

Analysis of Risks and Discussion of Preventive Measures Related to the Misdeclaration of Dangerous Cargos in Containers

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Abstract: This article provides a comprehensive analysis of the risks associated with the misdeclaration of Dangerous Cargos in containers and explores preventive measures. It begins by defining and discussing the background of misdeclaration in containers, highlighting the potential safety, environmental, and legal risks that may result from such actions. The article then delves into various preventive measures, including technological solutions, regulatory policies, and industry self-regulation, aimed at addressing the misdeclaration of Dangerous Cargos. Furthermore, the article conducts case analyses and draws on international experiences to propose effective countermeasures and suggestions for combating misdeclaration and false reporting of Dangerous Cargos, particularly in the context of waterway transportation. By examining these issues in detail, the article aims to provide a comprehensive understanding of the risks associated with misdeclaration and to offer practical solutions for mitigating these risks. In conclusion, this article serves as a valuable resource for stakeholders in the shipping and transportation industry, providing insights into the challenges posed by misdeclaration of Dangerous Cargos and offering actionable recommendations for addressing these issues.

1. Introduction

The misdeclaration of Dangerous Cargos in containers refers to the intentional concealment or false reporting of the true conditions of Dangerous Cargos during transportation by enterprises or individuals in order to evade the constraints and supervision of relevant laws and regulations. This behavior poses serious risks and hazards to the logistics and transportation industry, posing a significant threat to public safety and environmental safety. With the development of world trade, the demand for chemical products is constantly increasing, and the transportation of crude oil,

liquefied gas, and various Dangerous Cargos accounts for a significant portion of the shipping industry [1]. Given that the global ocean area covers 71% of the Earth's surface, maritime trade transportation is undoubtedly the primary mode of transportation for industrial production and social development [2]. In recent years, attempts to illegally transport containers loaded with dangerous goods as ordinary containers through concealment and false reporting have been incessant, aiming to gain illegal profits as shown in Figure 1. Regulatory agencies and transportation enterprises often face the phenomenon of misdeclaration of Dangerous Cargos in containers, which poses significant risks to the entire transportation industry. Therefore, this article conducts an in-depth analysis of the risks associated with the misdeclaration of Dangerous Cargos in containers and proposes corresponding preventive measures.

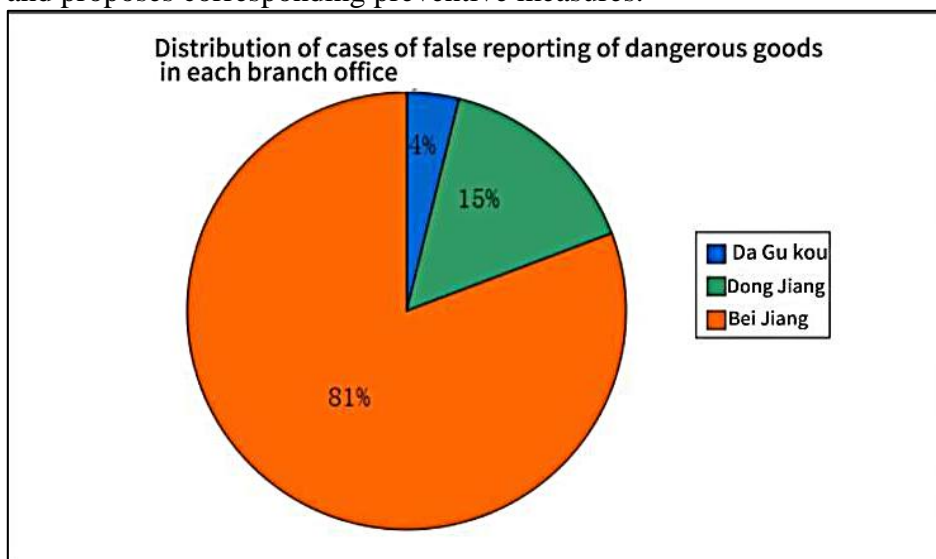


Figure 1: Investigation and Handling of Cases of False Reporting and Concealment of Shipborne Packaged Hazardous Cargo in the Jurisdiction of Tianjin Port in 2020

2. Research Status and Purpose of Misdeclaration of Dangerous Cargos in Containers

Zhang Xiaohua [3] points out that the safety of Dangerous Cargos transportation is closely related to the public's vital interests. On one hand, market entities need to comprehensively consider factors such as physical and chemical properties, potential dangers, environmental impact, and social concerns to select appropriate transportation tools and routes. On the other hand, it is essential to strengthen government supervision and guide market entities to shift their safety concepts from "requiring safety" to "demanding safety," implementing the production policy of "safety first, prevention foremost," and creating a safe environment for the transportation of Dangerous Cargos. The rapid development of the economy, society, and science and technology has created market and technological conditions for the widespread use of Dangerous Cargos. The production and use of Dangerous Cargos are becoming more extensive, and new varieties are constantly emerging. From industrial explosives to daily gas, Dangerous Cargos have become closely related to people's daily lives. In recent years, hazardous material accidents have occurred frequently, such as the Tianjin Port "8.12" explosion (2015), the Quanzhou Port "11.04" C9 leakage (2018), the Jiangsu Xiangshui "3.21" explosion (2019), and the Guangxi Beihai "11.2" fire at the China National Petroleum Pipeline Network Group Beihai LNG Company (2020). All these accidents involved inadequate supervision, causing significant casualties and property losses, sparking widespread concern in society.

Peng Jianhua and Geng Hong [4] propose countermeasures to prevent and reduce the

misdeclaration and false reporting of Dangerous Cargos in containers in China's waterway transportation. Based on the principles of similar safety systems, they investigate and analyze common scenarios and reasons for the misdeclaration and false reporting of Dangerous Cargos in containers in waterway transportation. They explore solutions to the problem of misdeclaration and false reporting of Dangerous Cargos in aviation, railway, and road transportation, drawing on their experience and combining with the reality of waterway transportation. The research results show that aviation, railway, and road transportation of Dangerous Cargos have a strong similarity to waterway transportation in terms of the problem of misdeclaration and false reporting. Aviation, railway, and road transportation of Dangerous Cargos have accumulated rich experience in administrative law enforcement, regulatory systems, safety training, information disclosure, data analysis, and whistleblowing management, which can provide a reference for solving the problem of misdeclaration and false reporting of Dangerous Cargos in containers in waterway transportation.

Zuo Dehua [5] analyzes some common violations in ships carrying Dangerous Cargos containers from the perspective of shipowners and proposes targeted preventive measures to avoid shipping risks and reduce accidents. Young K S et al. [6] investigated the risks of storing dangerous goods in ports, and subsequently, the Ministry of Environment compiled a guide for the safe management of Dangerous Cargos in ports through inspections conducted by the Ministry of Environment.

There are certain studies on the misdeclaration of Dangerous Cargos in containers at home and abroad, providing norms and guidance for ensuring transportation safety. However, there are still many problems: One of the issues in the development of research at home and abroad is insufficient technical level. In the design and development process, some enterprises may lack the necessary technical strength and professional knowledge, leading to unscientific and unreasonable design schemes that cannot meet the requirements of transportation safety. In such cases, Dangerous Cargos may leak or explode during transportation, posing a serious threat to personnel and the environment. Second, there is a lack of supervision and standards. In some regions, there is a lack of effective supervision and standards for the design and development of Dangerous Cargos containers, allowing companies to operate freely and neglect safety requirements. Additionally, there is a lack of transparency in information, especially in the domestic field of container misdeclaration in cargo transportation. It is necessary to further strengthen relevant research work to fill knowledge gaps and provide more effective solutions to the problem of container misdeclaration.

Therefore, the objectives of this study are:

(1) To uncover and understand the current situation and scale of misreporting of hazardous goods in containers. Through in-depth research, we aim to gain insights into the frequency, scale, industries, and regions involved in such misreporting, providing accurate data and information for relevant departments and institutions.

(2) To analyze the risks and impacts of misreporting hazardous goods in containers. By thoroughly examining these cases, we aim to reveal the potential risks and impacts on the safety of ports, ships, cargo, personnel, and the environment, thus enhancing public awareness and vigilance regarding this issue.

(3) To explore the reasons and motivations behind misreporting hazardous goods in containers. Through studying the reasons and motivations, we aim to understand the logic and dynamics behind these actions, providing a basis for formulating targeted preventive measures.

(4) To propose effective preventive and countermeasures. Based on the analysis of the misreporting causes and risks, we will put forward and discuss effective preventive and countermeasures, including strengthening regulatory and law enforcement efforts, improving information sharing and collaboration mechanisms, and enhancing the application of technological means and equipment, to reduce the risks posed by misreporting hazardous goods in containers.

(5) To promote international cooperation and information sharing. Through studying the issue of misreporting hazardous goods in containers, we aim to foster international cooperation and information sharing, enhancing international coordination and collaboration to jointly tackle the challenges posed by this issue.

3. Analysis of Reasons for Concealing Information on Hazardous Cargo in Containers

(1) Profit-driven motives: Some enterprises or individuals may choose to deliberately conceal hazardous cargo information to evade regulation, pay lower fees, or avoid penalties. They may believe that evading regulation is a more economical approach.

(2) Lack of knowledge: Some individuals may have insufficient understanding of the definitions and regulations concerning hazardous cargo. They may be unaware that the items they are transporting fall into the category of hazardous cargo, and they may be unaware of relevant laws and regulations. This can lead to concealment of hazardous cargo information.

(3) Indolence and neglect: Some enterprises involved in container transportation may not pay attention to or neglect hazardous cargo information due to poor management or negligent staff. This can result in concealment of hazardous cargo information.

(4) Ineffective enforcement of regulations: In some regions or industries, there may be cases of insufficient regulation and enforcement of laws and regulations. Enterprises may perceive this as an opportunity to evade relevant regulations, thus concealing hazardous cargo information.

To address these concealment behaviors, relevant departments can strengthen training for staff, enhance awareness and vigilance regarding hazardous cargo, strengthen supervision of enterprises, and increase penalties for concealment behaviors. These measures can help reduce the occurrence of such behaviors. At the same time, it is also necessary to strengthen global cooperation, jointly formulate stricter regulations and standards for hazardous cargo transportation, and eliminate the concealment of hazardous cargo in containers.

4. Risk Analysis of Concealing Information on Hazardous Cargo in Containers

(1) Safety Risks

Concealing information on hazardous cargo in containers may lead to safety accidents during transportation, loading and unloading, and storage, such as fires and explosions, posing a serious threat to personnel and facilities.

(2) Environmental Risks

Concealed hazardous cargo may cause environmental pollution, affecting ecosystems and human health, posing a serious challenge to environmental protection.

(3) Legal Risks

Concealing information on hazardous cargo in containers violates international trade laws and regulations, which may lead to legal proceedings, economic losses, and damage to the reputation and interests of enterprises.

5. Discussion on Preventive Measures

(1) Improvement of Policies and Regulations: Relevant department should establish a comprehensive legal and regulatory system that clarifies the relevant regulations and responsibilities for the transportation of hazardous cargo in containers. Strengthen the crackdown on concealment behaviors and increase the cost of illegal actions.

(2) Upgrading Inspection Technologies: The Department of supervision should leverage advanced technologies such as X-ray machines, infrared scanning, etc., to conduct thorough

inspections of containers, minimizing the occurrence of concealment behaviors. Utilize cutting-edge IoT, sensor technology, and data analysis tools to achieve real-time monitoring and tracking of container cargo, enhancing the ability to identify and oversee hazardous cargo.

(3) Strengthening Oversight Management: Traffic department should intensify supervision efforts during the transportation of hazardous cargo containers, conducting comprehensive verification and comparison of cargo information to ensure the authenticity and accuracy of declared item names, types, and other information. Enhance cooperation in international trade regulation, establish robust information-sharing mechanisms and risk warning systems, and intensify the crackdown on concealment behaviors of hazardous cargo containers. Locating hazardous cargo concealed in ordinary containers is akin to "finding a needle in a haystack." As [7] points out in his research, preliminary data collection is crucial in identifying concealed hazardous cargo containers among millions of standard containers.

(4) Enhancing Awareness and Capabilities of Staff: Relevant enterprises should conduct relevant training and education to raise staff's understanding of hazardous cargo transportation and risk awareness, strengthening their safety consciousness and sense of responsibility.

(5) Strengthening International Cooperation and Information Sharing: The government should foster cooperation with other countries and international organizations, share information resources, and jointly combat the concealment of hazardous cargo in containers.

6. Conclusion and Prospect

Through the analysis of risks and discussion of preventive measures concerning the concealment of hazardous cargo in containers, this article has proposed a series of effective countermeasures and suggestions. In the future, there is a need to further strengthen international cooperation, refine regulatory policies, promote technological innovation, and jointly address the challenges posed by the concealment of hazardous cargo in containers, thereby ensuring the safety and sustainable development of international trade.

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