Original Research Article

# Marine Environmental Protection

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***ABSTRACT***

The sea is the hometown of life, the ocean is closely related to human beings. The ocean accounts for 70.8% of the Earth's area. It absorbs heat from the sun and releases heat into the atmosphere to regulate the climate. Therefore, the climate in the coastal areas is suitable and the environment is beautiful. Since ancient times, the world is densely populated. Forty percent of people live in coastal areas. American Oceanographer Silesia Earl said that our planet is characterized by the ocean's dominating point, weather and climate is also controlled by the ocean-like marine species of the crown and the world, if the ocean changes, the Earth the characteristics will also change. Environmental problems have been plagued by human development problems, in the face of many environmental problems, human development, you need a guiding ideology to avoid causing more difficult to save the environment damage and this is the idea of sustainable development.

***KEYWORDS:*** Benzoxazine; Dielectric properties; Copolymerization; Modification

## Introduction:

Environmental problems are a complex problem faced by mankind, and it is difficult to make them clear in the limited space here. It is mainly divided into ecological damage, environmental pollution and global warming, ozone damage, acid rain and other global atmospheric environmental problems. There are other more prominent aspects of environmental issues such as energy and resource issues, marine pollution problems, transboundary movement of hazardous wastes, urban environmental problems, water crisis, loss of biodiversity, and so on. The following is an introduction to marine pollution.

Marine environmental problems include two aspects: First, marine pollution, that is, pollutants into the ocean, more than the ocean's self-purification capacity; Second, marine ecological damage, that is, under a variety of human factors and natural factors, the marine ecological environment has been destroyed

## 1. 1 Marine pollution

The vast majority of marine pollutants in the land on the production process. Coastal activities, such as dumping of waste and port construction, are also included in the coastal waters of pollutants. Contaminants enter the ocean, pollute the marine environment, endanger marine life, and even endanger human health.

Wastes from industrial production are the main source of marine pollutants, which are concentrated near large ports and industrial cities. In 1953-1970, the mercury pollution incident in Minamata Bay, Kyushu, Japan, was due to the discharge of mercury-containing wastes during the production of organic products. These harmful substances flow into the ocean, gradually in the fish and shellfish enrichment. Eventually leading to more than 100 serious poisoning, and has died.

Nuclear water plants and factories discharge cooling water, water temperature is high, into the estuary or sea, often to the impact of marine life. The pesticides applied to the farmland flow into the river with the rain, or with the soil particles in the vicinity of the estuary siltation, and ultimately into the ocean. Sporadic offshore oil platforms and tanker accidents, causing oil spills and spills, causing marine pollution. With the rapid development of coastal economy, coastal waters have been more and more serious pollution, the sea area of environmental quality decreased significantly,

the ecological environment deteriorated, and biological resources and human health have a detrimental effect. Pollution in coastal waters has become an environmental issue of concern to countries around the world, particularly countries like China that have a long coastline and a number of gulf. The development of marine economy is also facing the harsh marine natural environment. Marine disasters directly affect the scale, speed and efficiency of marine economy, and accurately predict the occurrence and development of marine disasters and what kind of disaster prevention, disaster prevention and mitigation measures should be taken. Become a serious concern about the environmental issues. In order to develop the spatial resources of the space, minerals, fishery and energy in the ocean, it is necessary to carry out various construction projects at sea. In the current development of science and technology, the scale of construction is increasing, and these large-scale engineering construction and marine environment the interaction between the two will also be an important issue in the development of the ocean that should cause special attention. In order to meet the rapid development of China's marine economy, the deteriorating marine environment, the frequent occurrence of marine disasters and the development of marine engineering to large-scale development, the development of offshore oil and gas fields, and the need for the subsequent effects of coastal development. It is necessary and urgent to carry out research on major marine environment and protection.

In this regard, the focus of the need to carry out research topics in general there are three categories. The second category is the study of marine engineering facilities disaster prevention, disaster prevention and mitigation. The third category is marine engineering and marine environmental engineering and marine environment. The second category is the study of the mechanism and laws of the marine environment. Measures and Countermeasures of Interacting Suction.

## 1.1. Mechanism and Regularity of Marine Environmental Characteristics on Various Pollutants

Wave, flow, wind, light, temperature, humidity and physical factors (diffusion, volatilization, sedimentation, adsorption, and so on) are studied on the basis of marine hydrodynamic research on the migration, diffusion and transformation of various pollutants. Release, chemical factors and biological factors, reveal the movement and evolution of pollutants under complex ocean conditions, and establish the ocean water quality prediction and forecasting model. In addition, in recent years, in China's coastal waters, red tide frequent. Therefore, in addition to strengthening the red tide monitoring and forecasting, but also should strengthen the establishment of red tide in the growth mechanism and development of the research work.

This study should be carried out by means of field observations, physical model experiments and mathematical modeling studies. As the on-site observation work is huge, and subject to many objective conditions, the data obtained often have many factors together, it is difficult to separate the one-factor influence, so often can only use it as a A water quality prediction model to test its feasibility and accuracy of an example.

It is a more effective method to establish the prediction model of marine water quality by mathematical simulation method. At present, there are many water quality forecasting models in China and abroad. These water quality forecasting models are based on the following models: water flow mathematical model; wave mathematical model; flow interaction model; pollutant migration in coastal waters Transformation mathematical model.

In the study of the mathematical model of water flow, a deep and average tidal current teaching model can be used for a wide range of sea areas. For areas with little effect on turbulence, the turbulence effect is not taken into account, and for areas with significant turbulence effects Area, you should consider the turbulence effect. In addition, the use of coordinate transformation, can be established to consider a complex terrain and the effect of the three-dimensional flow of the mathematical model, so as to better reproduce the actual sea area of the three-dimensional power characteristics. In the smaller waters, the mathematical model of water flow can be based on the N-S equation and the general k-(turbulence model), considering the effect of buoyancy on turbulence for the flow characteristics of water temperature and salinity stratified flow. The single-fluid mathematical model can also be simulated based on the basic concept of multi-fluid model, and the law of turbulent transport and the interaction between the two phases Simulating and establishing a two - fluid mathematical model of two - phase turbulent buoyancy stratified flow.

In the study of wave mathematical model, we can use BI-CGSTAB method to solve the algebraic equations obtained by elliptic gentle slope equation to improve the efficiency of solving. Starting from the wave development equation, we can derive a mathematical model for large-scale wave deformation problem. By introducing weakly nonlinear wave dispersion relation, the hyperbolic gentle slope equation can be considered effectively to consider the nonlinear effect of wave. The further study of the higher order equation can make the chromaticity of the equation from the water into the deep water to achieve very high precision, and improve the nonlinear precision of the equation, can be more accurate calculation of the deeper waters of the nonlinear characteristics of the wave.

For a wave field with free surface, a combination of the N-S equation and the wave energy balance equation, which can effectively simulate the free surface morphology, can be used to derive a parabolic gentle slope course that can be considered for the loss of wave energy. Regular wave and irregular wave break caused by wave height changes. The

coastal flow mathematical model can be established to simulate the wave height variation and the broken wave height, the wave increase and decrease water and the coastal flow.

In the case of the study of the wave-flow interaction model, a modified merged gentle slope model considering the influence of the flow can be used for the weak flow case. For the case of strong current, a model considering the effect of flow in the equation can be used. A new method of radiometric stress calculation can be established by using the formula of radiation stress and the variable to be obtained in the parabolic gentle slope equation. The method can simulate the wave radiation stress on the uniform slope of the larger area.

In the study of the mathematical model of pollutant migration and transformation in coastal waters, the depth-averaged two-dimensional stress-flux algebraic field model based on the N-S equation can be used to solve the problem of lateral shore discharge under asymmetric tidal current simulation. Based on the analysis of the physical, chemical and biological phenomena in the coastal environment, this paper analyzes the characteristics of the water pollution in the coastal waters, and starts from the three-dimensional turbulence model. In the momentum equation, The introduction of surface wind stress, the bottom of the shear stress and the role of Coriolis; in the transport equation to introduce the reflection of physical, chemical, biological and other effects of the source, sink, can establish a unified consideration of physical, chemical and biological processes It is an important scientific basis for environmental assessment, water quality planning, pollution control and water pollution engineering design. At the same time, it is necessary to determine the environmental capacity of the waters and develop the environmental protection strategy of the waters. A very important theoretical value and application prospects.

It should be pointed out that mathematical modeling is undoubtedly a very effective method in the study of marine water quality prediction and forecasting model, but whatever the mathematical model, the necessary parameters and boundary conditions needed in the model are the techniques of water quality model the key, directly affect the water quality model of scientific and predictive ability. And these necessary data cannot be obtained from the mathematical model itself, some can be obtained through on-site observation, but some of the most basic volume is to be through the basic mechanism of research can be obtained in this regard, the physical model of experimental research will be An effective means.

Advanced laboratory equipment capable of simulating marine dynamic factors, modern measuring instruments and test systems are the necessary conditions for carrying out physical model experiment. The spatial distribution and time course of the water particle velocity in the flow field can be obtained by further improving the vertical structure of the flow under the interaction of the non-destructive wave, the broken wave and the wave flow. The spatial and temporal variation of the concentration field under the interaction of wave and wave currents can be used to analyze the basic characteristics and diffusion coefficient of the diffusion of quantitative pollutant groups under wave and wave currents.

## 1.2. Precise forecast of marine disasters and research on disaster prevention, disaster prevention and mitigation of marine engineering facilities

Marine disasters include storm surges, waves, sea ice, tsunamis, red tide and coastal erosion. Since the 1990s, China's marine disasters caused the loss of tens of billions of dollars each year, is the world's most serious marine disaster one of the countries. The cost of investment in marine engineering structure is very high, in the event of damage, will cause significant casualties and huge property losses (such as the 1969 Bohai Sea ice down the 'sea two wells' platform, in 1989 the storm surge over 600 million yuan, 1991 DB29 Pipe ship in the South China Sea typhoon). At present, China's marine energy development and marine space utilization of the vast majority of activities in the coastal waters and very shallow sea. In order to ensure that the construction of the facilities in these areas to be able to secure service from damage, the primary problem is to understand the sea in the harsh and complex and volatile environmental factors. China's east Pacific Northwest, the number of typhoons each year accounted for 38% of the world, of which China may cause disaster typhoon 7-8 per year. When the typhoon landed in China or close to China's coastal areas, will be in the coastal areas of the storm surge, the formation of storm surge disaster.

In the northern waters of China (the Bohai Sea and the North Yellow Sea), due to the impact of the cold in winter, coastal areas are frozen every year, ice years are serious ice damage. If the lack of assessment of these marine disasters will bring huge losses. The formation of the ice and the accumulation of ice in the Bohai Sea not only give the structure a strong ice pressure, but also because of the vibration caused by ice shock, but also to the use of offshore platforms and bring great damage to the safety. The migration law and prevention and cleaning technology of oil spill in ice area have not yet been studied deeply. On the shore of a large area of ice and sea ice, in the waves, under the action of the tide will cause sea ice fracture, the scale of ice after the fracture directly affect its role in the structure. In the sea platform built in the Bohai Sea area, in order to resist the ice damage, often built positive and inverted cone structure type, ice row on the cone structure of the ice load and its dynamic interaction, but also has not yet solved the problem. In the study of sea ice mechanics, in addition to theoretical analysis and numerical simulation, experimental research is also an important means. In the experimental study, model ice can be used to freeze the model ice and non-frozen model ice, each of

which has its advantages and disadvantages, the development of these two technologies is a sea ice mechanics research in a subject.

China is a multi-seismic country, there are earthquakes in the sea. Strong earthquakes will likely be the main damaging load of offshore engineering facilities. If the damage to the structure (offshore platform, drilling vessel, artificial island, oil and gas pipelines) in the earthquake, in addition to its direct economic losses, the secondary disasters - fire, environmental pollution and other consequences Unable to imagine.

In recent years, the frequency and intensity of earthquakes in the Pacific Rim are on the rise, causing major disasters. The safety of large-scale offshore engineering under earthquake action, especially the basic principles of earthquake disaster prevention and the technical measures of shock absorption need to be studied seriously. The response and vibration mechanism of large marine hydraulic structures under the earthquake are further studied. Japan's Hanshin earthquake record data show that the earthquake and the resulting waves of the common role of water and shore buildings caused by the destruction is very serious. This kind of damage mechanism of hydraulic structures has been studied at home and abroad, and few studies have been carried out at home and abroad because of the limitation of test conditions. This is a new field in seismic research of offshore hydraulic structures.

Some of the following research will be necessary to solve the key technologies in seismic engineering of marine engineering facilities, such as seismic hazard analysis of offshore environment, design of ground motion parameters and spectral characteristics, multi-dimensional ground motion of strong earthquake and its spatial distribution , Seismic wave propagation characteristics and ground motion input mechanism; large-scale marine hydraulic structures in the sea area under the action of the earthquake, taking into account the surrounding water medium impact of structural vibration damage mechanism, vibration control, ground motion analysis model and input mechanism, non-linear Dynamic analysis and dynamic damage test; seismic performance of marine engineering buildings in nuclear power stations, dynamic interaction between offshore oil production platforms and underground oil pipelines and foundation soils, seismic stability of terminals and bank revisions; performance design and earthquakes of hydraulic structures in waters Fortification standards.

The damage is mainly due to the two aspects: the aging, fatigue, overload, internal damage (cracks), the settlement of the foundation and the physical and chemical damage of the environment (the damage) Low temperature, freezing and thawing and atmospheric erosion; the other is ill-designed or low standard design, poor construction quality, raw material failure, poor management and maintenance. Damage and accidents of large offshore hydraulic structures will have a significant impact on the development of the national economy.

Therefore, the development of some of the following technologies and methods will be very important. Such as considering the marine environmental load at the amplitude. Time and direction of the randomness of the structural safety caused by the uncertainty of the case, the active marine engineering structure of health diagnosis and assessment of the remaining reliability of the theory; structural health status and damage detection of new technologies and new methods; structural disease management The use of new materials, new technologies and new methods; marine engineering structure in a variety of complex marine environmental conditions (wind, waves, streams, ice and earthquakes) reliability and optimization of theoretical research, design and construction of new anti-disaster engineering structure; Research and design of marine engineering structures in the design period of use has sufficient safety, and after decommissioning and easy to remove the various engineering measures.

In order to grasp the changes in the marine environment and the possible advent of disasters, the development of marine environment and disaster prediction technology is very necessary. For this purpose, the following systems need to be established, such as the establishment of marine environment and disaster observation networks from offshore to distant seas, forecasting and early warning systems, coastal preparedness and various types of emergency response systems. Based on the economic development of major maritime and coastal zones, To establish a digital marine environmental information system model and structure; and the establishment of coastal and offshore engineering facilities disaster prevention and mitigation digital information system, the coastal and offshore engineering and network technology, computer technology, remote sensing technology, geographic information systems, global Positioning system, the establishment of mathematical physics model, through the multimedia technology, visual description of the causes of disasters, the mechanism, the law of transmission, simulation of disaster damage process, built intelligent disaster prevention, disaster prevention and mitigation decision support system.

## 1.3. Interaction between marine engineering and marine environmental engineering and marine environment and its control measures and countermeasures

In order to take full advantage of the marine space, the use of modern marine space in addition to the traditional port and marine transport, is to maritime man-made cities, power stations, marine parks, sea airports, submarine tunnels and seabed storage direction. People are already in the construction or design of sea production, work, living with a variety of large artificial islands, large floating marine structure and submarine works, estimated to the 21st century, there may be able to accommodate 100,000 people maritime man-made city. China's Macao and Japan have been built

at sea artificial island sea airport. In order to alleviate the tense land resources and reduce the city noise, Japan has been in August 99 in Tokyo Bay with 6 380 meters long, 60 meters wide rectangular floating plate assembled sea floating airport.

It can be seen that with the development and utilization of marine resources and space, the number of various types of offshore engineering buildings is increasing, the scale is becoming increasingly complex and bulky, and the safe operation of these offshore engineering facilities and the prevention and mitigation measures of marine engineering will be more and more important. Coastal and coastal waters are the most complex areas of dynamic factors, but at the same time is the most economically developed areas, offshore construction, if considered improper will lead to a certain extent, environmental disasters. The engineering facilities may destroy the dynamic balance of the original coastal zone and affect the erosion and deposition of the beach. Sea backfill and dredging will change the shape of the coast, destroying the habitat for the survival of certain marine life, if the pollutants containing dredged sludge dumping improper handling will cause secondary pollution. Offshore oil spills in oil production will cause extremely serious pollution to the marine environment. Increasingly, offshore decommissioning facilities will become a sea obstacle if they are not dealt with in a timely manner. The task of disaster prevention and mitigation of marine engineering is to ensure that the loss of natural marine disasters is minimized on the one hand and the marine environment caused by man-made disasters is avoided on the other hand.

With the continuous development and utilization of marine resources, the coordinated development of marine environmental protection and human production practice is becoming more and more important. Such as the environmental problems in the development of the port, the main contents include: waterway, port excavation, dredging caused by sediment transport and dredging objects on the impact of the marine environment, deep water port hydraulic structures, large artificial islands, Large-scale floating structure of the environment and ecological impact; wave belt and its surrounding waters along the flow of material transport diffusion law; large-scale coastal engineering, beach protection and remediation projects caused by changes in the sea environment and coastal evolution; coastal evolution, Protection and development of the use of new concepts and principles, such as due to engineering measures caused by coastal dynamics, ecology, socioeconomic and environmental relations and comprehensive analysis and coordination.

With the rapid development of economic construction of large and medium-sized cities along the coast, the deep-sea discharge technology of sewage in the city-level construction, the multi-point discharge drift and diffusion of tidal waters, the water quality exchange capacity of natural and artificial canals and artificial canals, the protection of artificial beaches Measures, the impact of beach reclamation on the water environment, will be the need to seriously solve the problem.

In view of the reduction of the land area brought by the coastline of the Yellow River Delta, the threat and damage of the land facilities, the devastating destruction of the natural conditions of the Yellow River Delta wetland is also a very urgent subject. In addition, the Yangtze River Delta, the Pearl River Estuary and the Pearl River Delta coast development, beach reclamation and beach protection and remediation projects on the impact of environmental problems caused by the environment and its countermeasures, but also need to focus on research topics.

Based on the economic development of the main economically developed estuaries and coastal zones and the main sea areas, a digital regional economic development simulation system is established. As with disaster prevention, disaster prevention and mitigation decision support systems, environmental engineering, hydraulic engineering, civil engineering and network technology, computer technology, remote sensing technology, geographic information system, global positioning system, the establishment of models, through multimedia technology, visualization For the economic development plan, forecast due to the development of the economic environment caused by the deterioration of water pollution, marine natural disasters (typhoons, waves, storms, earthquakes, ice damage, geological disasters) frequent situation. Human activities, especially large-scale construction of the marine environment caused by the changes and changes in the coast, and their interaction between the use of digital means to deal with the establishment of intelligent decision support system to promote the national economy sustained and healthy Development will be a very effective tool for decision-making departments to make macro-decisions and concrete planning.

## 2. Marine ecological destruction

In addition to marine pollution, human production activities, such as engineering and fishery (reclamation and overcrowding), and changes in the natural environment, such as global warming and sea-level rise, can undermine and change the marine ecological environment. The excessive fishing of certain marine organisms causes the reduction of the number of marine living resources, the reduction of quality, and the extinction of some species. Some coastal engineering construction and reclamation do not lack scientific demonstration, destroying the coastal environment and coastal ecosystems. At present, marine development activities also lack a comprehensive, long-term planning, comprehensive benefits are relatively poor.

### 2.1. Oil pollution and monitoring

Coastal industrial production and shipping routes on the ship, is the main source of oil pollution. As a result, oil contaminated areas are concentrated along coastal waters and maritime routes. Oil spills caused by accidents, because pollution signs are obvious, the concentration of pollutants, serious harm, and thus much public concern, but also the focus of the current pollution control.

To reduce the incidence of accidents, many countries are experimenting with new crude oil loading methods. Some countries are equipped with decontamination vessels to remove port surface waste and waste oil.

### 2.2. Marine rights and interests and the United Nations Convention on the Law of the Sea

Since the 1960s, there has been a worldwide wave of ocean development. The rapid development of marine science and technology has become one of the important areas of contemporary new technological revolution. In response to the new situation of international marine development, protection and management, the international community, through its efforts over the past 20 years, adopted the United Nations Convention on the Law of the Sea and entered into force on 16 November 1994. The birth of the Convention on the Law of the Sea has led to significant changes in the international maritime legal regime. For example, the long-standing dispute over the territorial waters of the problem has been resolved; the international seabed and its resources established as a common inheritance of mankind.

According to the United Nations Convention on the Law of the Sea, 144 coastal States in the world, with the exception of 12 sea miles of territorial waters, can be extended to 200 nautical miles, as the exclusive economic zone of the country, with the exploration, development, utilization, protection and management of the sea Bed sovereignty over water and subsoil natural resources. China's jurisdiction of the sea area of 473 million square kilometers, equivalent to about one-half of China's land area, therefore, to strengthen the comprehensive management of the ocean is increasingly important.

The birth of the United Nations Convention on the Law of the Sea has taken an important step towards the establishment of a new international legal order. However, there are many imperfections and ambiguities because the United Nations Convention on the Law of the Sea takes into account the interests and demands of the various States. Therefore, in the implementation process, will inevitably produce some new contradictions and problems. For example, in closed and semi-enclosed waters, neighboring countries advocate the 200-mile exclusive economic zone there may be overlap, there are some island sovereignty disputes and the allocation of fishery resources and other issues, which are likely to become tensions between neighboring countries, And even lead to new factors in international conflict. Therefore, the delimitation of maritime delimitation and maritime rights and interests between neighboring countries requires the countries concerned to be fair and reasonable in the spirit of friendly consultations.

### 2.3. Protect environment

The environment is the precious wealth that nature has given us, and we should cherish them. Plants are the natural barrier of nature; animals are human friends; the ozone layer is the umbrella of the earth; fresh water is the spring of our life. But people always put the environmental protection in the mouth, and did not take protective action, people should know: environmental protection in reality.

A tree can absorb a lot of carbon dioxide and other harmful gases every day, release the same amount of oxygen, one person can breathe a day for a factory. And flowers can absorb noise, if you plant a lawn, then it can greatly reduce the noise pollution. It is thus clear how important the plant is to mankind. But some people still do not know these, whenever I see the lawn by those who trample, love the placards of the placards were kicked down, my heart like a knife-like, very uncomfortable. If you lose the flowers and trees, I cannot imagine what the world will look like! When I was in the third grade I learned 'a little village,' a text that speaks of a beautiful little village, because people are overcutting trees, making the earth bare and flooding the village.

## Conclusions

Animals are human friends, social wealth, we should cherish them. I know from the << Lingnan Youth Daily >> and << modern primary school student newspaper >> know: the American cheetah has been long out of the world; Meng Ma like has long been killed glaciers; saber-toothed tiger has long been extinct; European thunderbird close to extinction; cetaceans are linger; The African elephant was forced to extinct abyss. From now on, from my start, eat wild animals, to prevent hunters hunting animals. Remember the spread of SARS in 2003, because people eat fruit civet, caused by coronal changes in SARS and SARS.

I get the ozone layer from the Internet known as the umbrella of the earth, because it can block most of the UV, if there is no ozone layer, then the moment, the earth will be scorched. Because people use chemicals extensively, there is a big hole over Antarctica.

Freshwater is also very valuable, according to television news reports: 70% of the world's water is brine, this water cannot drink. According to statistics: among the three people, there will be one person lack of water, not to mention there is no invention of salt water conversion machine. Water flow 'rushing' must be someone did not tighten the faucet, saving water is just hanging in the mouth, no one remembered, those who do not consciously wash hands, do not close the faucet, so that fresh water flowing away.

All in all, to protect the environment, and then cannot hang in the mouth, to focus on practical action. We join our hands to protect our beautiful and fragile earth.

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