International Journal of Recent Engineering Research and Development (IJRERD)
ISSN: 2455-8761
www.ijrerd.com || Volume 02 – Issue 07 || July 2017 || PP. 193-197

The prevention of pollution from ship and shipping operation

Xuan Phuong Nguyen, Phuoc Quy Phong Nguyen, Van Huong Dong
Ho Chi Minh University of Transport
No.2, D3 Road, Binh Thanh District, Ho Chi Minh city, Vietnam

Abstract: By 2020, the Vietnamese Government will complete the law on pollution prevention and management in marine navigation. This plan aims to implement fully the provisions of Appendices III, IV, V and VI of the International Convention for the Prevention of Pollution from Ship of which Vietnam is a member in order to ensure the legitimate rights and interests of the coastal state, the port State, the flag State.
Keywords: maritime, pollution prevention, shipping operation

1. Introduction

Environmental experts say that vessels are a major source of pollution to the environment. Especially in port cities and coastal areas because of their use of poor quality bituminous fuels, which have high levels of emissions such as nitrogen oxides (NO), sulfur dioxide (SO2). In addition, these wastes also produce acid rain and tiny particles of soot in the air.

Ship operations (including fishing vessels and cargo ships) are one of the artificial sources that contribute significantly to air pollution.

Figure 1. Shipping operation is main pollution for ocean

According to US government statistics, ships are responsible for two-thirds of SO2 emissions in the transport sector in 2002, with a lack of control measures that could lead to up to 98% By 2020.

Therefore, the US government has set new emission standards for large ships. Accordingly, from 2015, new ships will have to reduce 96% SO2 compared to today. Similarly, ships built after 2016 will have to cut 80% of their NO emissions.

The European Union's report on the impact of ship emissions on the health of the European Union shows that toxic emissions from ships are killing about 39,000 people each year in Europe, of which He suffered the most heavy damage because of the long sea route and also busiest trade, the bustling passage.

The study also showed that the average life expectancy of residents in the West Coast of England will be reduced from 20 to 30 months from 2020.

The EU is currently planning to establish the first low-emissions areas, minimizing the pollution from thousands of cargo ships moving through the seas each year. The EU will accept that governments support maritime companies to meet strict SO2 standards. In support of EU solutions, the International Maritime Organization (IMO) agrees to limit the SO2 content of the ship's fuel to ships passing through the controlled emissions area from 2015.

Meanwhile, shipping companies will face the potential to meet lower SO2 emissions and cleaner fuel costs, which have raised shipping rates. The EU accepted IMO's proposal to reduce the sulfur content of marine

fuels, with the sulfur limits for all ships cutting to 0.5% by 2020 (currently at 3 , 5%). The limits for all ships in the Baltic and North Sea (known as the control area emissions), will be cut to 0.1% from 0.5% starting from 2015. Marine operators can also use alternative treatment technologies to clean the emissions of ships to minimize pollution.

Currently, Vietnam has over 1,700 transport vessels, with the number of fishing vessels of about 130,000, corresponding to the amount of gasoline fuel consumed about 4 million tons per year. It can be said that this is the source of pollution to the sea, coastal areas and many places, seriously affecting the marine ecosystem, destroying marine resources, endangering human health.

The quality of Vietnamese ships is not high, many vehicles are too old, obsolete, low fuel burning efficiency and no exhaust gas treatment system ... so they emit more toxic gases such as SO2, CO2 , CO, NO2, CxHy ... The quality of Vietnamese ships is not high ... so they emit more toxic gases.

Figure 2. A container ship emission equal to 50 million of cars

On the other hand, oil spills are also considered to be released into the environment due to natural leaks from geological structures that contain oil under the seabed caused by crustal activities such as earthquakes. Spilling out naturally several hundred liters or more can be considered as an oil spill.

Oil is a special form of pollution because it is not water-miscible and has a lighter weight than water. As a result, the oil overflows to create a slurry of oil that floats on the surface of the water. The impact of an oil spill on an ecosystem depends on factors, including:

The size and nature of the oil spill (a large spill of oil will instantly spread over the surface of the water faster than a leak)

Physical and chemical properties of each oil; Oceanographic conditions (flow, convection tide)

Water condition (wind and wave) at the time of the oil spill

The nature of the sediment in the affected ecosystem (which will determine the ability of the oil to penetrate the substrate)

The timing of the oil spill season is related to the breeding season of the species.

Because of the transversal fluidity of the water surface, the areas particularly vulnerable to an oil spill are areas in the coastal zone between high tide and tide, including coral reefs (particularly the coral reefs). Fringes along the coast and continental sediments of the continental part), mangroves, marshy habitats, mud, low sandy soil and seaweeds. When spilled, oil can affect the environment in many different ways. At first, it is natural that oils can scatters organisms and substrates so they come in contact with toxic chemical components. It usually causes death to the creatures. In the early stages of an oil spill, the oil's toxicity to marine organisms is related to the amount of water-soluble aromatic compounds (alkyl benzenes, naphthalene) in the oil. Light oils are more likely to be toxic than heavy oils and it is rapidly dispersed, which also means that oil contact occurs quickly. Therefore, light oils spilling out near fish farms, shrimps, crabs ... can cause extensive damage. Average oils usually contain a large proportion of water-soluble compounds and are relatively easily dispersible in water. These can have a major impact on marine ecosystems.

Figure 3. Oil spill due to shipping operation

Figure 4. Oil slick in Binh Dinh, Vietnam

2. Vietnamese Government policies

Oil and oil spills despite the 0.1mg / l oil content in water can also cause zooplankton mortality and greatly affect juveniles and larvae of marine organisms. However, the seawater of Hai Phong coastal zone has the oil concentration in the water regularly exceeding the permitted limit of 100-300%. A recent report from the Hai Phong Department of Natural Resources and Environment showed that the area with high oil content is the water surface of Hai Phong port with an oil content of 0.3-0.6mg / l, exceeding the permitted level. The coastal area of Hai An district, Kien Thuy district, average oil content of about 0.6mg / l. Bach Dang estuary concentration of oil tends to increase, especially in the Department of Oil.

It is only marine pollution in a large seaport where most of the fishing boats, cruise ships, military vessels regularly wash ships, dispose of engine oil, ballast water, discharged waste water directly Oil into the sea. Most types of vessels do not have oil and waste water collection and treatment facilities, while Marpol conventions for ships entering and leaving ports must ban all waste water discharges into port water.

Nationwide, approximately 4 million tons of petroleum fuel from more than 1,700 transporters and about 130,000 fishing vessels a year are responsible for pollution in coastal and coastal areas and in many places. Focus on marine ecosystems, destroying marine resources, endangering human health. Particularly in Binh Dinh province, there are nearly 7,000 vessels, of which 2,500 are fishing offshore. The implementation of Decree 67 of the Government will help fishermen in 28 coastal provinces gradually modernizing the fleet of offshore fishing, exploiting the strength of the ocean tuna fishing to enrich the sea. But the technology of shipbuilding, whether fishing or shipping, needs to be renewed with new green maritime standards, reduced engine emissions - ship engines, and incinerators, are rarely mentioned. The current technology of shipbuilding, petroleum fuel is used quite heavily, causing a considerable amount of waste oil in construction stages. All major pollutant emissions to coastal waters, oil pollution and sediment heavy metal contamination in shipyard and shipyard areas. They alter the physical and chemical nature of seawater, bad effects on marine fauna and

flora, salt production, aquaculture and marine tourism. Renewal of shipbuilding technology requires the installation of advanced equipment, especially pollution prevention equipment on board, to minimize the pollution caused by maritime and shipbuilding activities.

Reducing toxic emissions to the sea to limit ocean acidification impacts is a global current issue. According to recent scientific reports, global warming is causing serious damage such as heat, heavy rain, ocean acidification and sea level rise. Ocean acidification is the phenomenon of continuous decrease of pH in the Earth's oceans due to the absorption of carbon dioxide by human action into the atmosphere. The means of shipping - especially old, backward ships emit more toxic gases due to low fuel burning efficiency and no exhaust gas treatment system ..., is a very polluting source. Great for the marine environment. Vietnam should have policies, normative documents, regulations and standards for reducing emissions, especially greenhouse gas emissions, for fishing vessels and transport ships, which can be controlled. Good emissions from ships in marine operations.

Emission control areas need to be researched, built and established in seaports close to sea areas of special ecological value, such as Quang Ninh - Hai Phong, Vung Tau - Ho Chi Minh City. . There are large sized vessels with emissions in excess of the permissible limits that will not be docked or under special pilot regimes. The policy to levy tolls on ships should also be enacted. It is necessary to blame the waste generator, to license operation to the certification of ecological ships, seaports, ecological enterprises.The Plan of Implementation of Appendices III, IV, V and VI of the MARPOL Convention - International Convention for the prevention of Pollution from Ships, has been approved by the Prime Minister.

This plan aims to fully and fully implement the provisions of Appendices III, IV, V and VI of the International Convention for the Prevention of Pollution from Ship (MARPOL Convention) of which Vietnam is a member. To ensure the legitimate rights and interests of the coastal state, the port State, the flag State. According to this plan, from 2016 to 2020, the Government will review and improve the system of legal documents on environmental pollution prevention caused by the ship and management of waste arising from ships in operation. Marine navigation, offshore oil and gas exploration and exploitation, investigation and detection of violations and maritime accidents in order to fully and comprehensively implement legal documents and regulations of Appendices III, IV, V and VI of the MARPOL Convention.

Annually implement the provisions of Annexes III, IV, V and VI of the MARPOL Convention, including the inspection and control to fulfill the responsibility of the State for vessels flying the Vietnamese flag. , The responsibility of the coastal state and the responsibility of the port state. In addition, capacity building for the inspection and certification of vessels carrying the Vietnamese national flag, conducting marine casualties investigations, timely handling of violations, including Both the training of seaport State Inspectorate officers, the State Port State Inspection (PSC) and the inspectors shall conduct the assessment, inspection and control of the ship's systems and techniques.

From 2016 to 2030, study mechanisms and policies for investment in the construction and upgrading of waste reception systems at seaports in accordance with MARPOL Annex III, IV, V and VI; To study and apply the equipment for inspection and control of waste arising from ships. Assessment of current environmental pollution caused by the seagoing vessel, the situation of waste management at Vietnamese seaports and the extent to which they meet the requirements of the MARPOL Convention; Study, develop and propose the establishment of environmental protection measures to prevent pollution caused by ships in Vietnamese waters to submit to the International Maritime Organization through; Propaganda, dissemination, training, training for organizations and individuals involved in the implementation of the provisions in Annex III, IV, V and VI of the MARPOL Convention.

Strengthen cooperation with international organizations in the maritime field and other countries in the region to exchange information, provide technical assistance, train civil servants, civil servants, officers and boats. Membership and transfer of technology related to the implementation of the MARPOL Convention; Promote bilateral cooperation with the States Parties to the Convention in order to consult the experience and take advantage of their technical assistance and assistance.

It can be said that this is a new step in the prevention of pollution caused by ships of Vietnam. The MARPOL Convention is one of the key conventions for the protection of the marine environment and Vietnam has acceded to the Convention since 1991. The Convention provides provisions to prevent pollution caused by the carriage of goods by oil. Mine, dangerous goods, toxic, as well as water, garbage and emissions from the ship. As the relentless development of science and technology as well as the environmental issues that arise in the maritime industry's practices (oil spills, emerging pollution problems, etc.) The technical requirements of MARPOL 73/78 have been continuously amended and amended. Up to now, the MARPOL 73/78 has 6 appendices detailing the relevant contents.

3. Conclusion

The Vietnamese government has set up very specific policies to contribute to the protection of the marine environment, prevention of pollution caused by the ship. From 2016 to 2030, study mechanisms and policies for investment in the construction and upgrading of waste reception systems at seaports under the provisions of Appendices IV, V and VI to the MARPOL Convention; To study and apply the equipment for inspection and control of waste arising from ships. It is necessary to assess of current environmental pollution caused by the seagoing vessel, and the situation of waste management at Vietnamese seaports and the extent to which they meet the requirements of the MARPOL Convention. On the other hand, it needs to study, develop and propose the establishment of environmental protection measures to prevent pollution caused by ships in Vietnamese waters to submit to the International Maritime Organization through. Propaganda, dissemination, training, training for organizations and individuals involved in the implementation of the provisions in Annex III, IV, V and VI of the MARPOL Convention is considered to strengthen cooperation with international organizations in the maritime field and other countries in the region to exchange information. The Vietnamese government provide technical assistance, train civil servants, officers and staff and officers Membership and transfer of technology related to the implementation of the MARPOL Convention; Promote bilateral cooperation with the States Parties to the Convention in order to consult the experience and take advantage of their technical assistance and assistance.

References

[1] http://stnmt.binhdinh.gov.vn/newsdetail.php?newsid=261&id=37
[2] http://www.mt.gov.vn/moitruong/tin-tuc/1091/45994/ngan-ngua-o-nhiem-tu-tau-bien--chat-thai-phat-sinh-do-hang-hai.aspx
[3] http://vpcp.chinhphu.vn/Home/Thuc-hien-Cong-uoc-quoc-te-ve-ngan-ngua-o-nhiem-do-tau-gay-ra/20165/18594.vgp
[4] https://moitruongviet.edu.vn/moi-truong-bien-dang-dan-bi-o-nhiem/
[5] http://www.csg.com.vn/news-details.aspx?page=2013
[6] http://kinhtevadubao.vn/chi-tiet/221-5890-ngan-ngua-o-nhiem-do-tau-bien-gay-ra.html
[7] http://www.vinamarine.gov.vn/Index.aspx?page=detail&id=1195
[8] http://giaoduc.net.vn/Xa-hoi/Chat-thai-tau-bien-gay-anh-huong-tram-trong-toi-moi-truong-post167862.gd