PIONEER
ACADEMIC PUBLISHING LIMITED

Studies in Law and Justice
ISSN 2958-0382
www.pioneerpublisher.com/slj
Volume 2 Number 3 September 2023

Study on International Law Regulation of Marine Radioactive Waste Dumping

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doi:10.56397/SLJ.2023.09.04

Abstract

The problem of discharging Fukushima nuclear waste water into the sea challenges the existing international law regulations on marine radioactive waste dumping. This behavior does not fall within the scope of dumping regulated by London Convention. Provisions of land-based pollution regulation in UNCLOS cannot directly determine the illegality of Fukushima nuclear waste water disposal into the sea; The application of precautionary principle has a high standard for judging "potential hazards", its application also has limitations. The existing international regulatory framework of marine radioactive waste dumping lacks compliance assessment mechanism.

The application of international law regulation on the dumping of marine radioactive waste should be strengthened, which means expanding the application scope of London Convention Prohibited List, strengthening the application of the obligation in UNCLOS to monitor the risk or impact of marine environmental pollution. At the same time, it is necessary to re-examine the criteria of precautionary principle and to strengthen the compliance procedures for marine radioactive waste dumping.

Keywords: dumping of radioactive waste at the sea, international law regulation, Fukushima nuclear waste

1. Controversy Caused by the Fukushima Nuclear Waste Water Disposal into the Sea

After the earthquake and tsunami on March 11th 2011, three nuclear reactors in Fukushima Nuclear Power Station melted down, the molten fuel fragments burned through the steel containment and entered the concrete base of the reactor building. Workers have been pumping water into the ruins to prevent the debris from overheating and causing further damage. As of December 17th 2020, the accident treatment has produced 1.24 million tons of nuclear wastewater, which is stored in nearly 1,000 water storage tanks. On April 13th 2021, Japan announced that it would disposal 1.25 million tons of nuclear waste water from the Fukushima nuclear power plant into the Pacific Ocean. Tokyo Electric Power Company said that the nuclear waste water was treated through the filter chain of Advanced Liquid Treatment System (ALPS) until the tritium concentration reached one fortieth of the allowable drinking

water concentration in Japan. The Japanese government said that this is the best way to treat tritium and other radionuclides in water. The disposal of nuclear waste water from Fukushima has aroused serious concern in international community. South Korea, China, Russia and other countries, as well as some special rapporteurs, ecologists and environmental activists of the United Nations Human Rights Office, voiced their fierce protests.

The incident of discharging nuclear waste water into the sea in Fukushima is not only a domestic issue in Japan, but also an international issue, which should be regulated by international law. However, it is not easy to determine the illegality of Fukushima nuclear waste water disposal from the perspective of international law. Whether Japanese government's unilateral decision of nuclear waste water disposal violates international law is controversial, which exposes the shortcomings of existing international law regulations on marine radioactive waste dumping.

2. Disputes over the International Law Regulation on the Dumping of Marine Radioactive Waste

2.1 Scope of the London Convention and Its Protocols' Application

When considering whether Japan's disposal of nuclear waste water into the sea violates the relevant provisions of the London Convention and its Protocol, we must first determine whether this disposal falls within the scope of "dumping" regulated by the Convention. The Japanese government finally decided to discharge it through submarine pipelines. Therefore, is the disposal behavior through the submarine pipeline a dumping behavior controlled by London Convention and its Protocol?

The purpose of the London Treaty and its Protocol is to promote the regulation of the dumping of radioactive waste in specific oceans, but not to regulate land-based pollution. According to the provisions of the London Convention and its Protocol, it can be known that dumping by means of vehicles is an important basis and necessary component to distinguish marine dumping from land-based pollution within the existing national framework of marine waste dumping. Can the emission behavior of laying pipelines be interpreted as the behavior of using vehicles? According to the Montreal Guidelines for the Protection of Marine Environment from Land-based Pollution in 1985, we can find the classification of land-based pollution. Firstly, it is disposal from the coast, including direct disposal into the marine environment from the disposal port and disposal through runoff; Secondly, canals that pass through rivers and other waterways, including underground waterways; Thirdly, through the atmosphere; Fourthly, activities carried out on fixed or mobile facilities at sea within the jurisdiction of the state. It can be known that the behavior of laying pipelines to disposal marine radioactive waste is closer to the behavior of land-based pollution. According to the analytical framework established in Article 31 of the Vienna Convention, the radioactive wastewater disposal in Fukushima does not belong to "ocean dumping" in the sense of Article 3 of the London Convention and Article 1 of the London Protocol. Moreover, historically, the London Convention and its Protocol have never been interpreted as being applicable to land-based marine dumping. Therefore, the dumping behavior of marine radioactive waste, such as the dumping behavior of Fukushima nuclear waste water tunnel, cannot be bound by the London Convention.

Therefore, although the wastewater from Fukushima spread to the seas and cause danger to the global marine environment, this problem cannot be solved within the scope of application of the London Convention and its Protocol.

2.2 Regulatory Effects of Relevant Provisions in UNCLOS

Among the international conventions regulating the dumping of land-based radioactive waste, the most typical one is the 1982 United Nations Convention on the Law of the Sea, in which articles 194, 207, 210 and 231 stipulate the relevant types of regulation. However, unlike the London Convention, the Convention on the Law of the Sea lists all kinds of pollutants in detail in the form of annexes, while its regulation of marine pollution is general and abstract. Therefore, the application of these provisions need specific explanation. This has caused three problems in the application of UNCLOS in dealing with the incident of Fukushima nuclear waste water dumping: the regulations on land-based pollution are underdeveloped; difficulties in proof; law enforcement and sanctions are insufficient.

Firstly, the undeveloped land-based pollution regulations make it more difficult to pursue the responsibility of Japan. With regard to the regulation of ship-source pollution and marine dumping pollution, in addition to the provisions of the United Nations Convention on the Law of the Sea, the former has many treaties adopted by the International Maritime Organization, while the latter has the London Convention and its protocols. On the other hand, the Convention on the Law of the Sea gives the country greater discretion on the dumping pollution of radioactive waste caused by land-based sources, and it needs legal interpretation when applying the treaty. If the illegality of the dumping of land-based radioactive waste is investigated according to the obligation to prevent environmental damage in violation of Article 194 of UNCLOS, it needs to be determined that the dumping has caused pollution damage to other countries and their environment, which requires high determination of damage results. Therefore, it is difficult to determine the illegality of its behavior by using the general provisions of UNCLOS.

Secondly, it is difficult to prove that Japanese acts are illegal in UNCLOS. Traditionally, state responsibility adopts the principle of fault liability. The proof of the extent to which nuclear waste water disposal from Japan will cause damage to the marine environment needs to pay huge economic costs. The causal relationship between real damage and the disposal of nuclear waste water have technical difficulties. In addition, due to the sovereignty of nuclear safety jurisdiction, it is extremely difficult to obtain evidence. In 2013, the Japanese Parliament passed the Law on the Protection of Specific Secrets. According to this law, any information about Japan's nuclear issue, including the Fukushima nuclear accident, is covered up in the name of "national security" and "specific secrets", which undoubtedly increases the difficulty of obtaining evidence. All these make it difficult to prove that nuclear leakage treatment of water causes pollution or threatens human health.

Third, the underdeveloped law enforcement and sanctions system of UNCLOS makes it more difficult to hold the Japanese government accountable. Article 213 provides for the regulation of land-based pollution, which means all countries shall implement the laws and regulations adopted in accordance with Article 207 of the Convention and take necessary measures to prevent, reduce and control the pollution of the marine environment by land-based sources. This requires the domestic laws of all countries to be consistent with international rules, especially in the aspects of the protection of oceans and international cooperation. However, UNCLOS does not clearly stipulate the international supervision of land-based pollution. Because of the lack of enforcement, countries will not be punished even if they violate or fail to comply with UNCLOS. In fact, it is difficult to achieve the effect of "forcing" any international subject to meet the expectations or requirements. Compliance with articles 207 and 213 of UNCLOS has become a sincere action depending on the will of individual countries.

2.3 Restrictions on the Application of Precautionary Principle

The ocean is a unified flowing whole, and it is difficult for people to accurately judge the risks of all special marine pollution, especially abstract or potential risks. This kind of risk may never be realized in the end, but if it is not prevented in time, it will have irreversible consequences. Therefore, precautionary principle is necessary to prevent marine environmental risks. The principle of preventing cross-border influence stipulated in London Convention Protocol marks its role in the field of dumping wastes at sea. During the formulation of London Convention Protocol, international communities realized that it was impossible to completely eliminate the danger, so they replaced the "danger" in UNCLOS with "possibility of damage", which promoted the application of precautionary principle.

However, in international judicial practices, the application of precautionary principle has a very high threshold. In the MOX Plant case, the International Tribunal for the Law of the Sea held that Britain did not object to the position of precautionary principle, and this situation could not be applied in this case. Britain has taken measures to prevent environmental pollution, and the possibility of radioactive material leakage is very small. At the same time, Britain has declared that there will be no more international movement of radioactive materials. Regarding the possible damage and danger caused by MOX nuclear power plant monitoring, the two countries can exchange views and take necessary measures to prevent the pollution

caused by operation to the Irish Sea.

In order to avoid excessive application of precautionary principle, the International Tribunal for the Law of the Sea seized the opportunity to clarify the scope and limits of its application. It emphasizes the need to specify the severity of potential damage to the marine environment. Therefore, to invoke precautionary principle, it is necessary to prove that the damage to be prevented cannot be general and abstract, but must be identifiable and clear. It is necessary to prove that this damage to the environment is serious or irreversible. In the distribution of evidence, the plaintiff should also bear the burden of proof, at least provide preliminary evidence to prove the risk of damage, and then the burden of proof will be transferred to the action party. This also proves that the application of precautionary principle is very limited.

2.4 Lack of an Effective Compliance Assessment Mechanism

The regulatory system of radioactive waste dumping at sea lacks effective compliance mechanism in implementation, which leads to problems one after another. UNCLOS does not provide any unified specific criteria for evaluating the compliance with the treaty, which leads to the problem of insufficient sanctions in treaties regulating the dumping of marine radioactive waste. This highlights the shortcomings of international regulatory framework for the dumping of marine radioactive waste. Due to the lack of a special institution with absolute power, such as the Seabed Authority, countries are in a "decentralized" system on the dumping of marine radioactive waste. It is also impossible to evaluate the compliance effects of States parties. Therefore, although the London Convention sets international standards for the dumping of marine radioactive waste, Russia's dumping of radioactive waste into the Sea of Japan has not been sanctioned by law. In addition, the poor performance of national reporting obligations in London Convention, the lack of implementation procedures for radioactive waste dumping in the Convention on Nuclear Safety, the lack of cooperative organizations for unified radioactive waste regulation in UNCLOS have all affected the compliance effects of States parties. However, faced with common international maritime interests, we should establish that international interests cannot be lower than the interests of the state in implementing a specific regulation and taking actions on behalf of the state. With the deepening of our understanding of radioactive waste and the improvement of our awareness of marine environmental protection, the compliance with international conventions should be better and better.

3. Perfection of International Regulation of Marine Radioactive Waste Dumping

3.1 Expand the Scope of the Application of London Convention's Prohibition List

The London Convention and its Protocol constitute the core of the international legal regulation system of marine radioactive waste dumping, which is being supplemented by other global and regional treaties. Because the London Convention and its Protocol are stricter than UNCLOS, some States parties have turned to dumping radioactive wastes by land sources in order to avoid accountability. It should be prohibited to avoid regulations that regulate a certain range of activities and protect specific ecosystems by transferring risks related to activities, which may actually lead to greater environmental damage. In order to ensure the fairness of law, the dumping of land-based radioactive waste should be identified as the same illegal act. Considering the efficiency factor, the London Convention's prohibition list can be applied to the dumping of land-based radioactive waste through legal interpretation, which is more efficient than re-enacting a new treaty.

According to Article 210 (6) of UNCLOS on the regulation of dumping pollution, the effectiveness of domestic laws, regulations and measures should not be lower than "global rules and standards", which means that the measurement of pollution in UNCLOS takes global rules and standards into consideration. Therefore, the pollutants regulated by the London Convention and its Protocol are also binding in UNCLOS. Article 207, paragraph 5, of UNCLOS stipulates that the laws, regulations, measures, rules, standards and recommended methods and procedures mentioned in paragraphs 1, 2 and 4 includes various regulations aimed at minimizing the release of toxic, harmful, or harmful substances to the marine environment, especially persistent substances, to the greatest extent possible. As a member of UNCLOS and London Convention, Japan is also bound by this. According to the

treaty interpretation of Article 31 (3) (c) of the Vienna Convention on the Law of Treaties, the London Convention's prohibition list can be interpreted as an obligation between States parties stipulated in Article 207 of UNCLOS, which allows to consider "any relevant rules of international law applicable to the relations between States parties". Thus, the London Convention's list of prohibitions can be applied to UNCLOS. In addition, a series of measures should be taken, such as setting a transition period of three to five years. The London Convention and its Protocol also ought to be merged into a single global dumping convention, so as to improve its authority and protect the marine environment in the 21st century.

3.2 Strengthen the Implementation of Obligations Under Article 204 of UNCLOS

Environmental impact assessment refers to the review, analysis and evaluation of planned activities to ensure environmentally sound and sustainable development. Article 204 of the 1982 Law of the Sea Convention stipulates the general obligation to monitor the danger or impact of marine pollution. The Espoo Convention stipulated the environmental impact assessment system: Before deciding or authorizing the activities listed in Appendix I that may cause significant adverse transboundary impacts, conduct an environmental impact assessment. The 1982 Law of the Sea Convention defined the obligation to control the dumping of marine radioactive waste. Article 210 of the Convention implicitly referred to the London Convention and its annexes, requiring the effectiveness of national control to be no less than the globally stipulated rules and standards. It is necessary to review the impact of planned activities on the marine environment and the effectiveness of control measures when implementing the relevant rules for controlling harmful substances disposal from land sources. In a sense, environmental impact assessment can limit the discretion of the state party in formulating environmental policies, thus strengthen the obligation to prevent and eliminate land-based pollution, which strengthens the international law regulation of land-based radioactive waste dumping.

3.3 Re-Examine the Criteria for the Application of Precautionary Principle

It is necessary for international environmental law to adopt precautionary principle. Scientific uncertainty should not prevent international law from taking effective action. In the advisory opinion of February 1, 2011 on the responsibilities and obligations of states sponsoring persons and entities with respect to activities in the area, International Tribunal for the Law of the Sea clearly stipulated that international environmental law must adopt the provisions of precautionary principle, which greatly promoted the development of this principle. In response to the above questions, the consultation identified several obligations directly undertaken by the sponsoring state party, such as assisting the activities in the area under the control of the Authority, applying best environmental practices, taking measures to ensure protection when the authority issues an emergency order to protect the marine environment, providing compensation for the damage caused by pollution, conducting environmental assessment and applying precautionary principle. Although the UNCLOS has not clearly put forward precautionary principle, nor has it stipulated the concept, content and mode of application, it is still very important to determine the status of precautionary principle in marine protection.

When applying precautionary principle to judge the illegality of radioactive waste dumping, comprehensive considerations should be included, rather than just judging from the data of radiation. First, the international communities' panic caused by the disposal of nuclear waste water is enough to prove the size of its risk, the public's suspicion is reasonable. Science has fundamental characteristics of uncertainty, and scientific conclusions are often drawn based on existing data and knowledge, which is the most rational judgment available rather than a perfect judgment. Therefore, questioning the scientific research conclusions of public health experts is always effective and can be used as one of the criteria for risk judgment. Second, after the Fukushima nuclear leak, the Japanese government and the International Atomic Energy Agency formulated a standard for the content of radioactive substances in food, but it is doubtful whether this standard is scientific. Its data is collected by Hiroshima Nuclear Radiation Effect Foundation, but its epidemiological research tends to track survivors who have obviously suffered from nuclear radiation, but it does not pay attention to the health problems of human bodies after

ingesting nuclear radiation pollutants. Therefore, the basis of this designated standard lacks certain scientificity. Thirdly, due to Japan's previous fraudulent behavior, we can't determine whether the nuclear waste water is harmful only from the Japanese rhetoric. The inclusion of these factors should be included in the judgment standard of risk.

Precautionary principle should be used to reduce the adverse effects of marine radioactive waste dumping on the marine environment. Although the application of precautionary principle is very cautious, the problem of Fukushima nuclear waste water is different. Its potential harm is enough to apply precautionary principle.

3.4 Strengthen the Compliance Procedure of Marine Radioactive Waste Dumping Regulation

With regard to the promotion of the compliance mechanism in international law, the improvement of the global dumping regulation needs the cooperation of regional organizations, transparent measures and increasing attention to improve implementation capacity. London Convention and its protocols provide a platform for international subjects to show political compromise under the pressure of widespread public concern by formulating global conventions based on regional regulations, which encourages wider participation and implementation of existing provisions. The national reporting system is an effective way to monitor the parties' compliance with the Convention. According to London Convention, if the parties disposal wastes into the sea that are not included in the annex, they should notify the relevant organizations in advance. If discharging wastes into the sea is the only way, and the damage caused by discharging wastes into the sea is the smallest compared with other ways, then the provisions of Article 4 of the Convention may not apply as an exception, but the damage should be minimized during the disposal process. Relevant organizations and institutions should be informed during the disposal process. Article 3 of London Convention also stipulates that the parties involved in the accident should fulfill the obligation of notification in special emergencies without obtaining a permit.

In addition, it is particularly important to promote the transparency of marine radioactive waste dumping. Influenced by the historical image of death, disarmament and serious institutional failure, it is an arduous task for Japan to build public trust in nuclear energy. When dumping marine radioactive waste, the contracting parties must consider the public trust, including geographical proximity to nuclear facilities, international cooperation, trust in nuclear energy regulatory agencies, transparency, political inclination and technological progress, which are all elements to promote the implementation of the convention. Therefore, the statistical data, approved data, quantity of pollutants and implementation action plans, schemes and measures of radioactive waste dumping should be reported, so as to exchange public trust and strengthen compliance effect by improving the transparency of dumping behavior.

4. Conclusion

This paper takes the international legal regulation of marine radioactive waste dumping as the research theme and demonstrates the controversy of existing legal framework from the challenge brought by nuclear waste water dumping from Fukushima to the existing international legal regulation of marine radioactive waste dumping. Firstly, the scope of application of London Convention is controversial; the regulation effect of UNCLOS is not good; Secondly, precautionary principle plays a limited role in the process of radioactive waste dumping at sea. Its application has a high standard for judging the potential harm of radioactive waste dumping. Thirdly, the compliance mechanism of international regulations on marine radioactive waste dumping is not perfect, the reporting system has not been implemented, and the lack of compliance evaluation mechanism leads to insufficient implementation.

This paper also mainly analyzes how to improve the international regulatory framework of marine radioactive waste dumping. Firstly, to expand the scope of application of London Convention's prohibition list, strengthen the implementation of general monitoring obligation in Article 204 of UNCLOS, monitor environmental risks throughout. Secondly, re-examine the criteria for the application of precautionary principle. Thirdly, strengthen the compliance procedures of marine radioactive waste dumping regulations. We should not only strengthen the role of regional organizations, but also strengthen the national reporting

system to improve the transparency of dumping.

Finally, in the aspect of international regulation of marine radioactive waste dumping, China should actively compete for the right to speak on marine protection and actively participate in the construction of international regulation order of marine radioactive waste.

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