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Food Safety Management and Future Plans in Korea

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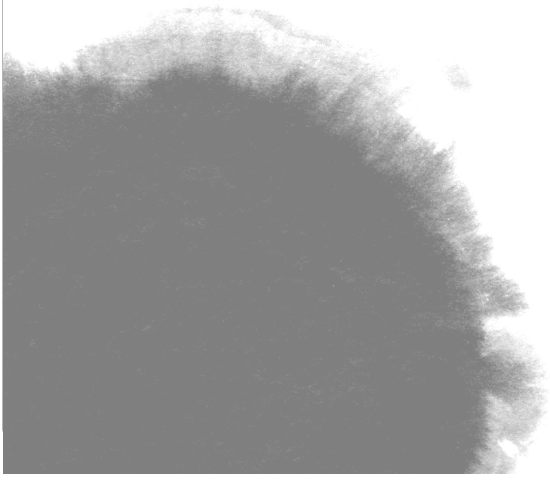


Chapter 1 Food Safety Management System in Korea

1. Overview

The food safety management in Korea is managed by multiple ministries as can be found in the following <Table 1>. Different competent authorities apply different regulations. For instance, drinking water is managed by the Ministry of Environment, school meals by the Ministry of Education, Science and Technology, processing of livestock products by the Ministry for Food, Agriculture, Forestry and Fisheries and other processed food by the Korea Food and Drug Administration and local governments.

In the Lee administration, management of agriculture and fisheries has been converged for efficiency with the launch of the Ministry for Food, Agriculture, Forestry and Fisheries. Safety management of marine products is still based on the Food Sanitation Act.

〈Table 1〉 Responsibilities on food safety by ministry

Type of food	Name of Ministry	Name of Act
Drinking water	Ministry of Environment	Management of Drinking Water Act
School meals	Ministry of Education, Science and Technology	School Meals Act
Liquor	Ministry of Strategy and Finance	Liquor Tax Act
Processed livestock products(meat, milk, egg)	Ministry for Food, Agriculture, Forestry and Fisheries	Processing of Livestock Products Act
Flour etc	Ministry for Food, Agriculture, Forestry and Fisheries	Grain Management Act
Fish oil(liver oil)and other fisheries products processed at sea	Ministry for Food, Agriculture, Forestry and Fisheries	Fisheries Act
Salt	Ministry for Food, Agriculture, Forestry and Fisheries	Salt Management Act
All other food excluding the above, restaurant business and packaging business etc.	Ministry for Health, Welfare and Family Affairs (Korea Food and Drug Administration) Local governments	Food Sanitation Act

Source: Korea Institute for Health and Social Affairs internal data, 2009.

2. Management of imported food

<Table 2> summarizes the safety management system for imported food.

The four ministries that share the responsibility of managing food safety are the Ministry for Health, Welfare and Family Affairs, Ministry for Food, Agriculture, Forestry and Fisheries, Ministry of Environment and the Ministry of Strategy and Finance.

Liquor is managed by the Ministry of Strategy and Finance due to liquor tax management; however, safety testing is performed by the Korea Food and Drug Administration.

〈Table 2〉 Safety management system for import food

Name of Ministry	Name of Act	Product
Ministry for Health, Welfare and Family Affairs	Food Sanitation Act	Raw material used in food made of processed agriculture, forestry and fisheries products, processed food, food additives, tools, containers, packaging (products subject to National Veterinary Research and Quarantine Service and National Fisheries Products Quality Inspection Service excluded)
Ministry for Food, Agriculture, Forestry and Fisheries	Processing of Livestock Products Act	All imported processed food from livestock (meat, ice cream, ice cream powder/ice cream mix, processed meat, processed milk, formula, processed food using meat extracts, beef/pork tallow)
	Ginseng Industry Act	Ginseng products
	Agricultural and Marine Products Quality Control Act Food Sanitation Act	Fisheries with no additives or other material that maintains its original shape (live fish/shellfish, fresh/refrigerated material, salt preserved food, fish roe, smoked products, seaweed, dried products, frozen products)
	Salt Management Act	Salt for food and industrial use (feed included)
Ministry of Environment	Management of Drinking Water Act	Drinking water
Ministry of Strategy and Finance	Liquor Tax Act	Liquor

Source: Korea Institute for Health and Social Affairs internal data, 2009.

3. Key Institutions

<Table 3> illustrates the different tasks managed by different ministries under the current food safety management system.

The various acts and regulations provide for a legal framework for different tasks.

〈Table 3〉 Key food safety management institutions

Institution		Key Tasks		Name of Act
Name of Ministry	Name of Institution			
Ministry for Food, Agriculture, Forestry and Fisheries	National Agricultural Products Quality Management Service	· Safety testing on agricultural products before retailing · Certification of quality mark for agricultural products, environmentally-friendly agricultural products and registration for geographical identification · Supervision on place of origin and GMO indication		Agricultural Products Quality Control Act
	National Plant Quarantine Service	· Pest inspection on imported plants		Plant Protection Act
	Rural Development Administration	· Registration and management of agrochemicals · Establishment of safe agrochemical usage on crops		Agrochemicals Control Act
	National Veterinary Research and Quarantine Service	· Processed livestock products stipulated in the Processing of Livestock Products Act	Import Quarantine	Communicable Disease Prevention Act
			Safety testing	Processing of Livestock Products Act
		Processed livestock products stipulated in the Processing of Livestock Products Act	Import quarantine	Communicable Disease Prevention Act
			Safety testing	Food Sanitation Act
	National Fisheries Products Quality Inspection Service	· Safety testing on imported fisheries products (Minimally treated fish/shellfish)		Food Sanitation Act
Ministry for Health, Welfare and Family Affairs	Korea Food and Drug Administration	· Safety testing on retailed agricultural/fisheries products · Safety testing on general food · Safety management of imported agricultural products		Food Sanitation Act (Food code)
Ministry of Environment	Regional environmental offices Local governments	· Registration and hygiene management of drinking water		Management of Drinking Water Act

Source: Korea Institute for Health and Social Affairs internal data, 2009

02

Change in Korean food Management Policies

Chapter 2 Change in Korean food management policies

The Food Sanitation Act, which was enacted in 1962, has served as the legal framework to this day. The four key events that have had a major impact on the Korean food environment during the past 50 years are as follows.

1. 1995 : Launch of the World Trade Organization (WTO)
2. 1995 : Launch of the local autonomous governments
3. 1998 : Inauguration of the Korea Food and Drug Administration
4. Since 2000 : GDP of Korea exceeds 20,000 USD

A closer look at each stage is as follows.

1. Launch of the World Trade Organization (WTO)

The launch of the WTO was an event that had engrained the importance of food safety in the minds of Koreans. With the establishment of the WTO, world trade has ushered in an era of completely open and free markets. As a result, Korea, which had been lenient on food safety management, has faced some important issues.

First was to cope with the expanding food safety zones. In particular, due to both intentional and unintentional adulteration of hazardous materials, food safety has become a preventive issue as well as a post-management issue.

Secondly, the food safety regulations grounded on the sanitary and phytosanitary measures disallowed the food safety regulations to be applied differently to imported food and domestic food. Therefore, a domestic regulation that corresponds to the international food safety standard was needed. In the case of Korea, where 85% of food-related businesses were small businesses with less than 5 employees, improving the overall food industry has become an urgent matter.

Thirdly, despite the fact that an improved national infrastructure was in urgent need to deal with the fast changing environment, the government's policy to create a small and efficient government has resulted in a decrease of government institutions dealing with food safety and a countermeasure must be created.

A plan under review is the privatization of the food safety industry and strengthening of the consumers' capabilities. In order to help consumers safeguard food safety on their own, the government must implement a stronger food certification system and provide more information so that the consumers can make the best decision. Ultimately, it would be most ideal to privatize the food safety industry; however, it still remains a government-led effort.

The launch of the WTO had the biggest impact on imported food.

Korea is the 5th largest food importer in the world. 50% of the food consumed in Korea is imported.

While the total size of the food market was estimated to be 31

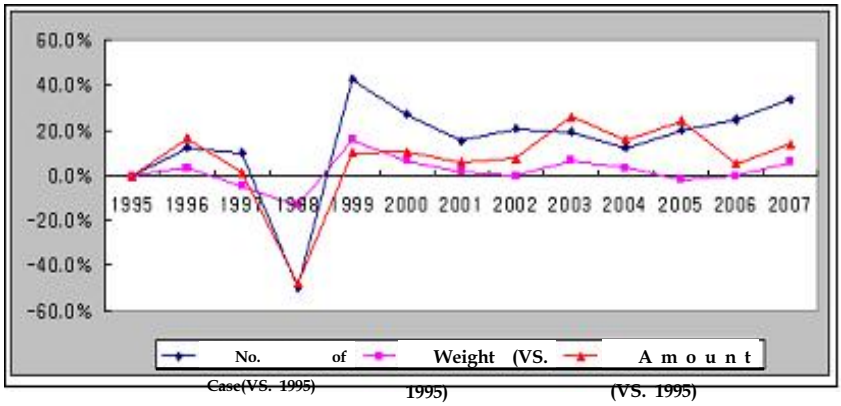
trillion Won as of the end of 2007, imported food accounted for 8 trillion Won. Compared to 1995, the number of imports has doubled in 2007 and it is expected to double again by 2015.

Imports from China, which have brought about a food scare in 2008 due to melamine, have increased fourfold in 2007 compared to 2005. It is expected to double by 2015. Chinese imports account for 1/3 of the total imported food market in Korea with 3 trillion Won as of the end of 2007.

<Picture 1> illustrates the trend in the number of imports, volume and amount in imports from 1995 to 2007.

[Picture 1] Annual import compared to the 1995 level

(unit: %)



Source: Korea Food and Drug Administration, 『Yearbook of Imported Food Inspection』, Annual data (excerpt)

Imports have constantly increased in terms of both volume in dollar value and the number of items. The details are illustrated in <Table 4>. General food and container packaging is increasing each year. A few types of items have shown decreased imports in 2007, however, this cannot be viewed as a trend.

〈Table 4〉 Imported food by year

(Unit: Mn USD)

Category	2002	2003	2004	2005	2006	2007
Food	2,270	3,070	2,703	3,664	3,460	3,885
HealthSupplement	-	-	433	581	470	215
Food Additive	368	387	418	475	604	519
Container packaging	441	435	452	529	230	708
Total	3,079	3,892	4,006	5,250	4,763	5,328

Note: Food refers to processed food only (agricultural and forestry products excluded)
Source: Korea Food and Drug Administration, Yearbook of Imported Food Inspection, 2002~2007.

Any incidents involving imported food can have a great impact on the domestic food market as well. Therefore, an overall improvement is needed in importer management and testing systems to ensure import of safe food. In particular, enhancement of safety of imported food from China, which accounts for 1/3 of the total import, due to low logistics cost is an important national issue that needs to be addressed immediately.

The production stage before the import and the retailing stage after the import are stages that cannot be controlled by the government. Therefore, it is difficult to ensure the safety of imported food at the government level. To ensure the safety of foods consumed by children, import of cheap hazardous food must be stopped.

2. Launch of the local autonomous governments

After the launch of the local autonomous governments in 1995, 99.9% of food safety tasks have been transferred from the central government to the local governments as described in <Table 5>.

Unlike other areas, food safety is an area that requires special infrastructure. However, favoritism coupled with lenient administration

on the part of the local government heads have led to poor management of pre- and post-management of food safety.

The controversy still remains regarding the appropriateness of transferring food safety responsibilities to the local governments. However, the basic goal of local government system where the central government takes charge of planning and local government take charge of execution is in fact a very appropriate.

In other words, it is questionable whether the original goal of shifting from management by registered business to functional role-based system to enhance professionalism and efficiency of monitoring and control is achieved.

In order to improve the effectiveness of food safety related tasks performed by the local governments, the understanding on the matter and the will and commitment towards proper execution at the local government level is imperative.

〈Table 5〉 Tasks that have been transferred to local governments after the launch of the local autonomous government system

Year	Task	Government body in charge	
		Before	Now
1996	- Licensing for food business	Ministry of Health and Welfare	Shi, Gun, Gu
1998	- Registration and licensing for food business	Ministry of Health and Welfare	Shi, Gun, Gu
	- Hygiene supervision and facility inspection	Ministry of Health and Welfare	Shi, Gun, Gu
	- Food additive business - Food preservative business (Food irradiation business)	Ministry of Health and Welfare	Food and Drug Administration
	- Food packaging in small portions, retail	Shi, Do	Shi, Gun, Gu
1999	- Food service (Public karaoke bar and amusement restaurant)	Ministry of Health and Welfare	Shi, Gun, Gu

Year	Task	Government body in charge	
		Before	Now
2002	- Health supplement manufacturing business	Korea Food and Drug Administration	
	- Healthsupplement import business	Regional Food and Drug Administration Offices or Shi, Gun, Gu	
	- Health supplement sales business	Regional Food and Drug Administration Offices or Shi, Gun, Gu	
2003	- Import/sales of food etc.	Shi, Gun, Gu	Regional Food and Drug Administration Offices
2005	- Food service and bakery	Ministry of Health and Welfare	Shi, Gun, Gu
2009	- Licensing for food additive business, food irradiation business - Registration for food import business and health supplement import business - Collection, testing, monitoring and inspection on food and drugs	Regional Food and Drug Administration Offices	Shi, Do Shi, Gun, Gu

Note: The health supplement manufacturing business, created in 2002 follows the "Act on Health Supplements."

Source: Korea Institute for Health and Social Affairs internal data, 2008.

3. Inauguration of the Korea Food and Drug Administration

Built on its predecessor, the Food and Drug Safety Center, the Korea Food and Drug Administration was established on February 1998 to improve the safety management of food and drugs. Under the KFDA, there are 7 institutions including the National Institute of Toxicological Research and 6 regional Food and Drug Administration offices. Before the exaltation, the Food and Drug Safety Center had 346 staff members, and the regional Food and Drug Administration office had 325 staff members. With the launch of the Korea Food and Drug Administration, the number of staff has increased by 15% to 776. There are 424 staff members at the head office including the

National Institute of Toxicological Research and 352 at the regional Food and Drug Administration offices.

As the name Korea Food and Drug Administration indicates, the organization has been patterned after the US FDA and was only in charge of food and drug safety. The responsibilities for enacting and amending laws still lie with the Ministry for Health, Welfare and Family Affairs, rendering the organization a rather abnormal structure.

However, the Korea Food and Drug Administration have continuously increased the organization, budget and infrastructure for food safety during the past 10 years.

A. Enactment of regulations

The Food Sanitation Act in Korea was enacted in 1962 to provide a framework for food hygiene. The new laws enacted by the newly created Korea Food and Drug Administration have become a new basis for food safety management in Korea.

The Health Supplement Act of 2003, the Basic Act for Food Safety of 2008 and the Special Act for Food Safety Management for Children have been enacted to cope with the changing food hygiene and safety management environment. The Food Sanitation Act has undergone a total of 33 full and partial amendments since 2008.

However, the Korea Food and Drug Administration had limitations regarding competent regulations from the beginning. In 1998, the year that the Korea Food and Drug Administration were inaugurated, the Ministry of Agriculture enacted the Processed Livestock Products Act for the management of processed livestock products management. Since then, the management of processed livestock product had been

jointly carried out by the Ministry for Food, Agriculture, Forestry and Fisheries and the Korea Food and Drug Administration.

As of the end of 2008, safety management of all processed food is the responsibility of the Korea Food and Drug Administration but as indicated in <Table 6>, processed food with more than 50% meat content and over 6% of cream is managed by the Ministry for Food, Agriculture, Forestry and Fisheries under the Processed Livestock Products Act.

Due to the divided roles in food management by the two ministries, Ministry for Food, Agriculture, Forestry and Fisheries was in charge of testing of formula and Korea Food and Drug Administration was in charge of testing confectionaries in dealing with the melamine incident.

Integration of food safety management regulations must take place before the integration of food safety management system.

〈Table 6〉 Management of processed livestock products

Ministry for Food, Agriculture, Forestry and Fisheries	Korea Food and Drug Administration
Ham (meat content over 50%)	Sausage (meat content less than 50%)
Ice cream (milk content over 6%)	Ice bar (milk content less than 6%)
Powdered milk	Confectionary/chocolate (processed food using powdered milk)

Source: Korea Institute for Health and Social Affairs internal data, 2008.

B. Organization

The Korea Food and Drug Administration has been reorganized three times since its inauguration in 1998. The objectives of the recent reorganization which took place on April 2004 are as described in <Picture 2>.

○ Strengthened management of hazardous material
○ Strengthened management of food safety information management
○ Strengthened concentration of lab work
○ Improved and enhanced food monitoring

1) Head Office

The head office is a strategic organizational structure for its roles as a policy developer and a control tower for food safety management. The five key functions of the head office are; ① policy development, ② standard setting, ③ approval of marketing, ④ marketing monitoring and, ⑤ production quality system management. The rest of the administrative functions have been transferred to the regional Food and Drug Administration offices.

The organization has been changed from 1 office, 5 bureaus (1 division, 4 departments) and 65 teams to 1 office, 5 bureaus (1 division, 4 departments) and 46 teams and the existing 17 teams have been eliminated. The hazardous material management division has been promoted to the Hazard Prevention Policy Bureau and the Hazardous Material-related Crime Investigation Division has become a permanent post while the Nutrition and Functional Food Bureau had been downsized into the Nutrition Policy Section.

The evaluation department has been reorganized into an examination division, which is in charge of standard setting and registration and the number of staff was reduced by 27 from 658 to 631. The Hazard Prevention Policy Bureau aims at reinforcing the role of protecting the public from food and drug related incidents and the Hazardous material-related crime investigation division has a

quasi judicial power like the US FDA. The organizations have been reorganized into the policy division, management division, quality division and the examination division in line with the five key functions of ① policy development, ② standard setting, ③ approval of marketing, ④ marketing monitoring and, ⑤ production quality system management.

The evaluation department has only responsible for registration/examination and standard setting and R&D, hazard evaluation, testing and analysis and testing methodology development have been transferred to the National Institute of Food and Drug Safety Evaluation (formerly, The Toxicological Research Institute) and the registration and examination have been integrated at the Assessment department (currently, evaluation department). The Nutrition policy function has been strengthened to establish a food safety management system for children and focused management of potentially hazardous nutrients.

2) Establishment of the National Institute of Food and Drug Safety Evaluation

The Toxicological Research Institute and the Evaluation have been merged into the National Institute of Food and Drug Safety Evaluation. The Institute was established to provide support necessary for the policies at the head office. It deals with R&D, hazardousness evaluation, testing and analysis, testing methodology development and examination method development as a think-tank that ensures safety management in a scientific manner. 11 divisions (teams) have been added to the 3-department-18-division (team) Toxicological Research Institute, which currently has 3 departments and 29 divisions.

The existing Toxic/pharmaceutical/hazard research division has been eliminated and instead, Food Hazard Evaluation Division, Medical Product Research Division, Toxicity Evaluation Division and Product Commercialization Division and National Accreditation Center have been newly created.

94 people had been added to the existing 137 staff members, making it a 231-person organization.

The main role of the evaluation office has been expanded from a toxicity/pharmaceutical research to medical equipment safety support. It has also turned into a system that provide prompt and direct support for the policy development for food and drug safety management and key governmental policy mandates at the head office and the regional FDA offices.

It also has an increased supporting role on the four National Growth Engines, namely, high value-added food, bio pharmaceuticals, medical equipment and healthcare.

3) Regional Food and Drug Administration Offices

The regional FDA offices are completely different from local governments in that they are regional professional organizations. Many of the administrative responsibilities (HACCP and GMP examination etc.) have been transferred to the regional FDA offices and the routine sanitary inspection tasks that are redundant with the local governments' task have been transferred to the local governments to strengthen the core function of the regional FDA offices.

The organization remains the same with its 31 divisions and 7

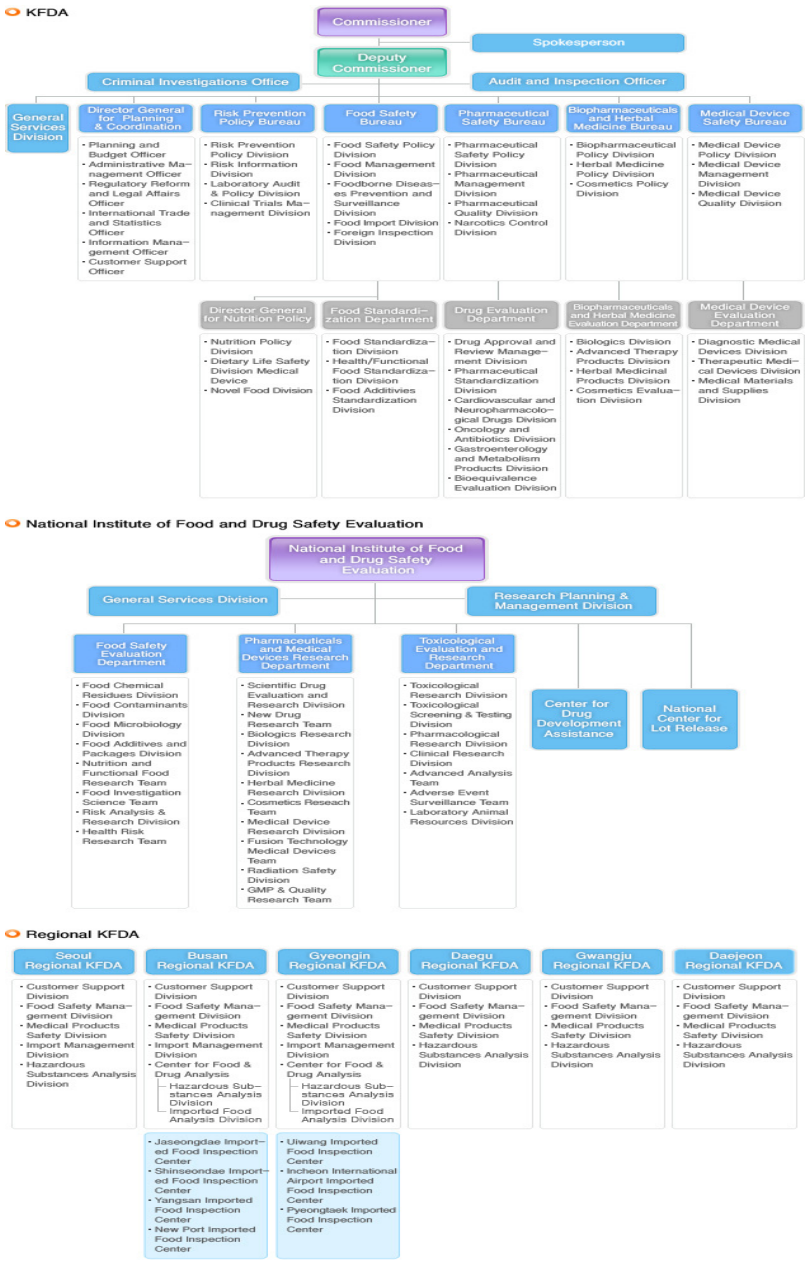
inspection offices. However, the operation support division has been changed into a customer support division in order to reinforce customer protection. Simple administrative work such as guidance has been transferred to the local governments and the food safety management division focuses only on the professional tasks such as special investigation on hazardous food criminals and HACCP health supplement GMP and production quality system management etc. The existing testing and analysis center has been reorganized into a hazardous material analysis division and imported food analysis division. As the 91 people who were in charge of food monitoring have been transferred to the local governments, the number of staff members has decreased from 630 to 539.

In other words, simple tasks such as guidance have been transferred to the local governments and the regional FDA offices have been reorganized to focus on professional areas for complete differentiation from the local governments.

A. Tasks transferred local governments (simple administrative task e.g., guidance)
   - Licensing for food additive business and food irradiation business
   - Registration of food importers and health supplement importers
   - Collection and examination of food and drugs and general guidance

B. Tasks that have been transferred from the head office to the regional offices
   - Licensing for health supplement manufacturers (item registration included) and drug manufacturing
   - HACCP accreditation, GMP appointment and post-management of health supplements

[Picture 2] Korea Food and Drug Administration' s Organization Chart (as of Jul 14, 2009)



C. Budget

1) Annual Budget

As demonstrated on <Table 7>, the budget for the central ministry responsible for food safety management, Korea FDA is increasing annually since its inauguration in 1998.

Since 2000, the budget increased by double digit rates except for the years 2004, 2005 and 2007. In particular, the increase in 2006 was a whopping 29.1%.

However, the increases were not consistent and constant and fluctuated based on occurrence of food-related incidents, preference of the budget reviewer and other one-off events. It is important that the budget is increased at a more constant rate in line with detailed project plans in order to build a leading food safety system.

〈Table 7〉 Annual budget change at the Korea FDA

(Unit: %, 100mn KRW)

Category	2000	2001	2002	2003	2004	205	2006	2007
Compared to government budget (budget, 100 Mn KRW)	0.07% (887,363)	0.07% (991,801)	0.08% (1,096,298)	0.09% (1,181,323)	0.09% (1,201,394)	0.09% (1,343,704)	0.1% (1,448,076)	0.1% (1,565,177)
Compared to Ministry for Health, Welfare and Family Affairs (budget, 100 Mn KRW)	1.1% (53,100)	0.9% (74,581)	1.1% (77,495)	1.3% (85,022)	1.2% (92,322)	1.4% (86,480)	1.6% (97,063)	1.4% (119,369)
KFDAgeneral accounting budget change	14.6%	19.5%	21.6%	20.2%	4.1%	9.9%	29.1%	6.8%

Note: as of Jan 2008
Source: Korea Food and Drug Administration Financial Planning Team

2) Budget for 2008 and 2009

<Table 8> indicates the budget for 2008 and 2009.

〈Table 8〉 Tax revenue and expenditure for 2009

(unit: Mn KRW, %)

Category	' 08 budget (A)	' 09 budget plan (B)	Change(△) (B-A)	%
○ Tax revenue	12,234	16,835	4,601	37.6
○ Tax expenditure	178,512	188,625	10,113	5.7

※ R&D : 51,895 →52,615mn KRW(720mn KRW, 1.4%)

The tax revenue plan for '09shows an increase of 37.6% from 12,234 million Won in '08 to 16,835 million Won. The tax expenditure plan for '09 shows an increase of 5.7% from 178,512 million Won in '08 to 188,625 million won.

A breakdown of the Korea FDA's tax expenditure plan shows an increase of 32.9% in the tax expenditure plan for the food area from 24,438 million Won in '08 to 32,477 million Won in '09.

In particular, the overall increase rate of Korea FDA's budget is only 8.0%, while the budget for the food area shows an increase of 32.9%. This means that budget has focused much more on the food area than on the areas of drugs and medical equipment, for which the budgets have decreased by 12.0% and 16.6%, respectively.

The notable facts in the 2009food budget is that despite the overall increase of the budget for the area of food safety, the budget for direct supervision has decreased while the budget for exaggerated advertisement supervision and establishment of Food Safety Information Center has increased. This illustrates the government's

goal to provide the right information to the consumers. Budget for establishing a food poisoning test system has increased greatly to purchase the testing equipment for Norovirus, the culprit for wintertime food poisoning at schools.

Other areas with an increased budget include food projects for children, safety management on GM food and the establishment of a food safety information center for effective risk communication.

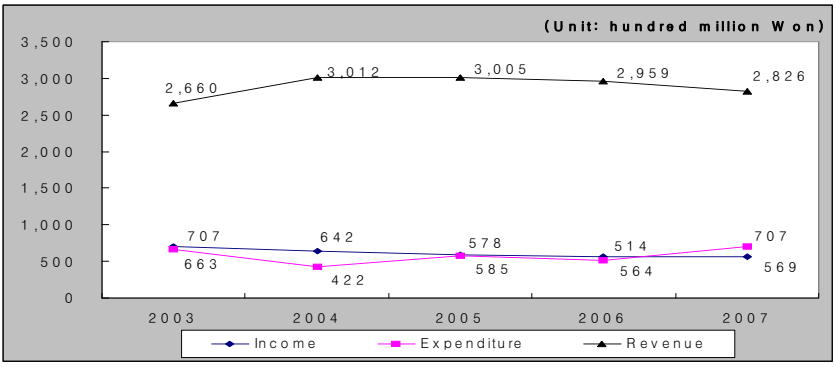
The food safety information center, which opened on July 16, 2009, has an important duty of sharing and providing food safety information to consumers and the industry.

3) Food Promotion Fund

A food promotion fund is an additional fund to the general accounting for the management of food safety. Based on Article 89 of the Food Sanitation Act, The Food Promotion Fund is created from surcharge, profits and subsidies. The total accumulated amount as of 2007 is 282,626,453,000 Won, as illustrated in [Picture 3].

The annual Food Promotion Fund is the largest financial resource for the food sector, with an increasing amount each year. However, the fund is underused due to inflexible management. The annual spending of this fund is only allowed to the local governments as described in the Basic Act for Fund Management. Therefore only 25% of the accumulated amount can be tapped into. In addition, the fund that is being used go into the renovation of food service business (amusement restaurant included), defeating the original purpose of the fund.

[Picture 3] Food Promotion Fund Trend Year-on-Year



Note: Expenditures include loans for renovation, education and PR, honorary supervisor activities, voluntary supervisor activities, support for model restaurants that make efforts to improve the food culture, inspection, research etc.

Source: Ministry for Health, Welfare and Family Affairs Food Policy Division internal data, 2009.

<Table 9> illustrates the 2007 Food Promotion Fund management details.

〈Table 9〉 Food Promotion Fund Management Details

(Unit: 1K KRW)

Category	Revenue				Spending		
	Total (a)	Carry-over from previous year (b)	Net revenue (c)	Grants for shi·o (d)	Reserve(E) =(a)-{(f)+(g)}	Net spending (f)	Grants for shi·un·u (g)
Total	358,881,261	296,454,904	56,912,358	8,571,665	282,646,453	70,720,809	8,571,665

Source: Ministry for Health, Welfare and Family Affairs internal data, 2009.

Measures must be taken in order to increase the access of this fund to the central government for support of good businesses in the food safety zone for children, financial support for purchasing equipment for foreign material detection and other projects that benefit the consumer.

4. The era of GDP 20,000 USD

As Korea's GDP exceeded the $20,000 mark, people's interest in food safety has grown. Whereas more people were interested in the quantity of food before 2000, people nowadays focus more on the quality of the food such as safety, hygiene and nutrition. In other words, consumers are seeking high-quality food.

The foreign materials such as a mouse head and a knife blade that were adulterated in some food products in 2008 were an acute demonstration of lack of safety and soundness in food. Chinese products with melamine content, which created frenzy around the world is an example of no safety, soundness and integrity in the food product.

People's interest and demands on food safety has become a social matter which could easily turn into a social risk. The US Beef incident in 2008is an example of how a food safety policy can even stalemate the national assembly's operation.

As food safety related incidents occur in domestic and imported food alike, the consumers are bound to feel more uneasy. The government's inconsistent behavior that is swayed by the public opinion rather those scientifically-proven facts is fueling the uneasiness among the consumers.

A. Calorie intake

<Table 10>shows the calorie intake trend of Koreans before 2000.

〈Table 10〉 Daily PFC Ratio trend for one person

Category	Total calories(㎉)	Ratio of 3 major nutrients (%)		
		Protein	Fat	Carbohydrate
1970	2,150	12.0	7.2	80.8
1975	1,926	12.5	9.5	78.0
1980	2,052	13.1	9.6	77.3
1985	1,936	15.4	13.7	70.9
1990	1,868	16.9	13.9	69.2
1995	1,839	16.1	19.1	64.8
1998	1,985	15.0	17.9	67.2
2001	1,976	15.1	19.1	65.8
2005	1,979	15.5	20.3	64.2
2007	1,808	14.7	18.5	66.8

Source: 1) "1995 National Nutrition Report", 1997, Ministry of Health and Welfare.
2) "1998 National Health/Nutrition Report", 1999, _____.
3) "2001National Health/Nutrition Report", 2002, _____.
4) "2007 National Health Statistics-National Health/Nutrition Survey Phase41st year (2007)", 2008, Center for Disease Control, Ministry for Health, Welfare and Family Affairs.

The calorie intake has constantly decreased from 2,150㎉ in the 70s to 1,839㎉ in 1995. Since then the trend shows an increase with 1,985㎉ in 1998, 1,976㎉ in 2001 and 1,979㎉ in 2005. The trend has been once again reversed with 1,808㎉ in 2007.

The nutritional breakdown shows an increase in protein from 12.0%to 14.7% and fat is sharply increasing from 7.2% to 18.5%. The overall ratio is at a sound level since fat takes up less than 20% of the total calorie intake. Some medical professionals, however, worry that the sharp increase rate is responsible for the increasing number of chronic disease patients.

B. Food expense breakdown

<Table 11> compared the food expense breakdown in the urban areas and rural areas in Korea from 1960 to 2008.

〈Table 11〉 Food expense per household

Year	Urban area[1]		Rural area[2]	
	Annual spending (1K KRW)	Percentage of spending on food against annual spending (%)*	Annual spending (1K KRW)	Percentage of spending on food against annual spending (%)*
1965	10	56.8	101	53.1
1970	28	46.6	208	45.9
1975	63	48.8	616	47.3
1980	207	42.9	2,138	36.8
1985	310	37.5	4,691	28.4
1990	686	32.0	8,227	23.5
1995	1,231	28.8	14,782	21.1
1999	1,474	27.7	17,123	21.2
2000	1,615	27.5	18,003	20.2
2001	1,752	26.5	18,458	20.3
2002	1,827	26.3	17,858	20.9
2003	1,862	26.6	18,162	25.2
2004	1,963	27.1	18,386	26.2
2005	2,035	26.5	19,378	25.8
2006	2,120	25.7	19,891	25.0
2007	2,211	25.1	20,510	25.1
2008	2,290	25.5	20,328	24.6

Note: * Engel's coefficient:
Source: 1) "Yearbook on urban households," each year, Statistics Korea.
2) "Statistics on rural households," each year, Statistics Korea.

The Engel's coefficient for urban areas has constantly decreased from 56.8% in 1965 to 25.5% in 2008. The trend has been the same for rural areas where the decrease has been from 53.1% to 24.6%. The reason behind the sharper decrease is assumed to be due to more self-production of food. The Engel's coefficient of around 20% for both the urban and rural areas indicate that Korea had joined the ranks of the developed countries as an OECD member, in terms of food expenditure.

C. Increased spending on eating out

The increase in eating out is not a desirable trend since it could lead to excessive calorie intake as well as over-consumption of fat,

sodium and unbalanced intake of certain nutrients.

<Table 12> shows the spending trend in eating out. The annual spending on eating out per household in Korea has increased from 5,900 Won in 1975 to 267,400 in 2008. This is a 45.3-fold increase. Considering the fact that the price of food increased by 3.5 times and processed food increased by only a double during the same period, this is too steep an increase which requires government-level measures.

The increase in eating out is largely due to economic development as well as increasing double-income households and small families. Policy measures for nutrition management must be in place to deal with this trend.

〈Table 12〉 Average spending on processed food and eating out for an urban household

(Unit: 1K KRW, %)

Category	Total spending on food	Total spending on processed food[1)]	Total spending on eating out
1975	168.5	162.6	5.9
1980	208.8	196.7	12.1
1985	227.9	205.9	22.0
1990	307.2	236.9	70.3
1995	364.1	248.4	115.7
1999	341.7	213.7	128.0
2000	444.0	258.3	185.7
2001	463.4	262.5	200.9
2002	481.3	268.6	212.7
2003	495.2	272.2	223.0
2004	532.5	288.1	244.4
2005	539.3	292.4	246.9
2006	543.9	296.0	247.9
2007	555.6	297.7	257.9
2008	584.8	317.4	267.4
2002/1975	2.8	1.7	36.1
2008/1975	3.5	2.0	45.3

Note: 1) Processed food refers to grain and processed grain products, processed meat products, processed fish/seafood products, processed vegetables and seaweed, bread/confectionaries, tea/beverage and alcoholic drinks.

Source: "Yearbook on urban households,"each year, Statistics Korea.

03

Ongoing Projects

Chapter 3 Ongoing Projects

1. Food Poisoning

The definition of food poisoning as described in Article 2 (definition) of the Food Sanitation Act is as follows; "Poisoning refers to an infectious or a toxic disease generated or deemed to be generated from harmful microbes to the human body from consuming food."

The number of food poisoning incidents has declined since the 1960s as personal hygiene improved but as can be seen in <Table 13>, the number of food poisoning incidents has increasing since the 1990s. The increase rate is higher in Korea than in the US or Japan.

After 2000, low-temperature and pathogenic viruses such as Listeria have been the cause of increased food poisoning. Furthermore, Norwalk virus and Norovirus have caused wintertime food poisoning, changing the traditional notion that food poisoning takes place only in warm seasons.

〈Table 13〉 Number of food poisoning incidents

(Unit: incident, person)

Year	Number of incidents	Number of patients	Number of patients/incidents(person)
1996	81	2,797	34.5
1997	94	3,942	31.3
1998	119	4,577	38.5
1999	174	7,764	44.6
2000	104	7,269	69.9
2001	93	6,406	68.9
2002	78	2,980	38.2
2003	135	7,909	58.6
2004	165	10,388	63.0
2005	109	5,711	52.4
2006	259	10,833	41.8
2007	510	9,686	19.0
2008.6	141	3,605	25.6

Source: Korea Food and Drug Administration internal data, as of Nov. 2008

As can be found in <Table 14>, more incidents are taking place in large venues like school cafeterias. In the past most food poisoning incidents took place at home. As more cafeterias are in operation aspart of the social welfare system, the scale of the outbreaks is also growing and the trend is likely to continue in the future.

〈Table 14〉 Food poisoning incidents by venue

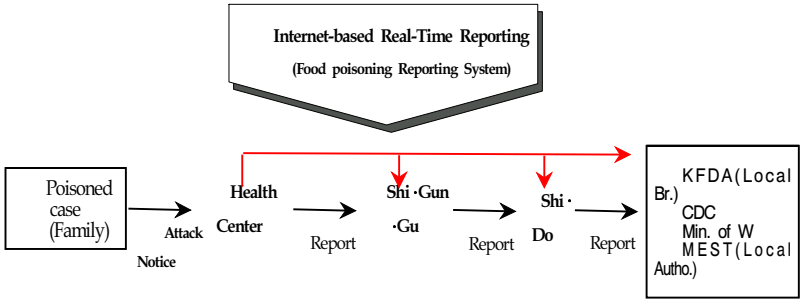
(Unit: number of incidents, number of persons, %)

Category		2002		2003		2004		2005		2006		2007		June 2008	
		No. of Incidents	No. of Patients	No. of Incidents	No. of Patients	No. of Incidents	No. of Patients	No. of Incidents	No. of Patients	No. of Incidents	No. of Patients	No. of Incidents	No. of Patients	No. of Incidents	No. of Patients
		78	2,980	135	7,909	165	10,388	109	5,711	259	10,833	510	9,686	141	3,605
Home		7	117 (3.9)	7	81 (1.0)	7	44 (0.4)	9	111 (1.9)	15	119 (1.1)	30 (5.9)	151 (1.6)	6 (4.3)	35 (1.0)
Restaurant		29	586 (19.7)	46	1,441 (18.2)	35	1,052 (10.1)	53	1,021 (17.9)	108	1,971 (18.2)	289 (56.7)	3,476 (35.9)	85 (60.3)	1,161 (32.2)
Hotel· Motel		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cafeteria	Total	16	1,392 (46.7)	67	6,130 (77.5)	72	7,738 (74.5)	30	3,751 (65.7)	93	8,073 (74.5)	98 (19.2)	4,533 (46.8)	23 (16.3)	1,751 (48.6)
	School	9	806 (27.0)	49	4,621 (58.4)	56	6,673 (64.2)	19	2,304 (40.3)	70	6,992 (64.5)	57 (11.2)	3,101 (32.0)	20 (14.2)	1,679 (46.6)
	Company etc.	7	586 (19.7)	18	1,509 (19.1)	15	1,026 (9.9)	11	1,447 (25.3)	23	1,081 (10.0)	41 (8.0)	1,432 (14.8)	3 (2.1)	72 (2.0)
	Other	-	-	-	-	1	39 (0.4)	-	-	-	-	-	-	-	-
Other		26	290 (9.7)	26	885 (11.2)	39	1,206 (11.6)	13	729 (12.8)	33	515 (4.8)	82 (16.1)	1320 (13.6)	22 (15.6)	620 (17.2)
Unknown		-	-	-	-	12	348 (3.4)	4	99 (1.7)	10	155 (1.4)	11 (2.2)	206 (2.1)	5 (3.6)	38 (1.1)

Source: Korea Food and Drug Administration internal data as of June 2008 (disclosed in November)

The reporting system for food poisoning is divided as the responsibilities for food safety management are divided between the Korea FDA, Center for Disease Control, Ministry of Health, Welfare and Family Affairs and Ministry of Education, Science and Technology.

[Picture 4] The current food poisoning reporting system



When the clinic or hospital that diagnoses the food poisoning reports to the public health center, the public health center enters the information in the food poisoning information management system on the website of the Ministry of Health, Welfare and Family Affairs. When the input is complete, it is automatically sent to those in charge of food poisoning in all relevant organizations via phone, email or fax. Various improvements must be made in the food poisoning management system, particularly in virus detection and continuous consumer education.

Climate change has become an important global environmental issue since the 2000s. Increase in the global temperature will have a great impact on food safety. The average temperature of the globe in

increasing and the temperature of the Korean peninsula is estimated to have increased by 1.5℃. This is twice the increase in the global average. In addition, despite the decrease in the number of days with precipitation, the daily precipitation rate has increased.

As illustrated in <Table 15>, the National Institute of Meteorological Research's simulation on climate change during the past 150 years show that abnormal weather patterns like increased heat wave, shorter winters, less days with precipitation, increase in torrential rain and increased draught are expected to be exacerbated.

The global climate change can have a direct impact on food safety since food poisoning is closely connected to temperature and humidity.

〈Table 15〉 Climate change estimate

Category	World	Korea
Temperature	0.74±0.18℃ increase (1906~2005, land+sea average)	1.5℃ increase(1906~2005) (6 major cities, effects of urbanization included)
Ocean Temperature	0.10℃ increase (1961~2003)	App.1.0℃ increase (1968~2004)
Sea level	0.17±0.05m increase (20C)	Annual increase of 0.1~0.2㎝ (1960~2006)
Precipitation	Concentrated in certain areas, lacking in other areas	Annual average precipitation increases Number of days with precipitation decreases

Source: "Climate change and measures to tackle it," Oct 11, 2007, Office for the Advisor for Information, Science and Technology.

As the average temperature of the globe increases, food poisoning incidents are expected to grow as well as shown in <Table 16>. If the average temperature in 2050 is 1.2℃ higher compared to 2007, the possibility of a food poisoning outbreak is expected to increased by 6%. The general precautionary guidelines for climate change are

for the slowing down of the climate change and for the education of the people. However, in the field of food safety, measures for food induced disease forecast, evaluation and countermeasures must be in place. The IPCC (Intergovernmental Panel on Climate Change) recommends that the policymakers of each country start investment in countermeasures against global climate change. This is something that needs to be considered in Korea as well.

〈Table 16〉 Food poisoning outbreak forecast based on the estimation model

(unit: ℃, no. of incidents, no. of people)

Year	Average temperature	Increased cost due to food poisoning	No. of food poisoning incidents	No. of food poisoning patients
2003~2007 average	13.6℃	-	236.0	8,905
2020	14.8℃	6.3	250.9	12,052.4
2050	16.6℃	15.8	273.8	13,300.5
2080	18.6℃	26.4	297.4	-

Source: Korea Institute for Health and Social Affairs internal data, 2008.

2. Foreign materials

Foreign materials in food is considered a physical hazard as illustrated in <Table 17>, however, it could have a direct impact on health and serves as an evidence of unsanitary handling and management. Therefore, the management of foreign materials must not be neglected.

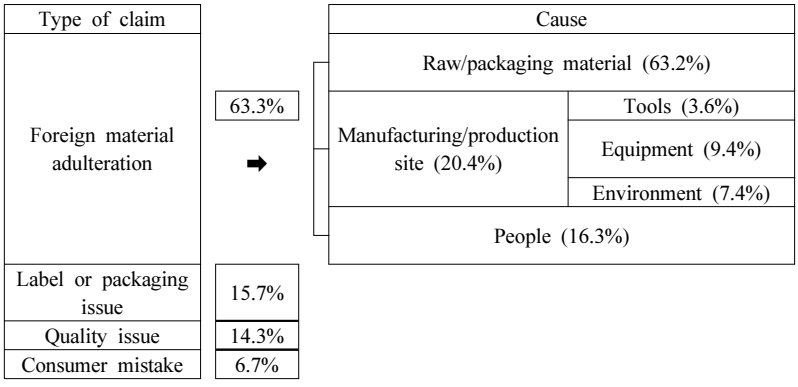
〈Table 17〉 Food hazard category

Category	Description
Biological hazard	Microbes such as germs and viruses
Chemical hazard	Agrochemicals, antibiotics, heavy metal and endocrine disruptors that could cause chronic hazard
Physical hazard	Foreign materials such as plastic, knife blade, larva etc.

Foreign materials in food have become a great concern since the incident where a mouse head was found in a bag of chips in 2008. The claims on foreign materials account for over 60% of the total claim cases as shown in [Picture 5].

These incidents have necessitated the need for the government to take control of foreign materials found in food based on legal grounds from 2009 as opposed to before when all the incidents were taken care of at the company-level.

[Picture 5] Customer claims



As a result of a research in 2008, the scope of foreign materials has been expanded to include unintentional adulteration. A legal ground will be established to mandate installation of foreign material detection facilities. In addition, Korea FDA has a program which awards those who have reported foreign material in food.

In addition to strengthening foreign material management, it is equally important to set an adulteration standard by type of food and type of foreign material so that a realistic management policy can be

created. Although reduction of foreign body adulteration is necessary, 0% adulteration is virtually impossible except for the case of food for astronauts. Therefore, DALs must be set by type of food and foreign material for realistic management of foreign materials. Sufficient consumer education must go hand in hand with stronger regulation on foreign materials.

<Table 18> illustrates a mid/long-term management plan for foreign material in food. A legal ground, such as an amendment of the Food Sanitation Act must be in place for the management of foreign materials in food. In addition, DALs by food and foreign material type must set for non-astronaut food. Also, the government must mandate the companies in the industry to install equipments such as x-ray detectors or video detectors.

〈Table 18〉 Foreign material management plan

Term	Measure	Description
Short-term (2009)	Define and expand scope of foreign materials	Definition : include unintentional Scope : include insect, putrefaction, mold, paper, thread etc.
	Improve reporting and collection system	Reporting : within 24 hrs during weekdays, within 48 hrs during weekends One-time foreign material etc :collect only the product in question
	Develop and finalize manual	Develop manuals for different stages and by type of food Raw material management, process management, personal hygiene management etc.
Mid-term (2012)	Set DALs	Material that cannot avoid natural adulteration, Micro materials that could be found only through a microscope
	Install equipment for foreign material control	Large companies
Long-term (2015)	Install additional equipment for foreign material control	SMEs and micro companies

Source: Jung Ki Hye et al., "Improvement plans for foreign materials in food," 2008.

3. HACCP: Hazard Analysis Critical Control Point

HACCP was originally developed to control the process of manufacturing food for astronauts at NASA. Nowadays, it is applied to the manufacturing of general food. In the 1995 amendment of the Food Sanitation Act, HACCP has been included in Article 32-2. <Table 19> shows the increase in the number of companies and products that follow HACCP.

Although HACCP is still a recommendation for most food products since its introduction in 1995, it has become mandatory for manufacturers of the following 6 products: fish cakes, processed frozen fish/ mollusca, frozen pizza/dumplings/noodles, ice cream and other frozen treats, unpasteurized beverage and retort food to adopt and comply with HACCP. Recently, based on Article 43-3 of the Act, Lettuce Kimchi manufacturers have been added to the list.

Mandatory HACCP compliance is applied only to food manufacturers and processors as described in paragraph 1 of Article 7 of the Enforcement Decree of the Food Sanitation Act.

As part of the mid/long-term food safety improvement plan, the government has set a goal of 20% by 2012. This means about 2,000 businesses must follow HACCP standards. As of 2009, there are 483 HACCP certified operations in Korea.

In order to encourage more small- and medium-sized companies to join the development and distribution of the HACCP model for SMEs, financial support and consulting services must be provided using the Food Promotion Fund.

〈Table 19〉 Number of HACCP certified operations

(Unit: number of operations)

Category	Food manufacturer/ processer	Large cafeterias	Number of certified operations (annual)	Number of certified operations (accumulated)
Total	457	39	496	496
1999	5	0	5	5
2000	2	4	6	11
2001	3	2	5	16
2002	17	5	22	38
2003	22	8	30	68
2004	21	5	26	94
2005	38	4	42	136
2006	68	6	74	210
2007	115	4	119	329
2008	144	1	145	474
2009.02	22	0	22	496

Source: Korea Food and Drug Administration homepage (HACCP information), 2009.
Source: Number of businesses as of Feb 6, 2009.

4. GM(Genetically Modified) Food

A globally controversial topic in the area of food safety is GM (genetically modified) food. The 4 main crops with most GM food are maize, beans, canola and cotton. As shown in <Table 20>, the import of GM maize and soybean in increasing each year in Korea.

〈Table 20〉 Imported soybean and maize

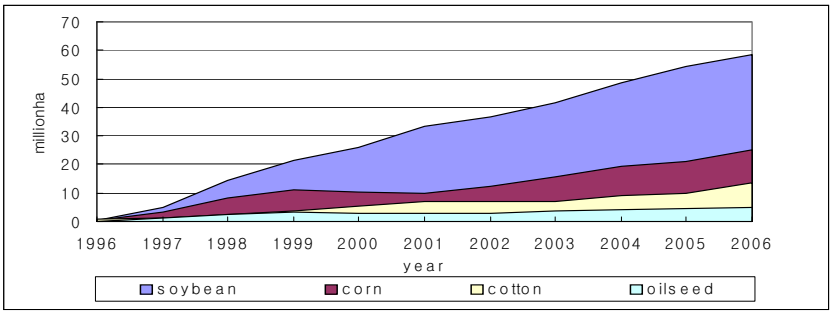
(unit: ton, %)

Category		2006	2007	2008 Jan~June
Soybean	Total imports	1,126,879	1,185,167	556,898
Maize	Total imports	8,669,653	8,579,028	4,200,790

Note: Soybean is 12-01 and maize is 10-05 in the HS code.
Source: Korea Customs Service (http://www.customs.go.kr).

Although no GM crop for food is grown in Korea, the area of the GM crop farms is increasing every year as shown in [Picture 6].

[Picture 6] Trend of GM crop farm area



Note: oilseed is canola.
Source: ISAAA, Clive James, 2006,

It is expected that the consumption and intake of GM food in Korea will increase due to this trend. The policies on GM food, especially labeling remains a contentious issue between GM food exporters like the US and China and importers such as the EU, Japan and Korea. In the EU, a 0.9% cap has been set for unintentional or inevitable adulteration of GM substances. Should the contents exceed the 0.9% threshold, it must be indicated on the label. In Korea, the producer must indicate on the label if GM material had been used regardless of the final testing results of the product. The Prime Minister's office has chosen GM food as a potential social risk in 2008. Therefore, it is important that a prudent policy is created to allow customers to make informed decisions.

5. Hazardous material in food

There has been an increase in incidents related to hazardous material in food as shown in <Table 21>. There is an increasing need to control hazardous material in food such as pollutants,

hazardous substances generated in the process of production and new types of hazardous material. For instance, a carcinogen called acrylamide is generated in the process of cooking fast food or French fries, wild sesame oil may contain benzopyrene and bottled water could be contaminated with a potential carcinogen bromate.

〈Table 21〉 Food accidents due to hazardous material in food

(Units: number of incidents, %)

Year	Total	Naturally generated	Environmentally induced	Manufacturing/ processing	Food additives	Other
Total	71 (100.0)	21 (29.6)	11 (15.5)	9 (12.7)	7 (9.9)	23 (32.4)
2009	6	3	1	-	-	2
2008	7	1	2	-	-	4
2007	6	2	1	1	-	2
2006	2	1	-	-	1	-
2005	6	2	-	1	1	2
2004	6	2	-	-	2	2
2003	3	2	-	-	-	1
2002	7	3	-	1	1	2
2001	3	1	-	-	-	2
2000	8	1	3	1		3
Before 2000	17	5	4	3	2	3

Note: 1) Naturally generated: hazardous microbe, AI etc.
2) Environmentally induced: agrochemical residue, antibiotics, dioxin etc.
3) Hazardous substance generated in the process of manufacturing/processing: acrylamide, nitrosamine etc.
4) Food additives: bleach, color etc.
5) Other: GM food, melamine, mad cow disease, foreign material, forged shelf life included

Intentional or unintentional adulteration of hazardous material cases are increasing, of which the melamine found in some Chinese food products is one. Due to the free trade of food products since the launch of the WTO, it is expected that more hazardous food will enter the Korean market. Lead, mercury, cadmium and aluminum not only directly affects the body but also can act as an endocrine disruptor. Therefore, food containing these substances must be stopped from entering the market.

The Korea FDA is in the process of creating risk profiles for items that are potentially hazardous for the incremental reinforcement of Korea's safety standards. The number of items which had been 1,638 will increase to 1,882 by 2010.

The number of hazardous materials that require control has been 100 in 2008,100 in 2009 and will increase to 300 in 2020. In 2009, 50 hazardous materials have been selected for agrochemical residue and radioactive pollution control; however, due to the great number and numerous types of hazardous materials, it is difficult to execute an effective control or supervision. Therefore, an update on the list of hazardous material is needed.

Most OECD members share the stance of strengthening rules and regulations on food safety. Not only must Korea do the same but also focus on setting the standards on food mold such as aflatoxin and ochratoxin and increasingly used food additive called coumarin. In addition to stronger regulations, ex ante and ex post management must be reinforced for hazardous materials.

1) Strengthening preemptive measures

The food safety information collection system in Korea is fairly limited in terms of the number of hazardous materials compared to EU's RAFFS. Clear steps must be created in Korea's system and the quality of the information must be improved so that data collection and analysis on the latest hazardous materials and information sharing system must be improved.

The Food Safety Information Center that opened on July 16, 2009 must be well leveraged to relay the information on hazardous

materials to relevant industries, consumer groups, research institutes, and consumers in a timely manner.

Scientifically-based, on-site safety measures are essential preemptive food safety measures for an importing country. There is only one inspector dispatched to Beijing, despite that fact that China is the largest food exporter to Korea. More inspectors must be dispatched to closely monitor the environmental changes of the manufacturing sites and levels of contamination for different times in a year to strengthen preemptive food safety measures. In addition, more inspectors must be dispatched to the countries listed in <Table 22> such as Thailand, Vietnam and Chile as these countries are deemed weak in food safety management.

〈Table 22〉 Top 5 food exporters to Korea

(unit: 1K USD, %)

Category	2004		2005		2006		2007	
	Amount	M/S	Amount	M/S	Amount	M/S	Amount	M/S
China	1,015,100	16.7	1,622,746	23.2	2,227,405	29.4	2,113,762	25.7
US	1,498,889	24.7	1,303,951	18.6	1,578,633	20.8	1,601,487	19.4
Australia	620,641	10.2	465,381	6.6	614,629	8.1	597,498	7.3
Brazil	543,550	9.0	404,005	5.8	379,440	5.0	522,036	6.3
Japan	258,148	4.3	294,768	4.2	305,242	4.0	414,342	5.0

Source: Yearbook on food and drugs, 2008.

In the case of imported foods, testing measures must be strengthened to include testing on new types of hazardous materials, fostering professional testers, improving testing infrastructure and enacting a law that mandates 100% sampling test when necessary.

Since contamination usually begins from the raw material, a collaboration system among relevant government organization must be in place to create a robust raw material management system.

2) Strengthening post-management

Post-management is necessary for the safety management of hazardous material that have already entered the market or collection newly identified hazardous material. A scientifically-based systematic monitoring must take place on a short-term (ad hoc) and mid/long-term (regular) basis so that emergency situations can be handled promptly and hazardous material could be collected without delay.

The hazardous material monitoring system for rapid response and consistent service must be divided into short-term and mid- and long-term based on the urgency and the management of the materials (reduction or ban) as indicated in <Table 23>.

Hazardous materials such as melamine must be monitored under the short-term system and heavy metal, environmentally induced material, microbes and GMO must be monitored under the long-term system to change intake patterns and reduce consumption.

〈Table 23〉 Monitoring system for different types of hazardous materials

Category	Material
Short-term(ad hoc) monitoring	Hazardous material found through food related incidents such as melamine
Mid/long-term(regular) monitoring	Heavy metal, environmentally induced material, microbes, GMO etc.

The legal basis for hazardous material monitoring must soon be in place and detailed monitoring plans and guidelines such as the Food Monitoring Handbook must be created. Types of material, number of food products, number of samples and samples per food type must be determined for each year for effective monitoring.

Management of hazardous material will become an important issue in the food safety area. Therefore, clear definition of roles and responsibilities for the central government and local governments and action plans must be established to conduct a systematic monitoring on hazardous materials. In addition, a flexible policy execution is important for a timely response to emergencies.

6. Health Supplements

1) Management and market status

The size of the health supplement market as of the end of 2008 stood at 803.1 billion Won, which was an 11% increase compared to the previous year. It accounts for 1/4 of the entire food product market and about 10% of the total population consumes them.

According to the 'Health Supplement Market Performance Analysis' in 2008 by the Korea FDA, red ginseng products were number one in terms of production, followed by aloe gel, vitamins and minerals, individually registered products and ginseng products.

Red ginseng production increased by 27% compared to the same period last year to 418.4 billion Won, accounting for 52% of the total health supplement market. The newly developed individually registered products accounted for only 5.2% of the market with 41.5 billion Won in production, however, its growth rate reached a whopping 67%.

The individually registered products which have experienced rapid growth since 2006 and the production increased by more than 5

times in 2008 are expected to become the new power player in the health supplement market.

Fat reduction products containing hydroxycitric acid and conjugated linoleic acid accounted for 49% of the total production. Following these were the joint/bone health supplements containing dimetyl sulfone and green lipped mussel extract with 13% and antioxidant products using coenzyme Q10 with 10% and cholesterol improvement products with policosanol 9%.

With the enactment of the Health Supplement Act in 2003, the policies which were focused on reevaluation of existing health supplements and item certification must be shifted towards effective policies for the consumers.

〈Table 24〉 Number of health supplement retailers

(Unit: number of retailers)

Category	Grand Total	Manufacturing			Importer	Sales		
		Total	Professional manufacturing	Venture manufacturing		Total	General Sales	Retail Special sales
2005	44,307	310	298	12	1,635	42,362	41,614	748
2006	49,203	337	313	24	1,955	46,911	45,833	1,078
2007	50,255	345	319	26	2,201	47,709	46,649	1,060

Source: 『Yearbook on food and drugs』, Volume 10, Dec 2008, Korea Food and Drug Administration..

Countries like the US have a more deregulated health supplement market that allows advertising and has no limitation on pill. Korea is also in the process of reviewing the lifting of limitation on pill type for health supplements.

It is difficult to launch a full-out health supplement market regulation, but an effective solution must be drawn out for advertisements that could help customers make an informed decision. Deregulation on pill type will also cater to the needs of the customers.

2) Vitamins and minerals

These days, vitamins and minerals are managed under the health supplement category. If consumed over the limit, fat-soluble vitamins such as vitamin A and E can be accumulated in the human body, turn into toxic substance and affect the health. Therefore, the hazard of each vitamin and mineral, dosage limit, recommended dose, maximum content and content by product are managed.

<Table 25> illustrates the results of a research study conducted by Korea Institute for Health and Social Affairs in 2008.

〈Table 25〉 Hazard, dosage limit, recommended dosage, product content comparison for Koreans 2008

Hazard	Nutrient	Average product content	Maximum content	Recommended dosage[1)]	Dosage limit[2)]
Group A	Vitamin B1(㎎)	13.2	100	-	-
	Vitamin B2(㎎)	11.8	40	-	-
	Vitamin B12 (㎍)	23.5	2,000	-	-
	Vitamin K (㎎)	2.0	1	-	-
	Biotin (㎍)	300.6	900	-	-
	Pantothenic acid (㎎)	20.7	200	-	-
	Potassium (㎎)	50.1	3,700	-	-
	Chromium (㎎)	0.07	9	-	-
	Molybdenum (㎍)	50	230	-	600
Group B	Vitamin E (㎎ a-TE)	81.6	400	10	540
	Vitamin B6 (㎎)	10.1	67	1.5	100
	Vitamin C (㎎)	312.9	1,000	100	2,000
	Niacin(㎎ NE)	-	-	-	-
	-Nicotinic acid amide(㎎)	29.9	670	16	1,000
	-Nicotinic acid (㎎)	19.7	23	16	35
	Copper (㎎)	1.4	7	0.8(800㎍)	10
Group C	Vitamin A (㎍)	422	1,000	750	3,000
	Betacarotin (㎎)	3.9	7	-	-
	Vitamin D (㎍)	4.9	10	10	60
	Folic acid (㎍)	294.6	400	400	1,000
	Calcium (㎎)	285.7	800	800	2,500

Hazard	Nutrient	Average product content	Maximum content	Recommended dosage[1)]	Dosage limit[2)]
	Iron (㎎)	9.6	15	14	45
	Zinc (㎎)	9.0	12	10	35
	Iodine (㎍)	74	150	150	3,000
	Manganese (㎎)	2.0	3.5	3.5	11
	Selenium (㎍)	51	135	50	400
	Magnesium (㎎)	58.9	250	350	350

Source: Jung Ki Hye, et al. Compliance to maximum dosage of vitamins and minerals used in health supplements, Korea Institute for Health and Social Affairs, 2008.

According to the study, the level of vitamin and mineral intake for Koreans is sufficient. The vitamins and minerals are categorized into Groups A, B and C based on the harm it could cause when accumulated in the body. The harm is lowest in the case of vitamins and minerals that belong to Group A while the harm is highest for those in Group C.

Some products in the market show a high vitamin K content, however, it is not a serious issue since the harm of vitamin K is low. The vitamin and minerals marketed in Korea comply with the vitamin and mineral content standards. Therefore, it would be safe to take any product sold in the Korean market.

7. Children's diet

As unbalanced nutrition in the children's diet has become an issue in the 2000s, national investments have been made to improve children's diet for better health. The Special Act on the Management of Food Safety for Children has been enacted in March 2008, providing a legal ground for food projects for children. A

comprehensive plan must be created and promulgated every 3 years as stipulated in the Act. In addition, the Korea FDA has announced a comprehensive plan for food safety for children on February 2007 consisting of 10 major projects in 5 areas. The 1st comprehensive plan must be established this year, as it is the first year of execution this year. The outline of the "plans for food safety for children, announced on February 22, 2009, is as follows.

1) 「Standard for high calorie/low nutrition food nutrients」, 「Quality certification standard for children's snacks」, 「Standard for child-friendly company designation」 and 「Children's diet safety survey and method」.

2) The high calorie/low nutrition food will be determined as follows based on calories, saturated fat, saccharide, sodium and protein.

a) In the case of carbonated beverages that children like to drink, if there is an excess of 4g of saturated fat and 19g of saccharides and less than 2g of protein per 250kcal, or if the product contains more than 500kcal or 8g of saturated fat or 34g of saccharides, it will be categorized as a high calorie/low nutrient food.

b) In the case of meal substitutes such as hamburgers, if one serving exceeds 500kcal or 4g of saturated fat and contains less than 9g of protein and exceeds 600mg of sodium, or if the meal alone exceeds 1000kcal per serving and 8g of saturated fat, it will be categorized as a high calorie/low nutrition food. The result of the

Korea FDA's 2008 survey on 1,706 processed food and instant food enjoyed by children as snacks are shown in <Tables 26 and 27>.

〈Table 26〉 Meal substitutes preferred by children

Type of food (n=240)	High calorie/low nutrient food
Hamburger (n=46) [2)]	83%
Pizza (n=119) [2)]	86%
Ramyun noodles·noodles(cup noodles) (n=75)	88%

Note: 1) Conducted by Korea FDA on 1760 products enjoyed by children as snacks between Feb '08 and Feb '09
2) 1) Processed food, 2)Instant food

〈Table 27〉 High calorie/low nutrition food consumed as favorite children' s snacks

Food group	Type of food (n=1520)	High calorie/ low nutrition food
Confectionaries	Cookies/chips (n=298)	18%
	Candy (n=81)	68%
Bread	Break1) (n=395)	12%
	Cake2) (n=248)	26%
Chocolate	Chocolate (n=86)	37%
Milk processed products and ice cream	Processed milk (n=42)	0%
	Fermented milk(n=56)	2%
	Ice cream1) (n=74)	23%
	Ice cream2) (n=75)	15%
Fish processed food	Fish sausage(n=8)	0%
Beverage	Fruit/vegetable juice (n=48)	100%
	Carbonated drink (n=81)	65%
	Mixed drink (n=28)	18%

Note: 1) Conducted by Korea FDA on 1760 products enjoyed by children as snacks between Feb '08 and Feb '09
2) 1) Processed food, 2)Instant food
3) 'Quality certification standard for children's snacks' is a system established to promote production and sales of safe and good quality snacks for children that meet the HACCP standards, that are not high calorie/low nutrient, that have high vitamin, fiber content and that does not use food additives such as tar color. by providing a certification.
4) 'Food safety scores for children' will be announced every three years based on a national survey on food safety management, nutrition management and public awareness to evaluate the safety and nutrition of the children's die.

The children's food project will be executed at the local government level based on a comprehensive plan. The central government will provide a comprehensive plan to the local governments and evaluate

the project results and provide feedback to help stabilize the children's food project.

8. Creating an environmentally-friendly food culture

Covering the whole table with food is considered a good gesture in the Korean food culture.

But this leads to an excessive amount of food waste and many governmental efforts have been made to improve the situation starting from the Ministry of Health and Welfare's Standard Menu Policy. The Ministry of Education, Science and Technology, Ministry of National Defense, Ministry of Public Administration and Security, Ministry of Culture, Sports and Tourism, Ministry for Food, Agriculture, Forestry and Fisheries, Ministry of Gender Equality, Ministry for Health, Welfare and Family Affairs and Ministry of Environment have participated in a joint effort to create a Comprehensive Measure for Food Culture Improvement and Food Waste Management 2006~2010.

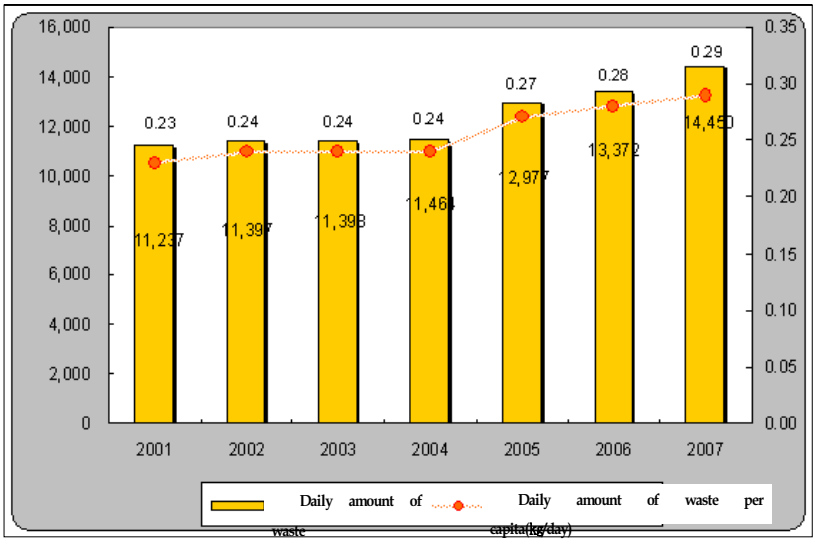
However, the government-led measure alone cannot persuade the people to reduce food waste. Therefore, it is imperative that a comprehensive plan to tackle the fundamental issue of improving food-related practices is in place.

As part of the endeavor, the 10 ministries have come together to embark on an "environmentally-friendly food culture" project on April 2009.

1) Current issues

The total amount of food waste generated in Korea and food waste per person is increasing every year as illustrated in <Picture 9>. Total amount of waste increased by 28.5% in 2007 compared to 2001.

[Picture 7] Total amount of food waste (from 2001)



As shown in <Table 28 >, the proportion of food waste in the total volume of waste is also increasing year after year. In 2006, food waste took up 27.4% of all waste.

〈Table 28〉 Food waste generated each year

(unit: ton/day)

Category	2001	2002	2003	2004	2005	2006
General waste	48,499	49,902	50,736	50,007	48,398	48,844
Food waste	11,237	11,397	11,398	11,464	12,977	13,372
Ratio(%)	23.2	22.8	22,5	22.9	26.8	27.4

The reasons behind the increase of food waste are increase in population, increased people eating out and a preference for a full table.

Korea is a food importing country with the self-sufficiency ratio of 50% for food and 27% for grain. In this situation, 15 trillion Won worth of food waste generate each year is a classic example of wasting precious resource. Furthermore, as direct dumping of food waste has been prohibited since January '05, the cost of handling food waste has increased.

The continuous increase in food waste is a sign that the existing policies have not been effective. This calls for a more consistent and effective measure, however, the divided efforts exerted in different ministries have not generated much synergy so it is important that an "environmentally-friendly food culture council" where private organizations can participate, is created to build a basis for cooperation.

Policies such as increased shared expense for food waste generated in agricultural/fisheries markets and ban on reuse of leftover food must be actively reviewed.

Due to the gap between awareness building and practice, 94.3 % of the people said that they understand the need for such policies, however, only 44.0% answered that they put the policies into proactive. The biggest reason behind the meager result is lack of incentive and non-existence of inducing measures. A systematic

movement and a cooperation network centered on National Sustainable Development Association are needed.

Events to reward best practice can attract people's interest and incentives for restaurants and local governments with best practices need to be in place.

2) Project objectives

Objectives

□ Reduce food waste by 20%(3,240 ton/day) by 2013
  ○ Reduce from 16,200 ton/day (0.35kg/person·day) to 12,960 ton/day (0.26kg/person·day)
    ※ Food waste volume expected to increased by 2% each year

Strategy

□ Reduction of food waste at each stage of the waste lifecycle
  ○ Build an environmentally-friendly production/retail/consumption system
□ Launch a national drive
  ○ Strengthen efforts to promote food culture improvement and launch a national drive
□ Improve system and create a cooperative network
  ○ Reorganize system and create a cooperative network to enhance effectiveness of the policy

3) Key projects

Key project include; reduction of food waste at each stage of the waste lifecycle, launch of a national drive and system improvement and cooperative network building. Tactics for each strategy will be crafted for effective execution.

Key projects		
Reduction of food waste at each stage of the waste lifecycle	Launch a national drive	Improve system and create a cooperative network
○ Production·retail - Standardize agricultural product packaging - Educate farmers and wholesalers on standardized shipment ○ Consumption - Launch no food reuse drive - Improve food culture to minimize leftover ○ Waste discharge - Food sharing using Food Bank and Food Market - Strengthen control on mandatory waste reduction operations	○ Create a system for a national drive - Establish regional committees ○ Strengthen education - Provide education by class - Develop and provide education material ○ Promote drive - Leverage audio/visual ads e.g, TV·radio·billboards - Leverage campaign and events	○ Improve rules and regulations - Regulation amendment for mandatory food waste reduction operations - Strengthen control on food service businesses - Waste reduction through local government joint evaluation

4) Step-by-step implementation plan

The step-by-step implementation plan for an environmentally-friendly environment are as follows.

Step 1('09)	⇨	Step 2('10~'12)	⇨	Step 3('13)
Establish/execute tasks for environmentally-friendly food culture by ministry Establish/operate execution system		Review performance by ministry/organization(mid-term analysis) Continue promotion/education on food culture improvement drive (continuous)		Finalize tasks and evaluate results Stabilize national drive, Increase waste reduction effect

04

Direction for Food Related Administrative Policies

Chapter 4 Directions for Food Related Administrative Policies

The Korean government is pursuing many projects to improve the level of food safety. Moreover, many future plans are in place for implementation.

In order to improve the weakness of the dispersed management system, a Food Safety Policy Committee has been created under the Prime Minister's office in 2009 to oversee the food safety related activities of each ministry. The last 10 years have been an important period for food safety in Korea.

However, the KFDA's infrastructure is still far lacking compared to the U.S FDA, therefore the people and government's continuous efforts must be exerted.

The following are the directions for food safety in Korea since the inauguration of Korea FDA in 1998.

1. Responding to future environmental changes

The food safety landscape has changed greatly since the inauguration of Korea FDA in 1998 and further environmental changes are expected.

Policy measures for increased imported food, increased food poisoning due to climate change, influx of GM food and hazardous material are in place, however, more efforts must be exerted for increased effectiveness. In other words, an environmentally-friendly circumstance must be created in the area of food safety in the age of green growth.

2. Rationalization of regulation

Since 1998, governments around the world have embarked on deregulation as a policy mandate, however, stronger regulation yet regulation reform is needed in the area of food safety.

In other words, complicated processes must be simplified, safe regulation must be strengthened and rationalized as recommended by the OECD. Under the environment of better regulation, good companies will flourish and bad companies will vanish.

3. Consumer-oriented safety management

Food safety is a priority issue for food importing countries and exporting countries alike. The ultimate goal of food safety management is to ensure food safety for the consumers. The producer-oriented food policy must be converted to a consumer-oriented food safety policy. Growth of the food industry and safety regulation must be independent and a system detailed evaluation and feedback on food safety management must be in place.

Furthermore, the organization, budget, staff and infrastructure for adequate safety management must be secured.