/week)
- PTWI

Northern
Southern

- Average
- P90
- P97.5

60.1% > PTWI
8.0% > PTWI
Estimated Al intake in Chinese population based on the revised food additive standard

Food compliance rate in China

Chinese government has started national sampling/testing programmes since the late 1980s. The annual number of food samples tested were as many as several hundred thousand, or even several millions. It is therefore possible to use these data to analyze the trend of over-all compliance rate in the past several decades as a reference to assess the changes of food safety situation in China.

- The total food compliance rate in the past 30 years in China has increased from 71.3% to 96.8%;
- For some major and high concern food categories (meat, poultry & products, condiments, milk & dairy products, aquatic & products, cereals & products and vegetable oils), the compliance rates were also significantly increased.

Changes in total food compliance rate in China (1985-2015)

Changes in compliance rate of specific food categories (1985-2015)

Major food safety issues at present

- Foodborne illness is the most important food safety issue.
- Main issues of chemical contamination of food are heavy metals (lead, cadmium) in grains and vegetables, mycotoxins in grains and nuts, illegal use of veterinary drugs in livestock, and illegal use of pesticides in vegetables and tea.
- Food adulteration or food fraud. Economically motivated adulteration (EMA) events are currently quite common in China and they seriously damaged consumer confidence in the food supply.
- Risk Communication is the weakest component in the implementation of risk analysis framework in China. Food scary due to misconception is common. The importance of psychological harm to consumers caused by misinformation and misconception should not be ignored.

Looking forward

Directions for efforts

- Food producers and handlers should ensure food safety in the whole food chain, i.e. from farm to table. The leading enterprises have the responsibility to help the upstream and downstream SMEs, so that the possible loopholes could be avoided.
- The government regulatory agencies must strengthen cooperation among different agencies to achieve integrated seamless control of the whole food chain.

Current priorities

- To further reform of national system, and strengthen multi-sectorial coordination and cooperation.
- To change the way of inspection from end product sampling/testing to risk based process inspection.
- To further improve/upgrade national food safety standards.
- To improve capability in monitoring/surveillance and risk assessment by learning from developed countries.
- To increase food safety investment by food industry, including human, financial and material resources.
- For both government and industry, capacity building is the key to the implementation of the above priorities.

Summary

- In the past 30 years, China, a developing country with a huge population and large geographical heterogeneity, has made a big leap from shortage of food to basically elimination of hunger.
- However, there is an obvious conflict between the traditional household agriculture farming and numerous small food business and the increasingly strong consumer demand for high quality and safe food supply.
- The only way to steadily improve the food safety situation in China is to follow the risk analysis framework by the joint efforts of all stakeholders. With the 2015 new Food Safety Law put into place, it is believed that the food safety in China will be steadily improved.
Thank you!