

Thinking on the Public Health Problems of COVID-19 Prevention and Control Logistics Packaging

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Abstract: The emergence of the COVID-19 epidemic has had a great impact on the global economy. Under such an epidemic situation, the development of the logistics industry provides sufficient supplies of materials and resources for the public during the epidemic period, and protects the lives of the general public from the impact of the epidemic. However, what followed was that the COVID-19 carried by logistics packaging led to the continuous expansion of the epidemic and threatened public health security. Based on this, this paper takes the cold chain logistics as the starting point to explore the strategies to improve the public health of COVID-19 prevention and control logistics packaging, in order to ensure the stable development of society.

1. Introduction

On June 11, 2020, the COVID-19 made a comeback, starting with the Beijing Xinfadi Agricultural Products Wholesale Market. The detection of COVID-19 on the salmon chopping board attracted great attention from the society. On July 10, through the monitoring of imported cold chain food COVID-19 announced by the customs, it was found that Dalian customs detected COVID-19 nucleic acid positive in one container inner sample of Ecuador frozen South American white shrimp and three outer packaging samples of frozen South American white shrimp, and Xiamen customs detected COVID-19 nucleic acid positive in two outer packaging samples of frozen South American white shrimp. Since then, Chongqing and Pingxiang in Jiangxi have detected COVID-19 on the outer packaging of frozen Ecuadorian white shrimp. Under the influence of the COVID-19, the farmer's market, as the main fresh consumption channel for consumers, is being replaced by supermarkets, e-commerce and other channels. As a result, consumers' purchasing methods for fresh food have shifted from offline to online, and fresh food e-commerce has increased rapidly. This greatly reduces the potential exposure of buyers to viruses, but it is necessary to ensure the safety of packaging in cold chain logistics to achieve zero exposure.

2. Current Situation of Logistics during the COVID-19

2.1. Current Situation

In recent years, with the improvement of the quality of life of the people, the improvement of consumption levels, and the enhancement of online shopping awareness, the online shopping circulation of fresh fruits and vegetables across the country is huge. Benefiting from such huge consumption and stimulating transportation, there is a huge demand in the logistics transportation market. According to data, in 2019, the market size of China's cold chain logistics industry was about 339.1 billion yuan, an increase of 50.52 billion yuan compared to 2018, with a year-on-year increase of 17.5%. By 2020, the market scale of China's cold chain logistics industry will exceed 400 billion yuan. It is expected that the national industrial scale will increase by more than 20% annually from 2021, and the market size will reach 897 billion yuan in 2025, as shown in Figure 1.

Due to consumers' requirements for the quality and timeliness of fresh fruits and vegetables, the cold chain logistics environment has been improved, including infrastructure cold storage, refrigerated vehicles, insulation boxes, supermarkets' refrigerated display cabinets, etc., covering various links such as warehousing, transportation, distribution, and retail. The lack of any of these

links will greatly reduce product quality. Due to the core position of cold storage, it is necessary to move towards intelligent and refined fresh storage.

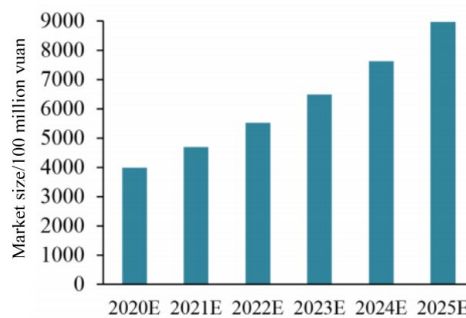


Figure 1 Forecast of China's cold chain transportation market size from 2020 to 2025.

2.2. The Role of Logistics

After the COVID-19, the demand for food tends to non-contact distribution. During the Spring Festival in 2020, the average daily survival rate of fresh APP increased by 107.17% year-on-year. In contrast, the fresh e-commerce penetration rate in 2018 was only 3.8%. The increase of fresh e-commerce has once again driven the development of the logistics market. Another growth point is the medical cold chain, including chemical drugs, traditional Chinese medicine, biopharmaceuticals, and nucleic acid test samples from confirmed patients. These items require professional medical cold chain logistics and distribution during the transportation process to maintain a constant temperature to ensure quality and safety. Perfect cold chain logistics can avoid food unsalable, waste and loss during the COVID-19 epidemic. However, the safety of food and the health of consumers require more security in the cold chain logistics packaging process, which also requires inspection and inspection during transportation.

3. Strategies to Improve the Public Health of Logistics Packaging under the Prevention and Control of COVID-19

3.1. Requirements for Logistics Packaging Prevention and Control

First, prevention and control requirements for loading and unloading operators. In addition to general personal hygiene requirements, work clothes and hats should be worn before handling goods, disposable medical masks or disposable surgical masks, gloves, etc., and goggles and face screens should be worn when necessary to avoid frequent contact with the body surface when packaging goods. International navigation vessels can safely and safely carry out port loading and unloading operations only after they have passed customs health quarantine and obtained inspection and quarantine certification materials. In particular, when loading and unloading imported cold chain food from epidemic areas, dock porters and other operators should wear masks in a standardized manner throughout the process of handling goods, to avoid the goods packaging clinging to the face, touching the mouth and nose with hands, and to prevent contact with cold frozen aquatic product packaging that may be contaminated by COVID-19. During loading and unloading operations, appropriate isolation measures such as billboards and warning lines shall be taken to prohibit crew members from entering the dock operation area in principle. When cooperation between the ship and the shore is required, the crew should correctly wear personal protective equipment such as masks and gloves, and take measures such as rotating operations or increasing work intervals to avoid direct contact between dock personnel and the crew as much as possible; For crew members who really need to go ashore, temperature monitoring should be conducted. If masks and gloves are damaged during handling, they should be replaced immediately.

Second, prevention and control requirements for transportation personnel. Operators and accompanying personnel transporting imported cold chain foods shall not open the packaging without authorization during transportation, nor shall they open the packaging of cold chain foods without authorization and directly contact them. When entering and exiting vehicles, drivers and

accompanying personnel should avoid unnecessary contact with the guard on duty and staff.

Third, cargo source prevention and control management. In the process of cold chain logistics, if it is necessary to add support or padding inside the logistics package, it should comply with relevant food safety and hygiene requirements. Strengthen operational management of goods handling and handling, and prevent goods from directly contacting the ground. Do not arbitrarily open the packaging of cold chain food. It should be ensured that the temperature of cold chain food is always within the allowable fluctuation range during transportation. Keep records of the time, temperature, and other information for each delivery and receipt process and keep them.

Fourth, cargo information registration. The cargo owner or freight forwarder shall actively provide the relevant customs clearance documents for imported cold chain food to the carrier. Cold chain logistics enterprises shall truthfully register the information of goods shipped, vehicles and vessels, crew (crew) information, loading and unloading information, and consignee information, and shall not carry imported cold chain food that cannot provide a source of purchase. Relevant units shall actively cooperate with health, transportation, customs, market supervision, and other departments in accordance with their responsibilities to collect relevant samples of imported cold chain food and conduct nucleic acid testing of cold chain goods transportation vehicles. Port enterprises, freight terminals, and other business units should truthfully register the information of cold chain food road and waterway transportation vehicles and drivers entering and exiting the port terminals. If an importer or cargo owner entrusts a third-party logistics company to provide transportation, warehousing, and other services, when the goods are delivered to the third-party logistics company, they should actively provide the third-party logistics company with relevant food safety and epidemic prevention testing information. Local meat slaughtering, processing, and trading enterprises should strictly implement the relevant quality management and operating specifications for cold chain foods, and strengthen environmental hygiene management. The port operators and station staff who cooperate in the quarantine of COVID-19 of refrigerated goods shall be relatively fixed, and correctly wear protective clothing, goggles, masks, protective gloves and other protective equipment throughout the process.

Fifth, prevention and control management of transportation tools. The interior of vehicles and ships should be clean, non-toxic, harmless, odorless, and pollution-free, and preventive disinfection should be carried out regularly.

Sixth, the prevention and control management of transfer facilities. The transfer loading and unloading area should be equipped with a closed platform and sealing devices for docking with refrigerated transport vehicles and ships. Strengthen warehousing inspection, in addition to checking the appearance and quantity of cold chain foods, it is also necessary to check the central temperature of cold chain foods. Strengthen storage management in the warehouse, and stack cold chain food on pallets or shelves according to regulations. Cold chain foods should be stored in separate warehouses or locations according to their characteristics. Cold chain foods with large differences in temperature and humidity requirements and prone to cross contamination should not be mixed. The temperature and humidity in the warehouse should be regularly tested, and the temperature and humidity in the warehouse should meet the transit requirements of cold chain food and maintain stability. Regularly clean and disinfect the internal environment, shelves, work tools, etc. of the transfer facilities.

3.2. Requirements for Disinfection of Logistics Packaging

First, personnel. During the distribution process of cold chain food, transportation operators and accompanying personnel should maintain personal hand hygiene. Alcoholic hand sanitizers, disinfectants, and paper towels should be provided in the vehicle to ensure regular disinfection of hands without clean water.

Second, on the surface of the object, transportation operators should wash their hands or disinfect before transmitting and submitting delivery documents to enterprise employees. To avoid cleaning the returned items, it is best to place the documents in disposable containers and packaging materials. Reusable containers should be regularly and appropriately cleaned and disinfected.

Surfaces that are most likely to be contaminated by viruses such as steering wheels, door handles, and mobile devices that are frequently touched by human hands should be regularly disinfected.

Third, means of transportation. To avoid contamination of cold chain foods, transportation operators need to ensure that transportation vehicles, ships, refrigerated containers, and other transportation tools and containers are clean and regularly disinfected. When mixed loading of goods, it is necessary to separate food from other goods that cause pollution as much as possible. Before and after carrying a batch of goods on transportation vehicles and containers engaged in cold chain logistics transportation, the parts that may be contacted by transportation operators must be thoroughly disinfected. The carrier unit is responsible for organizing or entrusting a qualified disinfection unit to organize and disinfect the inner walls of imported cold chain food containers, such as vehicles, ships, and other transportation vehicles before and after shipment.

3.3. Safety Protection Requirements for Employees

Cold chain logistics enterprises involved in the loading, unloading and transportation of cold chain food shall timely adjust and update the health management system of employees and improve the management measures for the prevention and control of COVID-19 in accordance with the requirements for the prevention and control of COVID-19 epidemic. Employees should do a good job of personal protection. Cold chain logistics enterprises should be equipped with necessary personal protective and disinfection supplies and equipment, and in accordance with the policy requirements during the epidemic period, further strengthen the personal protection of ship agents and other boarding personnel, port operators, as well as drivers, loaders, crew members, pilots, and other cold chain logistics frontline personnel to prevent infection risks. Cold chain logistics enterprises should supervise and guide operators to correctly wear masks, gloves, and work clothes during work. Work clothes should be kept clean and tidy, cleaned regularly, and disinfected when necessary. Frontline logistics personnel who directly contact imported refrigerated containers or refrigerated goods should wear protective equipment such as masks and protective gloves throughout the entire process, and their body temperature should be measured at least once before going on or off duty. Under the guidance of the health department, cold chain logistics enterprises, port and shipping enterprises, pilot institutions, and other units should strengthen professional training for their own personnel who directly contact bulk refrigerated goods, refrigerated container unpacking operations, boarding personnel such as ship agents who have close contact with the crew on international navigation ships, and high-risk positions such as pilots, to correctly wear and take off protective clothing, and conduct regular inspections to ensure that key protective measures are in place. At the same time, according to the relevant regulations of the health department, work clothes, protective clothing and disposable appliances should be disinfection and sterilization after the work is completed, so as to ensure the safety of logistics packages.

4. Conclusion

In view of the importance of cold chain logistics in consumers' lives, especially during the COVID-19 epidemic, it served as a food transportation chain. Ensuring food safety has become a top priority, and inspection and quarantine of cold chain logistics packaging is essential. For cold storage, it is necessary to reduce the number of operators and disinfect the personnel entering and exiting vehicles to ensure the safety of the links, thereby improving the safety of logistics packaging in the context of the epidemic.

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