

The Research on the Ship Pollution Prevention and Control in Hainan Province

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Abstract: Based on regulations and strategies of the states for ship pollution prevention, this paper systematically analyzes the main sources of current ship pollution and its hazards combined with the special island conditions in Hainan Province. It thoroughly summarizes the management measures and work achievements of ship pollution prevention and control in Hainan Province in recent years. It objectively sorts out the existing problems and challenges in ship pollution prevention and control. This paper puts forward some countermeasures and suggestions for further optimizing ship pollution prevention and control, thus this paper can provide a certain reference value for speeding up the new journey of building a strong marine province and continuously strengthen the comprehensive prevention and control of ship pollution.

Keywords: Hainan province, ship pollution prevention, countermeasures, suggestions

Introduction

It is also increasing the impact of ship activities on the marine environment with the development of the shipping industry. The marine ecological environment and ship pollution are highly destructive and conductive. It will cause serious harm to the marine ecological environment, marine life, fishery resources, coastal beaches, ports, docks and other fields. It will also cause certain harm to human health.

1. Overview of Ship Pollution and Prevention System

1.1 Overview of pollutants from ships

Through summarizing and combing, the pollution sources generated by ships mainly include oil sewage produced during the voyage of ships and oil pollution caused by the transportation of petroleum products, toxic and harmful wastewater produced in the process of shipping chemicals and hazardous chemicals, pollution caused by water and ballast water of ship machinery and equipment, the domestic garbage produced by ships during navigation and docking, ship accidents produce leakage products.

At present, marine pollution sources have the characteristics of wide pollution sources, large pollution diffusion, and strong pollution persistence. According to the "Marine Ecological Environment on China report in 2020", the total amount of sewage from 422 straight-discharged sea pollution sources in China will reach 7.129 billion tons and the amount of ocean dumping will be 261.57 million/m³. Also, the surface floating garbage will reach 27/km² and the beach garbage will reach 216,600/km² in 2020. The amount of pollutants produced by marine and land activities is large and wide, and it is difficult to be naturally digested after being merged into the ocean. It not only directly affects marine life but also has a potential impact on us through bio-concentration.

1.2 Characteristics of ship pollution and the resulting hazards

After analysis and induction, the pollution caused by ships has the following characteristics:

1.2.1 Diversity of pollution sources.

The oil pollution, toxic and harmful wastewater pollution, air pollution and solid waste pollution produced in the process of navigation, production and life of ships are diverse, especially the oil pollution is most affected by the arbitrary and accidental discharge of ships.

1.2.2 Mobility of pollution diffusion.

Ship pollution is different from land environmental pollution because it is more difficult to control than traditional pollution sources. And, ships always travel to and from various regions and ports. The mobility of polluted seawater leads to high diffusivity of polluted seawater.

1.2.3 Infringement of pollution.

Ships are often caused by human factors, and their pollution behaviors are usually intentional or negligent. The consequences of such pollution are characterized by the infringement.

2. Relevant measures and effects of ship pollution prevention in Hainan

Province

Hainan Province has a vast sea area with a coastal area of about 24,000 square kilometers. Its natural conditions bring convenience to the development of the marine industry and shipping industry. In recent years, the maritime administration, ecological environment, and other departments of Hainan Province have promoted the construction of the National Ecological Civilization Experimental Zone under the correct leadership of the government, comprehensively built a ship pollution prevention system, and made positive contributions to serving the green rise of Hainan. The main practices and results are as follows:

2.1 The level of comprehensive control of ship pollution in the province has been continuously improved.

Hainan Province should focus on the remediation of ship water pollution, and comprehensively promote the classification and supervision mechanism of ship water pollutants. Moreover, it should actively build a three-dimensional oil spill monitoring network in coastal waters, expand the application of scientific and technological means, research and deploy marine oil spill monitoring radar and other pollution monitoring equipment on large and medium-sized patrol boats, and comprehensively improve the marine monitoring and early warning capabilities of key areas, key time periods and key ships. It needs to establish and improve the reception, transfer and disposal mechanism of port and ship pollutants in key ports such as Haikou Port, Sanya Port, Qinglan Port and Ledong Port, and vigorously implement the construction of reception, transfer and disposal facilities of port and ship pollutants. At present, Haikou, Sanya, Yangpu, Bashuo, and other ports have established and implemented the joint bill system, and other port-related work is being actively promoted. In 2019, the ship pollutant receiving unit received and disposed of 2,546 cubic meters of oily sewage, 398 cubic meters of domestic sewage, 8,677 cubic meters of garbage, and 11 cubic meters of chemical tank washing water according to the requirements of the joint billing system.

2.2 The supervision system and mechanism of ship pollution prevention and

control in the province have been continuously improved.

Hainan Maritime Safety Administration issued the "Implementation Plan for Comprehensive Control of Ship Pollution" and other documents urging the registered shipping enterprises in the jurisdiction to implement the main responsibility of ship water pollution prevention, strengthened the supervision and inspection of water pollution prevention, and control for ships entering and leaving the jurisdiction, established a long-term supervision mechanism for ship water pollution prevention and control, and strengthened the management of pollution prevention facilities and equipment for registered ships in the jurisdiction. Moreover, it should promote the whole chain and closed-loop management mechanism of ship water pollutants from generation, reception, transfer to disposal, strengthen cooperation and linkage with other relevant departments, and improve information sharing, and form joint supervision.

2.3 The province's emergency response capability to prevent and control ship pollution risks has been continuously improved.

Provincial Maritime Safety Administration promulgated the Emergency Plan for Ship Pollution Emergencies of Hainan Maritime Safety Administration, which laid the foundation for effectively dealing with environmental emergencies such as oil spills from ships at sea. Vigorously promote the construction of the national oil spill emergency equipment library and the allocation of oil spill emergency facilities for port and shipping enterprises. Docks and sewage cleaning companies in the province have completed the allocation of some offshore oil spill emergency facilities, such as more than 50,000 meters of oil booms and 48 oil receivers, to provide a basic guarantee for offshore oil spill emergency disposal; They build maritime supervision bases in Haikou, Sanya, Qinglan and Yangpu, and comprehensively improve the oil spill emergency response capability of key ports and surrounding waters. Promoting the construction of emergency response teams and establishing emergency response teams of over 500 port and shipping enterprises is needed. Also, enhancing the actual combat capability of emergency response teams is important.

2.4 The overall appearance of the marine ecological environment in the province has been continuously improved.

Through the joint efforts of party committees and governments at all levels and relevant departments, the marine ecological environment in Hainan Province has been effectively improved in recent years, and great progress has been made in ship pollution prevention and control. According to the Bulletin of China's Marine Ecological Environment 2020, the area of the South China Sea with inferior four kinds of water quality in 2020 decreased by 1,820 square kilometers compared with the same period of last year. The proportion of the area with excellent (first-class and second-class) water quality in the coastal waters of Hainan province reached 99.88%, and the proportion of the points with first-class sediment quality in the coastal waters was 100%. The water quality of national key bathing beaches is 100%. The environmental quality of major coastal tourist areas, key industrial parks, and mariculture areas all meet the environmental protection requirements of marine functional areas.

3. Countermeasures and suggestions for further optimizing the prevention and control of ship pollution in Hainan Province.

Since the "Thirteenth Five-Year Plan", the marine ecological environment quality in Hainan Province has been excellent but the environmental quality in some sea areas is poor and the marine garbage pollution problem is prominent. There are some problems and challenges in the prevention and control of ship pollution and they are mainly as follows. First, there are

still some obstacles in the supervision and inspection of ship pollution, and the construction of ship pollution prevention related personnel team is not comprehensive enough. Second, some shipping companies still have insufficient awareness of the main responsibility and equipment for prevention and control, which makes it difficult to deal with pollution incidents effectively in the first time. Third, there are shortcomings in the construction of marine environmental infrastructure. Based on the above problems, some countermeasures and suggestions are put forward to further optimize the prevention and control of ship pollution. Firstly, Hainan province should strengthen classified prevention and control of marine pollution, and enhance the capability of preventing and controlling pollution of ships in ports. Secondly, Hainan Province should strengthen the capacity of pollutant storage, transportation and supervision of fishing ports and fishing boats, and then carry out comprehensive environmental remediation around key ports and other areas, such as plastic waste treatment, sewage collection and treatment, build or improve the environmental protection infrastructure of fishing ports, establish and improve the environmental protection system, and strengthen the publicity of environmental protection awareness. It is a key factor to build supporting facilities for the storage and transportation of pollutants from fishing boats and to form a whole chain supervision system for the production and storage and transportation of pollutants from fishing boats. It is a task that can not be ignored in Hainan Province to improve the storage and transportation facilities of pollutants in fishing boats and enhance the capacity of collecting, storing and treating pollutants in fishing boats. It is an effective measure in Hainan Province to explore the whole chain supervision system for the production, storage and transportation of pollutants from fishing boats and to strengthen the monitoring of pollutants during fishing boats in offshore operations. Hainan Province should actively explore the implementation of large and medium-sized fishing boats that basically have the capacity to store pollutants on board, and form a monitoring system for the storage and transportation of pollutants in fishing boats. Third, accelerating and improving the risk early warning, prevention, control, and supervision system is essential. Hainan province should continue to strengthen the construction of early warning and forecasting facilities for marine pollutants, and strictly carry out special law enforcement inspection on key environmental risk sources. Strengthening the capacity building of risk monitoring and risk prevention is required. And, establishing and improving the degree of joint prevention and control of marine environmental emergencies are essential. Hainan province also needs to improve the dynamic monitoring platform and monitoring system for marine environmental risks. Hainan province can improve the emergency response system of ship pollution emergencies, strengthen the emergency response system of provincial-city-county-ship-related enterprises for environmental emergencies, and incorporate the emergency response force of ship pollution control into the unified deployment system for emergency response forces in the whole province. Furthermore, compacting the main responsibility of shipping enterprises in an all-round way and strengthening the overall coordination of the municipal and county (district) governments on the third-party pollution-cleaning companies and port emergency resources are necessary. Hainan province also should strengthen the construction of emergency response systems for marine environmental emergencies such as oil spills and hazardous chemicals leakage of port ships. Fourthly, studying and introducing advanced technology concepts of ship pollution prevention plays an important role. Hainan province should learn to introduce advanced technology and facilities related to ship pollution prevention, and invest more energy in research related to pollution prevention. Relevant institutions in Hainan Province should have special acceptance to regularly check whether related equipment and equipment meet the standards. Hainan province should strengthen the inspection and management of advanced equipment and high-end equipment for ship pollution prevention in the province, avoid unqualified equipment and use, improve the application of AIS, VTS, and other advanced systems, and further reduce the occurrence of maritime traffic accidents.

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