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Strengthen the Management of Food Safety

Section 1 Improvement of Imported and Exported Food Management

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Align with international standards

The “Standards for Pesticide Residue Limits in Foods,” “Standards for Veterinary Drug Residue Limits in Foods,” “Standards for Specification, Scope, Application, and Limitation of Food Additives,” and “Food Sanitation Standards” had regulated:

380	Pesticides
7244	Residue limits for pesticides
142	Veterinary drugs
1439	Residue limits for veterinary drugs
792	The scope of use, limits and specifications for food additives
28	Sanitation standards

Improvement of Drug Quality Inspection Technology

Food promulgated methods stipulate and amend 25 articles and 640 items.

The recommended method for food test stipulates and amend 43 articles and 433 items.

Improve the Regulations of Food Management

Reviewed the “Act Governing Food Safety and Sanitation,” and the “Health Food Control Act.”

Specified the “GHP Guidelines for Manufacturers of Liquid Egg Products,” “Sanitation Standard for Liquid Eggs,” and “Regulations Governing the Labeling of Liquid Egg Products.”

Specified the “Regulations Governing the Labeling of Health Food.”

Specified the “The Online Food Delivery Platform Safety and Health Management System Guidelines.”



Strengthen the Management of Food Safety

To ensure and provide a safe and healthy “food” environment for the citizens in this country. TFDA will continue to reinforce the food safety management with so called “Five-Point Food Safety Policy,” including enhance the import and export management to overseas markets, to improve the existing regulation of food management, to reinforce the inspection and monitoring in food product and supply chain, to upgrade the verification system for food industry hygiene and safety management, to cross supervise and application via current food safety digital systems and research of inspection technology for new substances to avoid unexpected risk. Furthermore, we established a comprehensive farm-to-table food safety management system under cross-checking coordination mechanism to complete subject program.

Section 1 Improvement of Imported and Exported Food Management

Introduction of the Policy

The “*Regulations for Systematic Inspection of Imported Food*” was revised in 2019 , as added items of import products subject to systematic inspections to strengthen the management of import foods and control the high risk products from the beginning of the source; TFDA announced the control measure that the official certificates from the exporting country should be attached for specific imported foods. In addition, according to Article 30 of the “*Act Governing Food Safety and Sanitation*” rolling reviews of items that should apply for inspection are conducted by TFDA to ensure the safety and sanitation of the imported foods.

On the other hand, TFDA also promotes exporting food products. Other than simplifying the application process of export proof documents of processed foods, we cooperation with interagency and put efforts on assisting Taiwan food products to export to Singapore and Korea or etc. In 2019, Directorate General for Health and Food Safety (DG SANTE) had conducted the on-site inspection in Taiwan regarding to the application of exporting animal origin food products to the EU. To expand our overseas markets as well as enhance Taiwan’s international competitiveness in food industry.

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Implementation Strategy

I. Strengthen the systemic and border inspection system and reinforce food safety control by health certificate mechanism

To strengthen the food safety management of imported animal source products, we refer to the international management models and conduct the overall systemic inspection to evaluate the equivalence of the food safety management system and the supervision measure of the exporting country. Moreover, the official certificates of the exporting country are required for the import of specific animal-source foods.

In addition, TFDA through the customs notification platform mechanism of “declared as food usage for imported goods without import food regulations” that was established with the Customs Administration, Ministry of Finance, by the cross-departmental coordination consolidates import food related information on a quarterly basis and the inspection results of TFDA’s regional administrations and public health bureaus, as well as announced the amendments to application of inspection product commodity classification number.

II. Assist food businesses to export food products to the EU

On the basis of the EU regulations, it is required for competent authority to submit an application to DG SANTE and fill in the relevant questionnaires and residue plan in non-EU member countries who intend for export animal origin food products to the EU. DG SANTE will conduct an on-site inspection to assess whether the official control systems is in line with the requirements laid down in the EU legislation. TFDA cooperate with domestic food businesses, and submitted the relevant questionnaires to DG SANTE for applying exported meat, dairy, and egg products to the EU.

III. Improve the application process for the sanitary certificates of processed foods for export

- (I) Starting on April 15, 2019, by connecting with the “Food and Drug Operator Registration Platform” (FadenBook system) and optimized the “Application System for Export Food Sanitary Certificates” (Asefsc system), the application documents that were originally required to be attached such as the factory or company registration certificates and the statements have been simplified. TFDA also integrated the audit records and simplified the application process for the “Sanitary Certification” which the manufacturers have been audited by the competent authority and comply with the Good Hygiene Practice (GHP) within 6 months.
- (II) From July 1, 2019, the online application for those sanitary certificates of processed food for export has been fully implemented. And followed by October 1, 2019, TFDA has also provided multiple payment services and changed the notice of receiving certificates from a paper document to an electronic notice.

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Achievements and Benefits

I. Expand the scope of inspection items and reinforce border control

In 2019, three dairy products and products of deer-derived were added and expanded the scope of products subject to systemic inspection to six types; moreover, the animal-source imported foods includes eggs and egg products, gelatin and its derivative products are required to attach the official certificates to prove the products are human consumption or to prove the products are in accordance with food safety and sanitation regulations of the original exporting country.

Another 27 item numbers were completed the revision, including the pumpkin seeds, genetically modified or non-genetically modified corn shoots, fresh or frozen aquatic products, etc. Thus, a total of 2,640 item numbers that required to be inspected at the border.

II. Promote bilateral communications between Taiwan and European Commission, and gradually expand the overseas markets

The DG SANTE had sent the audit team to Taiwan during October and November 2019, to conduct on-site inspection for animal origin food products intended for export to the EU. TFDA hosted the inspection, and the audit team visited 10 export products manufacturers and the Department of Health, Taipei City Government, the Kaohsiung Port, the Kaohsiung Branch of the Animal and Plant Quarantine Bureau of the Council of Agriculture, Executive Yuan and the Kaohsiung City Animal Protection Office. Based on the evaluation results, DG SANTE will assess Taiwan's animal origin food management system, the production system of business operators and the equivalence of the EU regulations (Figure 2-1).

With the on-site inspection and interaction between in Taiwan and the audit team of DG SANTE, TFDA had a better understanding of the EU food management regulations. The



Figure2-1

The closing meeting between the audit team of DG SANTE and Taiwan. DG SANTE visited the border inspection operations of TFDA's Southern Center for Regional Administration Center in the Kaohsiung Port.

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interaction will facilitate Taiwan's food industry to enter the international market. TFDA continues to reinforce the bilateral cooperation between Taiwan and the EU to facilitate the diverse development of Taiwan's export market and products.

III. Simplified the application process for the sanitary certificates of processed food for export

With the measures such as online applications, simplified the application process and provide multiple payment methods, the reviewing days for the application has been shortened by 2 working days. The application for "Sanitary certification" those who meet the specified conditions can greatly save the application time. In addition, the electronic notice also improves the efficiency of document delivery. The applicant's average satisfaction with the relevant measures reached 93%.

Section 2 Improve the Regulations of Food Management

Introduction of the Policy

In order to improve the food management regulations in Taiwan, The "*Act Governing Food Safety and Sanitation*" was reviewed three times in 2019, the precautionary principles for the case of important or emergency food hygiene and safety incidents, the management regulations for the processed aids and the penalty for spreading false food safety information were included in the provisions of the "*Act Governing Food Safety and Sanitation*"; the relevant food safety regulations were reviewed and a total of more than 40 regulations have been added or revised, including various food hygiene and safety standards, regulations for logistics operators, regulations for liquid egg management, the hygiene management personnel system of food factory, and the efficacy evaluation and labeling regulations for health food. We also promote multiple policies to enhance the professionalism of business operators' self-management, to ensure the hygiene and safety in the food production and supply chain.

Implementation Strategy

I. Food hygiene and safety standards

We refer to the international standards and adopt the risk assessment principles to conduct comprehensive evaluation on research results and standards according to the scientific evidence and toxicological tests, including "*Standards for Pesticide Residue Limits in Foods*," "*Standards for Veterinary Drug Residue Limits in Foods*," "*Sanitation Standards*," and "*Standards for*



Specification, Scope, Application and Limitation of Food Additives,” to align with international management standards.

II. Full registration system of food businesses

We establish a comprehensive food registration system in order to strengthen the management of basic information of business operators in the food industry, including logistics business operators, and enhance the management efficiency.

III. Hire professionals in the food industry

As more and more types of food industry and management, to improve food hygiene and safety professionalism is more important. According to the business operators’ capital and number of employees and conduct implementation in various years and stages, we expand the scope and strengthen the management of food manufacturing factories to ensure food hygiene and safety. For example, food businesses belonging to a category and scale designated by the central competent authority in a public announcement shall have sanitation control personnel in accordance with Article 11 of the *“Act Governing Food Safety and Sanitation.”*

IV. Improve the management of liquid eggs

TFDA has clearly specified the *“GHP Guidelines for Manufacturers of Liquid Egg Products,” “Sanitation Standard for Liquid Eggs,”* and *“Regulations Governing the Labeling of Liquid Egg Products”* in order to establish the relevant specifications of liquid egg products for liquid egg manufacturers to follow; we practically implement the source management of the production to prevent unqualified or poor hygiene liquid egg products from being used in the food production supply chain.

V. Strengthen the management regulations for health food

The assessment of the health care effects for health food have been revised in order to update the evaluation and test methods for the “health care effects” of health food and related specifications, to ensure the validity of the health care effects assessment experiments and enhance the product quality. In addition, in order to provide consumers with clear information and prevent misunderstanding in regard to health food, it is stipulated and specified the *“Regulations Governing the Labeling of Health Food”* and “precautions” shall be labeled on the external package depending on the type of health food products.

VI. Re-inforce the management of online food delivery platform

The online food delivery platform is a new type of business. Consumers order food via the Internet and the delivery service personnel deliver the food to an appointed location. The conduct in regard to the provision of food delivery service should comply with the regulations related to the *“Act Governing Food Safety and Sanitation.”* We have also stipulated relevant management guidelines for the business operators to follow.

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Achievements and Benefits

I. Align with international standards

As of December in 2019, the “Standards for Pesticide Residue Limits in Foods,” “Standards for Veterinary Drug Residue Limits in Foods,” “Standards for Specification, Scope, Application and Limitation of Food Additives,” and “Food Sanitation Standards” had regulated 7,244 residue limits for 380 pesticides; 1,439 residue limits for 142 veterinary drugs; the scope of use, limits, and specifications for 792 food additives; 28 sanitation standards.

II. Improved the registration system of food business operators

We announced the amendment to the “Category, Scale, and Implementation Date of Food Business Operators that Require Registration Before Operation” on April 26, 2019; and we specified the scale and implementation timeline of logistics business operators that are required to be registered, to accurately management the information of logistics business operators. As of the end of 2019, a total of about 470,000 food business operators had been registered, including food manufacturing and processing, import, sale, food service, and 1,400 logistics business operator.

III. Enhancement of self-management in food manufacturers

In 2019, “all categories” of food manufacturing factories shall have sanitation control personnel. It is expected to implement food safety management in the factory and enhance the self-management ability of food business operators with the implementation of professional personnel.

IV. Reinforce the egg industry chain management

- (I) Stipulate the regulatory standards and operating guidelines
 1. “Sanitation Standard for Liquid Eggs” and “Regulations Governing the Labeling of Liquid Egg Products:” Announced on November 7, 2019 to strictly regulate the types of shell eggs can be used for making liquid eggs and standard for microorganisms in liquid eggs; as for the labeling of liquid egg products, they are required to label the name of the product with the wording “pasteurized” or “unpasteurized,” as well as the expiry date and storage condition. For unpasteurized liquid egg products, an additional labeling of “The product must be used in the production of foods that will be sufficiently heated or other processing methods sufficient for effective pasteurization” or other synonymous terms is required.
 2. “GHP Guidelines for Manufacturers of Liquid Egg Products:” They were issued on March 14, 2019 and the monitoring key points for the manufacturing process of raw material acceptance, sterilization, and storage temperature are provided for reference as well as for the liquid egg manufacturers to follow.
- (II) The counseling and introduction workshop for business operators: To enhance the understanding of laws and regulations for egg product manufacturers, we conducted a total of 47 counseling sessions for manufacturers as of the end of 2019; and 2 workshops

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regarding the “Act Governing Food Safety and Sanitation” for product manufacturers were held, with a total of about 100 participants.

V. Improve the assessment method for health care effects and the product precautions

- (I) On March 28, 2019, “The efficacy assessment method of health food to enhance iron bioavailability” was amended and announced to optimize the assessment method of health care effects, as well as to ensure the consistency of iron bioavailability in experimental method and relevant regulations.
- (II) Regulations Governing the Labeling of Health Food:
 1. Health food in capsule and tablet form shall have containers or packages labeled with the following precautions (Figure 2-2):
 - (1) “This product is not medicine and only for health care purpose. Any person having the disease shall seek medical treatment.”
 - (2) “Please take recommended volume and avoid excessive intake.”
 2. Health food other than capsule and tablet form shall have containers or packages labeled with the following precautions (Figure 2-3): “This product is only for health care purpose, please take recommended volume.”

VI. Enhance the hygiene management of food delivery

The “Guidelines of Hygiene Self-Management for Online Food Delivery Platform Business Operators” were stipulated on September 19, 2019 and the content includes: the delivery personnel are required to regularly take the hygiene education and training and the delivered food must be kept clean and hygienic.

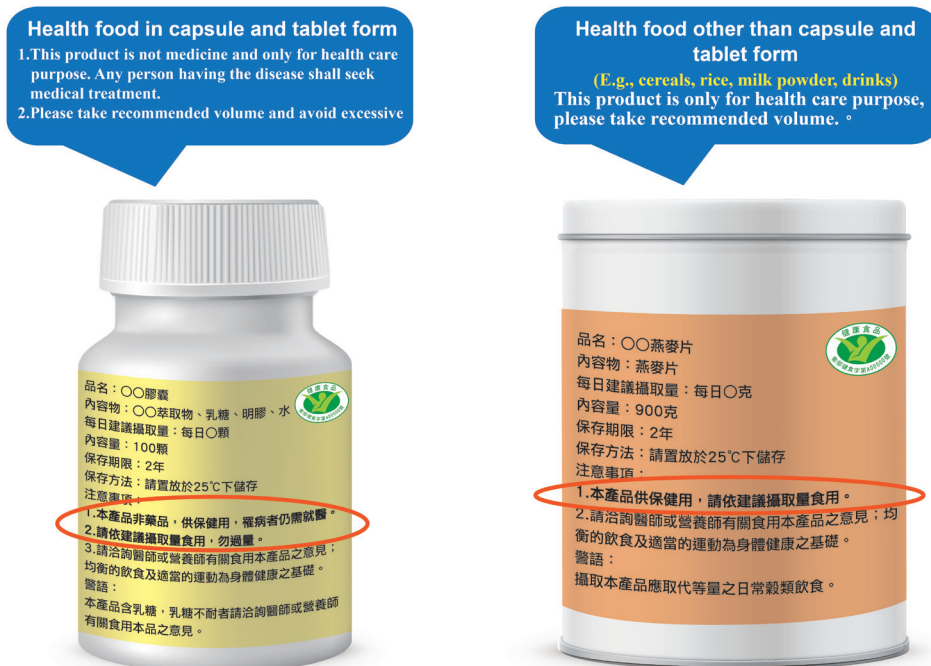


Figure 2-2、2-3

Regulations governing the labeling of health food

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Section 3 Reinforce Supervision of Food Production Chain

Introduction of the Policy

In order to offer a reliable food safety environment for all consumers, we precede the farm-to-table program as 3-tier food quality of management system. The competent authority is responsible for supervision and inspection through overseas source inspection, imported product inspection at borders, post-market inspection, and cooperation with police to enhance the inspection of food and drugs, to identify the potential risks and product items and adopt the warning and control measures in advance.

Implementation Strategy

I. Overseas on-site inspection

For the management of source control, the central competent authority refers to the imported records over the years, and dispatches personnel to the exporting country to conduct on-site inspection for the food safety and hygiene of imported foods.

II. Inspection of imported products at borders

The annual inspection plan will be stipulated every year in order to ensure the safety of imported food products, and we will review and adjust the inspection methods and items with the rolling approach according to the criteria such as inspection records, characteristics of products, and domestic and foreign information, etc. The foods that do not pass the customs clearance inspection at borders will be returned or destroyed according to the regulations, furthermore, the information of these products such as company name, address, product name, and illegal status may be revealed to the public. At the same time, TFDA will increase the product sampling rate up to inspection batch by batch if necessary.

III. Domestic manufacturing processing and circulation supervision

We plan national food inspection projects with reference of the food inspection data in the past, public opinion and concerned subjects, violation patterns of incidents and market distribution, production and sales models, to reinforce the inspections on high-concern, high percentage of violation and high-risk projects. We also supervise and assist the health bureaus of local governments to conduct implementation of food inspection and management and adopt the two-way inspection of source manufacturing and distribution sales to strengthen the food hygiene and safety.



IV. Collaborative cross-department inspection

For foods that are frequently consumed, in our daily lives, we plan inspection projects for abnormal circumstances through the precautionary information and statistical data analysis, which will be collaboratively conducted by the central departments and local governments to ensure the hygiene and safety for the traceable products in the supply and marketing chain.

V. Cooperative investigation between prosecutors and police

Every year, we conduct the “Strengthen the Food and Drug Crime Study Seminar” with the Ministry of Justice, to create good communication channels with the prosecutorial authorities, reinforce the mutual assistance in judicature, we also invited the Seventh Special Police Corps to participate in the seminar to enhance the efficiency of food and drug investigation.

Achievements and Benefits

I. Overseas source inspection

In 2019, we conducted the routine overseas inspection for countries and processing manufacturers with import records, with a total inspection of 18 factories. The overall evaluation in the food production processes of the inspected foods meets the relevant domestic regulations.

- (I) 1 special dietary foods factory in the United States.
- (II) 1 beef factory and 5 pork factories in Canada.
- (III) 6 beef factories in the United States.
- (IV) 5 kimchi factories in Korea.

II. Inspection of imported products at borders

A total of 718,766 batches of food related products were inspected at the customs clearance in 2019, including 89,639 batches were inspected on site and 58,108 batches were inspected by random sampling. A total of 786 batches failed to meet the inspection requirements, accounting for 1.4% of the sampling batches and the rate of passing the inspection was 98.6%.

III. Domestic manufacturing, processing and distribution supervision

In 2019, the inspected number of domestic business operators in the industry was over 150,000. The qualified rate of GHP food business operators for initial inspection reached 80% and the pass rate for re-inspection was higher than 90%. The number of inspected products and random inspection is 460,000 and the qualified rate attained 99%.

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IV. Collaborative cross-department inspection

Two food collaborative inspection projects of the Executive Yuan were conducted in 2019. The collaborative inspection was implemented for commercial longan-honey and washed eggs, to manage the production as well as the trace and track management, facilitate the development in the industry, strengthen the self-management of business operators, maintain product safety and hygiene and protect consumers' rights and interests. In 2019, the inspection for a total of 168 egg products from the chain stores was completed. The inspection results indicate that there is no veterinary drug residue in the eggs and feed of the livestock farms; as for the liquid egg products of the liquid egg manufacturers, there is only one case that was tested positive with Salmonella in the sterilized liquid egg that did not meet the regulations and the case has been penalized. In addition, 29 cases of commercial longan-honey were randomly inspected for 373 pesticides and antibiotics (tetracycline, chloramphenicol) residues and the entire results passed the inspection.

V. Cooperative investigation between prosecutors and police

In 2019, a total of 76 companies were inspected by the prosecutors, and police, and the busted circumstances such as selling expired food and the use of expired ingredients for making food were conducted in accordance with the laws.

TFDA continues to improve the supervision mechanism of the food production and marketing chain and enhance the efficiency of food management to establish a reliable food safety of consumption environment.

Section 4 Implement the 2nd Tier Quality Control Policy

Introduction of the Policy

The “*Accreditation of Certification Body and Sanitation and Safety Control of Food Businesses of Certification Regulations*” was announced on March 11, 2016, setting a new milestone for the 2nd tier quality control with third-party verification; the regulations were revised on June 4, 2019 to further strengthen the 2nd tier quality control management system. Moreover, TFDA assisted the business operators to export the nutritional supplements to Malaysia; both parties agreed to pass the “2nd tier quality control” with “expansion proposal” verification practices. TFDA aimed to facilitate GMP system to be aligned with international standards; improve the quality of MIT products to export successfully.

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Implementation Strategy

I. Compulsory types of management

The food manufacturers that have registered to TFDA such as canned food, food additives, special nutritional products, dairy products, and a capital of more than 30 million company manufacturer sugar, salt, starch, flour, soy sauce, and edible oils shall pass the verification. In addition to the preceding announced categories, the food manufacturers can also volunteer to apply for verification.

II. Specification of the verification content

In accordance with Paragraph 2 of Article 8 in the “*Act Governing Food Safety and Sanitation*,” the announced business category shall comply with the Regulations on Food Safety Control System. Therefore, in addition to the Regulations on Good Hygiene Practice (GHP) for Food, the dairy, canned, and oil and fat manufacturers need to conduct the Regulations on Food Safety Control System (Hazard Analysis and Critical Control Points, HACCP) verification.

III. Inspection implementation agencies and personnel

The inspection is conducted by the inspection agency (Food Industry Development Research Institute, China Grain Products Research & Development Institute (CGPRDI) and Central Livestock Industry Association) certified by TFDA. The inspection agency must have ISO/TS 22003 certification and hire professional dedicated auditors. The organization and its auditors shall obey relevant regulations to avoid conflicts of interests with the food business operator, to ensure the independence of the inspection implementation. In addition, the academic experience and auditing capabilities of the professional dedicated auditors are clearly regulated to ensure their professional capabilities. TFDA also conducts assessment of headquarters and review assessment for the inspection agencies and their auditors on a yearly basis to ensure the quality and effectiveness of inspection.

Achievements and Benefits

I. Reinforced the 2nd tier quality control inspection to improve product quality

In 2019, a total of 486 companies were inspected, of which about 93% of the companies passed the inspection. The 2nd tier quality control combines the inspection capability of a fair third-party agency to re-inforce the supervision and management of food hygiene and safety, as well as establish a comprehensive food safety protection system.

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II. Simplify the application process of food export to develop export markets

Those business operators who passed the verification can use the 2nd tier quality control with a third-party verification certificate to simplify the process of applying for food export and reduce the waiting time and cost. In 2019, a total of 12 business operators passed the 2nd tier quality control and the “expansion plan” inspection or the regular follow-up inspection. Their related products were successfully exported and we continue to accept the inspection application from the business operators in the industry.

Section 5 Food Safety Risk Management

Introduction of the Policy

As the food safety incidents happen frequently in the world, where most of the incidents are caused by improper use of food additives or illegal use of chemical substances that put human health at risk. In 2019, we conducted supervision on food additives-related to chemical substances in the upstream and downstream direction.

Furthermore, to comply with “African Swine Fever Central Disaster Emergency Response Center,” TFDA created the “TFDA African Swine Fever Emergency Response Work Group” to regularly conduct meetings, workshops, education, and training programs based on the Executive Yuan risk management and crisis management standards SOP.

Implementation Strategy

I. Initiated the monitoring and inspection for the flow of food additives and chemical substances

In 2019, TFDA integrated the food cloud, toxic chemical substances, selected chemical substances, and other cross-departmental data. The department applied the big data analytical techniques to track suspicious transactions and looked into the illegal use of food additives from the past three years, to establish a “monitoring module that could link the data from the food cloud to the chemical cloud” in order to better trace the substance.

II. Conducted the 2019 risk management and crisis management workshop

In response to the subject “Crisis management by the government when countering the food safety incidents” and “Risk Management of Multiple Disasters and Distribution of Medical

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Supplies,” we invited experts and scholars to join the seminar, conducted by experts in this field including Mr. Xu Fu, the Director of the Food Safety Office of the Executive Yuan; Mr. Otsuka Kazuko, the Director of the Ministry of Health, Labour and Welfare, Japan; the Director Mr. Cai MingZhe from the News Center of FTV; and Professor Zhou GuiTian, Director of the National Development Research Institute of the National Taiwan University, for a total of 289 attendees.

III. Convened a meeting of the Central Disaster Emergency Response Center for African Swine Fever

To comply with launching of the “African Swine Fever Central Disaster Emergency Response Center” in December 18, 2018, TFDA conducted 15 meetings and created the “TFDA African Swine Fever Emergency Response Working Group” on December 19, 2018 to respond to the development of the epidemic.

Achievements and Benefits

I. Initiated the monitoring and inspection for the flow of food additives and chemical substances

We convened the “Detection, Analysis, and Inspection Seminar for High-risk Food Business Operators” and chose high-risk business operators generated by the module. In line with the inspection project during Chinese New Year, we found that the GHP food additives of two business operators failed to meet the three special regulatory systems and effectively achieved the risk management goal of food safety with big data.

II. Conducted the 2019 risk management and crisis management workshop

This seminar provided an opportunity for experts to share experience, inheritance, and reinforces the concept of risk and crisis management to the staff of the central and local government, as well as to disseminate and promote the shaped awareness to enhance the ability of strategy planning when they are facing encountering emergency circumstances.

III. Convened a meeting of the Central Disaster Emergency Response Center for African Swine Fever

In 2019, a total of 8 emergency meetings were convened to discuss relevant emergency responses such as online platform management, control measures at borders, post-market inspection, and dissemination of epidemic prevention.

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Section 6 Development of New Food Test Technologies

Introduction of the Policy

In order to meet the requirements of food-related regulations and sanitary standards such as pesticide or veterinary drug residues as well as to identify unpredictable, unknown or illegal additives may intentionally added and contaminants may generated from manufacturing process that may affect human health, establishing fast and accurate testing methods is required. TFDA continued improving inspection capabilities, and establishing new testing methods to react to emergency incidents, as well as to hold technical exchange and training activities to strengthen domestic testing capacity for food safety.

Implementation Strategy

I. Promoted domestic food inspection technology interaction

We plan to conduct workshops and invite domestic experts and analysts from the laboratories in the industry, government, and academia to share the status and experience of testing technology. Analysts can also learn from each other and expand the network of experts in the field of analytical chemistry. The workshops would enhance the level and quality of domestic inspection institutions and training of the inspection professionals.

II. Aggressively develop the food inspection methods by national laboratories with high-end inspection technology

In response to high-risk and highly concerned subjects related to the general public's livelihood, we actively developed reliable and time-saving test methods to quickly identify and clarify the emergency incident. These test methods were immediately released to inspection related laboratories, which would strengthen the governing at borders, monitoring market products, enhance self-management of business operators and ensured the safety of citizens in the nation.

Achievements and Benefits

I. Conducted the “2019 Annual Food Safety and Analytical Techniques Symposium”

TFDA held the “2019 Annual Food Safety and Analytical Techniques Symposium” on August 21 and 22, 2019, to promote the research trend of the domestic food hygiene inspection technology and enhance the technology interactions (Figure 2-4); there is a total of about 200 participants from various industries, academia and research fields. We invited the official scholar

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Figure2-4

2019 Annual Food Safety and Analytical Techniques Symposium

Dr. Susanne Ekroth from the Swedish National Food Agency, and Professor Gu GuoLong from department of Applied Chemistry, National Chiayi University to conduct special lectures on analytical methods of pesticide residue and multiple analysis technique. A total of 86 research papers were published, including 14 oral presentations and 72 posters. It is expected to enhance the inspection capabilities of central, local and private laboratories, with the interaction and information exchange from various fields through the seminar.

II. Developed relevant inspection methods for high-risk and high-interest items related to people's livelihood

- (I) Establish the methods for testing dioxin and dioxin-like polychlorinate biphenyls residues in hairy crabs

TFDA published “Method of Test for Residual Dioxins and Dioxin-Like Polychlorinated Biphenyls in Hairy Crabs (GC-MS/MS Method);” with the liquid-liquid extraction instead of the conventional freeze-dry and Soxhlet extraction, the test time was shortened from 6 days to 4 days which will help speed up the customs clearance of imported hairy crab at the borders to reduce the illegal selling of the products due to the short product shelf life.

- (II) Developed the test methods for hydrocyanic acid in cassava products

If the linamarin in cassava was not handled properly, it may cause poisoning as the hydrocyanic acid may be generated in the gastrointestinal tract after intake. TFDA has developed and revealed two inspection methods such as the use of High Performance Ion Chromatograph (HPIC) with electrochemical detector, or the use of High Performance Liquid Chromatograph (HPLC) with fluorescence detector for the analysis of total hydrocyanic acid in cassava products. We conducted the inspection projects at borders and small scale post-market inspection and the inspection results indicated that imported cassava chips have a high risk of cyanic acid residues and hence we increased the sampling rate of cassava chips at borders to prevent the risk from entering the country.

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(III) In line with the ban of using the pesticide Paraquat and the use of veterinary drug Fluralaner to establish a test method

TFDA utilizes the liquid chromatography-tandem mass spectrometry (LC-MS/MS) with ultrasonic extraction technology for the development of pesticide Paraquat and utilizes the LC-MS/MS with QuEChERS extraction technology for the development of veterinary drug Fluralaner test method, to ensure the food safety for consumers.

(IV) Establishment of the identification technology for coffee adulteration

In 2019, a local coffee chain was found to be mixing relatively lower price Robusta coffee beans in to the products declared 100% Arabica. Since 16-O-methylcafestol (16-OMC) is a remarkable indicator to distinguish Robusta from Arabica. TFDA quickly developed a method for 16-OMC quantification using a 500 MHz nuclear magnetic resonance (NMR) (Figure 2-5) within 1 week and applied it for case testing. As a result, the local coffee chain was detected the existing of 16-OMC on its products and the behavior of adding Robusta into 100% Arabica coffee products was confirmed. In this case, TFDA utilizes the analytical capabilities of the national laboratory to develop the analysis method for coffee adulteration with the advanced inspection technology, so that the prosecutors could have the concrete evidence to process relevant legal actions.

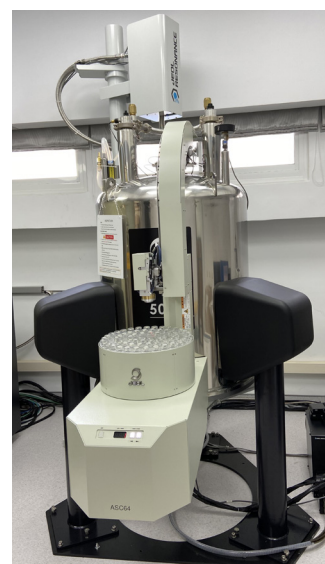


Figure 2-5 500 MHz nuclear magnetic resonance (NMR)

III. Identification of toxic Poisonous frogs (*Bufo bankorensis*) with molecular biotechnology

TFDA received a report from the Hualien County Health Bureau that some people had symptoms such as nausea, vomiting, diarrhea, headache, dysphagia, dyspnea and paralysis after eating the frog soup and one of them was not breathing and had stopped heartbeat before arriving at the hospital; one case of the remaining food (frog soup) was sent for food inspection. With the genetic identification technology developed by TFDA and comparison with DNA sequence, the results indicated that the people had eaten the poisonous toad (*Bufo bankorensis*). TFDA immediately reported the inspection results and issued a weekly journal on drug and food safety, to remind the public not to catch and eat unknown frogs to prevent getting poisoned, to achieve the goal of safeguarding the public's food safety.