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Evolution, Dilemmas and Improvement Paths of China's Food Safety Guarantee System

[1]Zhang Mengjin, [2]Zhang Xiaohan and [3]Li Tianran,
[1,2,3]Student, Beijing Wuzi University, Beijing, China

Abstract: Food safety bears on people's physical health, social stability and public security, and serves as a bottom-line guarantee for people's livelihood. With the expansion of the food industry and continuous renewal of business forms, food supply has shifted from pursuing "quantity security" toward equal emphasis on "quality safety" and "nutritional health". Traditional segmented supervision and post-incident disposal governance models can hardly fully adapt to the demands of modern governance. This paper sorts out the evolution of China's food safety guarantee system from decentralized administration to systematic governance and from post-fact punishment to whole-process risk prevention and control. It analyzes prominent problems concerning standard supply, supervision coordination, corporate primary responsibility, risk early-warning and traceability, as well as social co-governance. Improvement paths are proposed from five dimensions: dynamic standards, integrated supervision, substantive accountability, digital traceability and institutionalized co-governance, so as to provide references for safeguarding "safety on the tip of people's tongues".

Keywords*: Food Safety; Guarantee System; Whole-chain Supervision; Risk Governance; Social Co-governance*

1. INTRODUCTION

In recent years, China has attached great importance to food safety governance and strictly implemented the "Four Strictest Requirements". A food safety guarantee framework combining laws and regulations, standard systems, supervision systems, risk monitoring and social co-governance has gradually taken shape. The food production-operation chain features long links, numerous stakeholders and complex business forms. Food safety risks are concealed, transmissible and recurrent. Against the backdrop of booming new business forms such as online food ordering, pre-cooked food and cross-border food, governance pressure keeps mounting. It is of great practical significance to systematically review the development of the guarantee system, identify governance weaknesses and optimize institutional arrangements.

Theoretically, food safety is a typical "credence good". Information asymmetry prevails among producers-operators, regulators and consumers. Market mechanisms cannot spontaneously resolve such problems, hence public authority must build stable and predictable institutional supply[1]. Existing academic studies analyze fragmentation dilemmas of supervision systems from the holistic governance perspective and advocate institutional integration and cross-departmental coordination to replace fragmented segmented administration[2]. Other scholars discuss the objective orientation, framework design and implementation paths of food safety governance at the national strategic level[1,3,4].

In terms of policy practice, the State Food and Drug Administration was established in 2003. The *Food Safety Law* was promulgated in 2009 and revised in 2015 to enshrine the "Four Strictest Requirements". In 2019, the Opinions on Deepening Reform and Strengthening Food Safety Work was issued by the CPC Central Committee and the State Council. The *Food Safety Law* was amended again in 2021 to strengthen supervision liabilities for new business forms including online food trading and cold-chain logistics. Institutional changes demonstrate that China's food safety governance has entered an in-depth stage characterized by whole-chain, whole-process and multi-subject governance.

II. ESTABLISHMENT AND DEVELOPMENT OF CHINA'S FOOD SAFETY GUARANTEE SYSTEM

China's food safety guarantee system has undergone iterative upgrading, evolving from decentralized administration to systematic governance and from post-fact punishment to whole-process prevention and control. This evolution is more than institutional restructuring; it represents triple transformations in governance philosophy, policy tools and accountability structures, with inherent logics of risk source mitigation, downward shift of supervision focus and diversification of governance subjects[2].

First: Initial Exploration Stage. Early-stage food safety administration centered on sanitary inspection. Regulatory functions were scattered across multiple authorities including health, agriculture, quality inspection and industry-commerce administrations. Standard systems were incomplete, and governance mainly focused on food hygiene inspection and end-product sampling testing. Characterized by "multi-departmental management and segmented accountability", overlapping duties and regulatory gaps co-existed. Food safety incidents were mostly addressed through ad-hoc special rectification campaigns.

Second: Institutional Formation Stage. The promulgation of the *Food Safety Law* in 2009 formally established a unified food safety regulatory framework in China, clarifying regulatory duties, production-operation liabilities, penalty criteria and risk prevention requirements, marking the start of law-based governance. The Food Safety Commission of the State Council was set up in 2010 to undertake comprehensive coordination functions, remedying the lack of high-level coordinating bodies in previous years[5].

Third: Strict Governance Stage. The *Food Safety Law* was revised in 2015 to codify the principles of the most rigorous standards, strictest supervision, severest punishment and most serious accountability. Its 2021 amendment brought online food trading platforms and cold-chain transportation under regulatory scope. Systems for risk monitoring, sampling inspection, traceability management and credit-based supervision were

successively implemented. Two institutional reforms in 2013 and 2018 established the China Food and Drug Administration and subsequently the State Administration for Market Regulation, steering supervision from fragmentation toward relative unification[2,5].

Fourth: Modernized Co-governance Stage. Authorities emphasize whole-chain supervision and multi-stakeholder co-governance, breaking barriers covering farming, production, circulation, catering and after-sales links. Smart supervision, information disclosure and public oversight are promoted. Since 2022, the "Two Responsibilities" system (territorial administrative responsibility and corporate primary responsibility for food safety) has been fully implemented. Corporate routine mechanisms of "daily control, weekly inspection and monthly scheduling" have been enforced. Initiatives such as "Internet-enabled Open-Kitchen Project" and risk-graded classified supervision have gained momentum.

At present, China has basically formed a five-in-one food safety guarantee system consisting of legal norms, standard support, administrative supervision, risk prevention-control and social co-governance. Nevertheless, system maturity depends not merely on complete institutional elements but also on their coupling effect and operational performance.

III. MAJOR EXISTING PROBLEMS IN CHINA'S FOOD SAFETY GUARANTEE SYSTEM

Notwithstanding a sound institutional framework, structural deficiencies persist in governance performance, stemming from lagging institutional supply, misallocation of regulatory resources and capacity mismatches among governance subjects.

3.1 Insufficient Refinement and Timely Updating of Standard Systems

Standards constitute the technical basis for supervision. Detailed standards remain absent for certain emerging foods, novel processing technologies, pre-cooked food and online-retailed food. Some traditional standards are outdated with inadequate alignment between old and new versions, resulting in ambiguous law-enforcement references. Taking pre-cooked food as an example, national unified specifications for its definition, classification, raw-material requirements and labelling have long been lacking. Divergent criteria among local and group standards raise compliance costs for enterprises and create difficulties for law enforcement[6,7].

3.2 Loopholes in Regulatory Connection

The food industrial chain features multi-links, cross-regional and cross-departmental attributes. Regulatory gaps may emerge in planting-breeding, processing, transportation, warehousing and online sales. From the holistic-governance perspective, blurred duty boundaries, poor information sharing and defective coordination mechanisms underlie fragmented supervision[2]. Full mutual recognition between production-origin exit inspection and market access has not been achieved. Grass-roots regulatory authorities are understaffed. Many grassroots institutes suffer from heavy workloads relative to limited personnel, inadequate rapid-testing equipment and shortage of specialized technicians. Cross-regional collaborative investigation and joint law-enforcement mechanisms need improvement. Jurisdictional demarcation for online sales and live-stream e-commerce remains ambiguous.

3.3 Inadequate Implementation of Corporate Primary Responsibilities

Enterprises bear primary responsibility for food safety. Still, some small-and-medium-sized enterprises, small workshops and individual merchants exhibit weak self-discipline, including lax raw-material control, non-standard production procedures and incomplete account books. China hosts massive numbers of food market entities dominated by micro- and small-scale operators with characteristics of "small size, dispersion and disorder". As illegal gains may outweigh penalties, administrative sanctions alone fail to generate sufficient deterrence. Credit-based supervision, industry bans and joint disciplinary measures are underutilized. Low costs for food-safety violations discourage endogenous compliance incentives for enterprises[9].

3.4 Imperfect Risk Early-warning and Traceability Systems

Traceability systems serve as "positioners" for risk disposal while risk monitoring functions as "early-warning devices". Some food traceability records are incomplete with isolated data systems, rendering traceability formalistic. Discrepant traceability coding and data-interface standards create information disconnections among upstream and downstream participants, obstructing rapid identification of involved batches and product flows[8]. Risk-monitoring data is poorly shared across departments and regions, limiting predictive capabilities; governance still largely relies on post-incident disposal.

3.5 Under-utilized Strengths of Social Co-governance

Consumers face high rights-protection costs and limited risk-identification capabilities. Incentives and feedback mechanisms for whistle-blowers are insufficient. Industry self-regulation is weak; many industrial associations lack independence and professional competence. Media supervision and third-party evaluation lack standardization with ambiguous information-verification requirements and liability boundaries. The multi-subject co-governance pattern is yet to be fully established[10,11,12]. Public participation is mostly incident-driven and campaign-oriented rather than sustained through formal channels, procedures and incentive frameworks.

IV. COUNTERMEASURES AND SUGGESTIONS FOR IMPROVING CHINA'S FOOD SAFETY GUARANTEE SYSTEM

Improving the food safety guarantee system requires coordinated efforts in institutional supply, regulatory mechanisms, accountability structures, technical support and public participation. Governance shall transform from "government-only supervision" toward "multi-agent collaborative governance", and shift from "end-stage disposal" to "whole-process prevention and control".

4.1 Establish a Dynamic Food-safety Standard System

Accelerate standard-setting for emerging foods, new business forms and innovative processing technologies. Build a dynamic management mechanism featuring "rapid project initiation, collaborative formulation, regular review and orderly phase-out". Formulate unified fundamental standards and operational specifications for pre-cooked food, online-retailed food and live-stream-sold food[6,7]. Promote synchronized revision of limit standards and corresponding testing-method standards. Encourage group standards and enterprise standards stricter than national standards, forming a multi-level standard

supply pattern: "national standards securing the baseline, group standards lifting intermediate requirements and enterprise standards pursuing higher benchmarks".

4.2 Build a Whole-chain Integrated Supervision Mechanism

Enforce closed-loop supervision "from farmland to dining-table". Strengthen coordination among agriculture, market regulation, health and public security authorities. Clarify accountable parties for each link through duty lists and the unified regulatory-item network. Advance mutual recognition between production-origin exit inspection and market access. Improve cross-regional joint law-enforcement, clue transfer and case-assistance mechanisms, and reinforce the connection between administrative law-enforcement and criminal justice. Enhance grassroots regulatory capacity via staffing adjustment, equipment upgrading and professional training for rapid testing and law-enforcement. For cross-regional business forms such as online food ordering and live-stream sales, clarify division of supervision obligations between platform jurisdictions and operator jurisdictions and realize integrated online-offline supervision.

4.3 Consolidate Primary Responsibilities of Food Producers and Operators

Strictly implement corporate self-inspection, purchase-inspection, sample-retention and account-book management systems. Embed the "daily control, weekly inspection and monthly scheduling" mechanism into routine production procedures to translate nominal responsibilities into on-site practice. Adopt "support-oriented supervision" targeting micro-enterprises and small workshops. Reduce compliance burdens by constructing centralized-processing zones, providing shared testing services and delivering compliance training. Strengthen dishonesty punishment and credit disclosure. Establish food-safety credit archives and risk-graded classified supervision systems. Impose industry bans and joint disciplinary sanctions against serious violators to compel corporate compliance.

4.4 Improve Risk Monitoring, Early-warning and Traceability Systems

Advance the construction of a national unified food-safety traceability platform. Unify traceability coding, data interfaces and exchange standards, and achieve interconnection among national platforms, local platforms and corporate systems to realize traceability of food sources, destinations and liabilities[8]. Promote "one code for one item" or "one code for one batch" for key food categories. Apply Internet-of-Things and blockchain technologies to enhance data authenticity. Integrate multi-source data including sampling-inspection results, consumer complaints, public-opinion monitoring and medical records. Construct risk-modelling and graded early-warning rules to establish a three-dimensional risk-prevention-control model covering pre-incident early warning, in-process control and post-incident disposal.

4.5 Reinforce the Construction of Social Co-governance Systems

Popularize food-safety science to improve consumers' risk-recognition and self-protection capacities. Lower barriers for rights protection, keep the 12315 complaint-reporting channel accessible, and perfect reward and whistle-blower-protection mechanisms. Encourage industrial associations to conduct self-regulation, standard-setting and credit evaluation. Guide supervision from the public, media and third-party institutions. Standardize third-party certification and inspection-testing markets, and advance food-safety liability insurance. Meanwhile, institutionalize social co-governance by clarifying participation procedures, information channels and feedback mechanisms to avoid superficial public involvement[10,11,12].

CONCLUSION

Thanks to years-long development, China's food safety guarantee system has achieved remarkable progress in legalization and standardization with basically complete institutional frameworks. Nevertheless, deficiencies remain such as lagging standards, regulatory weaknesses, insufficient corporate accountability and inadequate social co-governance. In the future, continuous efforts shall be made to optimize institutional systems, strengthen whole-chain supervision, consolidate corporate responsibilities and enhance smart-governance capabilities. Governance priorities should shift from "post-incident investigation" to "pre-incident prevention", from "government-exclusive governance" to "social co-governance", and from "experience-driven supervision" to "data-driven supervision". A more scientific, rigorous and efficient modern food-safety guarantee system shall be built to continuously safeguard people's food safety.

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