

	The Board of Audit and Inspection of Korea	
	Fair Audit Fair Society	

Audit Report on the Safety and Quality Management of Fishery Products

Disclosed on March 21, 2019

Objectives: There is a need for fishery products to be monitored for their safety and quality in order to prevent harm to human health, as they account for a significant proportion of the nation's diet.

1. Inappropriate safety management (repeated or omitted safety inspections of fish farms)

The Ministry of Maritime Affairs and Fisheries (MOF) administers the safety management of fishery products, including setting up annual plans for safety inspections, while the National Fishery Products Quality Management Service (NFQS), as well as provincial governments collect samples from fish farms and joint markets to conduct tests for potential safety hazards.

- For the last three years (2015-2017), the ratio of wild-caught fish products has declined (43%→38%), while that of farmed products increased (34%→43%) in regards to domestic production.
- Farm-raised fish products have a high risk of contamination by harmful agents such as antibiotics* and require more stringent safety inspections.

*For the last three years (2015-2017), 94 farm-raised fish products were found to be inappropriate for sale due to a presence of excess antibiotics (82% of 115 cases in total).

However, the MOF allocated the number of inspections for each agency (local bureaus of the NFQS and provincial governments) without putting farm-raised and wild-caught fish products into different categories in the planning of safety inspections. The Ministry had no criteria for taking inspection frequency into account in selecting farms to be inspected.

Though the number of safety inspections of fishery products (per ton) has increased (2.43→2.97) over the last three years, the number of safety inspections for farm-raised

fish products has declined (3.04→2.85), reflecting less attention given to the safety management of farm-raised fish products highly vulnerable to contamination.

- The NFQS and the provincial governments selected fish farms for safety inspections at random without considering the inspection frequency, resulting in repeated or omitted inspections, as well as failures in conducting regular inspections on fish farms.

Example of repeated or omitted inspections on fish farms

For flatfish and eel farms in South Jeolla Province, the National Fishery Products Quality Management Service and the local government conducted 586 inspections on 381 fish farms over the last three years and found that 87 farms (23%) were inspected by both agencies, while 122 farms (32%) were never inspected.

As a result, 12 out of 13 farms, which had previously not been inspected for the last three years, were evaluated to be inadequate due to an excess presence of antibiotics, showing a lack of effectiveness of inspections to prevent harmful fishery products from distribution.

➡ The Minister of Maritime Affairs and Fisheries needs to prepare measures to enforce the safety management of farm-raised fish products at the production stage. The measures should include: categorizing farm-raised and wild-caught fish products into separate groups when allocating the number of safety inspections to the National Fishery Products Quality Management Service and provincial governments, increasing the ratio of inspections on farm-raised products, and providing criteria in selecting farms to prevent cases of repeated and omitted inspections.

Inadequate safety management of fish farms vulnerable to contamination

The MOF needs to implement measures and conduct inspections on production sites and contaminating sources to improve the safety management of fishery products based on the "Agricultural and Fishery Products Quality Control Act."

① Inadequate safety management of farms vulnerable to norovirus contamination

The MOF has been conducting norovirus* tests on oyster farms, as well as controlling terrestrial and marine contaminating sources by establishing a "Supply Plan of Safe Oysters" to prevent norovirus infections caused by farm-raised oysters since 2007.

*Noroviruses cause food poisoning and are accumulated in the intestines of shellfish. The shellfish are contaminated through water or seawater polluted from human

excrement, and as such, should be heated above 85°C before being consumed.

- According to sanitary inspections on 71 shellfish farms across the country conducted by the National Institute of Fisheries Science (NIFS) (2014~2018), 15 oyster farms, including those in southern Ganghwa Island exceeded "the permissible level of E. Coli for raw oysters" suggesting a high risk of infection by noroviruses.

However, the MOF did not refer to the sanitary inspection results of the NIFS in selecting farms to be monitored in the "Supply Plan of Safe Oysters."

- This resulted in a higher risk of delivering potentially tainted oysters to consumers because the 15 oyster farms were not inspected for norovirus contamination and control of contaminants.

② Inadequate safety management of fish farms vulnerable to heavy metal contamination

Fishery products from coastal and inland waters (rivers, lakes) are highly likely to accumulate heavy metals settled in sediments through an influx of territorial contaminants.

- The MOF needs to conduct safety inspections on fish farms with a high-risk of contamination, using the test results for sediment contamination by the NIFS.

During the course of the audit, locations of fish farms and sediment contamination test results by the NIFS and the Ministry of Environment (MOE) were compared for analysis.

- For coastal waters (inspected by the NIFS), the shellfish farms (101.8 km²) spotted along the Masanman and Jinhaeman Bays exceed the "Threshold Effects Level"* in regards to the marine environment standards.

*Heavy metal concentrations where certain toxic effects of marine organisms are expected to appear.

- For inland waters (inspected by the MOE), 18 shellfish farms are located along the Hantan River where heavy metal pollution is below the "poor" level in relation to the "river and lake sediments quality criteria."*

*Criteria for assessing heavy metal contamination comprises four levels: average, poor, bad and very bad. A level below "poor" requires a toxicity test.

However, the MOF neither utilized the inspection results on the level of sediment contamination nor considered the areas highly vulnerable to contamination in planning safety inspections on fishery products.

- Safety inspections are neglected for fishery products produced in areas vulnerable to contamination.

➡ The Minister of Maritime Affairs and Fisheries needs to prepare measures to ensure the production of safe fishery products from fish farms. The measures should include ① listing 15 oyster farms (including those in southern Ganghwa Island where E. Coli and noroviruses were detected due to an inflow of territorial contaminants, according to sanitary inspection results across the country) for safety management, such as norovirus tests to implement the "Supply Plan of Safe Oysters," and ② closely inspecting areas vulnerable to contamination. Such areas include coastal fish farms along the Masanman and Jinhaeman Bays, and 18 inland water farms where sediments are highly likely to be contaminated based on the inspection results of the fishery environment (coastal waters) by the National Institute of Fisheries Science, and the "nationwide inspections on sedimentary contaminations in rivers and lakes (inland waters)" by the Ministry of Environment. These farms should also be listed for safety inspections to implement the "Plan for Safety Inspections on Fishery Products."

No food safety management for fishery products from fishing grounds

The MOF needs to conduct safety management for fishing grounds (865 spots as of the end of 2017) and for the production stage of fishery products, while the Ministry of Food and Drug Safety (MFDS) needs to conduct safety management during the distribution stage.

- Meanwhile, seafood safety management is required for the fishing grounds where imported or locally farmed fishery products are allowed to be consumed on the spot. The MOF and the MFDS are responsible for monitoring the level of harmful materials in fishery products that can be consumed at fishing spots.
- However, as the spots do not contribute to fishery production and seafood that are used for the purposes of distribution, the two ministries have been neglecting the safety management of the fishing grounds.

➡ The Minister of Maritime Affairs and Fisheries needs to prepare measures for safety management of fishery products consumed on fishing grounds, such as performing water quality tests or inspections on the use of harmful materials in these specific fishing spots.

➡ The Minister of Food and Drug Safety needs to prepare measures to prevent seafood-related incidents at fishing spots, by listing them for inspection on fishery products for distribution.

Inappropriate management of shipping restriction period for veterinary drugs (including antibiotics)

The MOF needs to designate and manage veterinary drugs that can remain inside fishery products, potentially causing harmful effects on human health, based on the "Pharmaceutical Affairs Act."

According to the "Criteria for Safe Doses of Veterinary Drugs for Fisheries" (released by the NIFS), shipping of fishery products should be limited for a certain period to prevent the antibiotics remaining in fishery products from causing harmful effects on consumers.

- The authorities need to guide and supervise fish farmers to record and manage the dates of drug use and shipping for each water tank, as one-time inspection on residual antibiotics in fishery products cannot check for the additional drugs administered afterwards.

- According to the "Pharmaceutical Affairs Act," penalties should be levied on offenders who do not comply with the shipping restriction period for fishery products containing veterinary drugs.

However, the MOF only defined the regulation and failed to guide and supervise fish farmers to record and manage drug use and shipping dates for each water tank.

- Therefore, even if regulators uncover fishery products with excess antibiotics beyond the permissible level at the distribution stage, they have no practical criteria to decide on violations of the shipping restriction period and no measures to impose restrictions on inappropriate fishery products.

Examples of shipping restriction period violations

- In 2017, the number of prescriptions and injection of antibiotics (186 cases) and published sales records were compared for the top 10 eel farms in Yeonggwang, South Jeolla Province.

- While 92 revenue bills were issued in 10 fish farms during the shipping restriction period, compliance with regards to the restriction and the safety of distributed eels in seven farms could not be confirmed due to the lack of records regarding drug use and shipping.

➡ The Minister of Maritime Affairs and Fisheries needs to prepare measures for preventing shipment of fishery products with excess residual antibiotics by supervising and monitoring fish farmers' management of records on antibiotic use and shipment for each tank, and by imposing penalties on violations based on these records when distributed fishery products have residual antibiotics beyond a permissible level.

Inappropriate management on usage of zoonotic fluoroquinolones

The National Animal Quarantine Service banned the domestic manufacturing and imports of veterinary drugs containing fluoroquinolone antibiotics* in 2007 to ensure the safety of domestic livestock and fishery products and to protect the health of the public.

*Fluoroquinolones consist of 3 types: norfloxacin, ofloxacin and pefloxacin. There are limited treatments for fluoroquinolone resistance, and the resistant bacteria also shows resistance toward other antibiotics.

Therefore, the MOF needs to supervise and monitor fish farmers to ensure that they do not use fluoroquinolones by designating them as banned materials,* and to destroy fishery products with residual fluoroquinolones to protect people from any harm due to resistant bacteria.

However, the MOF did not ban the use of fluoroquinolones in fish farms nor did they destroy fishery products that tested positive for fluoroquinolones, while also allowing shipments of fishery products if they pass the second safety test after a shipment delay.

As a result, it is always likely that resistant bacteria against fluoroquinolones could cause safety issues for consumers as 22 cases passed the second safety test between 2014 and 2017 despite being rejected in the first test due to residual fluoroquinolones.

➡ The Minister of Maritime Affairs and Fisheries needs to prepare measures for enforcing management on the use of fluoroquinolones by discouraging fish farmers from using fluoroquinolones in the fishery production process and by taking steps to destroy fishery products with residual fluoroquinolones.

Inadequate safety management of deep-sea fishery products vulnerable to heavy metal contamination

The NFQS needs to conduct safety tests (methyl mercury tests) for deep-sea fishery products, including sharks, based on the "Plan on Safety Tests for Fishery Products in Production Stage."

According to the "Criteria and Standards for Food" (issued by the MFDS), the permissible methyl mercury level for sharks and tuna (including their intestines) is "below 1.0 mg/kg."

- According to the above criteria, sharks and tuna are designated as priority control targets, and thus, need to be tested for methyl mercury levels.

Meanwhile, sharks and tuna are eviscerated on board and their fins and intestines are separated into byproducts before shipping to the domestic market.

- However, the NFQS checks the level of methyl mercury for solely the main body but not for the byproducts of sharks and tuna.

As a result, 3,782 tons (in 834 cases) of fins and intestines of sharks and tuna were distributed between 2015 and 2017 without methyl mercury tests.

- In 12 cases out of 13 where the body of sharks were destroyed due to excess levels of methyl mercury, the fins and intestines of those sharks were distributed to the domestic market.

*Shark intestines are prepared and cooked as steamed meat and sold in markets and restaurants in Pohang and Gyeongju, North Gyeongsang Province.

➡ The Director General of the National Fishery Products Quality Management Service needs to ensure that fins and intestines of deep-sea fishery and tuna are not excluded from the residual methyl mercury tests.

Inappropriate follow-up management over distribution and sales of non-edible fishery imports as edible products

According to the "Food Sanitation Act," the distribution and sales of non-edible fishery imports (for feed and bait), which are not subject to safety tests for imported food as edible products, are strictly prohibited.

The MFDS, according to its "Food Safety Management Guidelines" needs to select and monitor imported non-edible agricultural and fishery products that are likely to be converted into edible products, by acquiring their customs clearance data from the Korea Customs Service.

- Food manufacturers and processors need to be supervised and checked more frequently than just once every quarter if they have previously imported non-edible fishery products.

The MFDS conducted 1,366 inspections on non-edible agricultural imports during the last three years (January 2015-March 2018).

- However, it only conducted 67 inspections and failed to regularly supervise and check non-edible fishery imports as those products lacked sufficient customs clearance data and distribution history.

The auditors found that two food importers sold 118 tons (from five separate imports) of squid beaks to three food processors between October 2017 and February 2018.

- These food processors used squid beaks, which did not undergo food inspections as raw materials, and produced 45 tons of processed food (seasoned and dried squid), distributing 23 tons in the domestic market.

*The MFDS ordered provincial governments to retrieve the aforementioned processed food products according to the "Food Sanitation Act" and notified the results to the public during the course of the audit.

➡ The Minister of Food and Drug Safety needs to prepare measures for enforcing safety management of non-edible fishery imports by conducting regular inspections to prevent their distribution, as well as pressing charges against companies that violate the "Food Sanitation Act" by distributing non-edible fishery imports as edible products.

*This summary has been comprised to help journalists' understandings. Please refer

to the unabridged document for further details.