Oceans in the Nuclear Age: The Need for Comprehensive International Environmental Regulations

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Oceans in the Nuclear Age: The Need for Comprehensive International Environmental Regulations

INTRODUCTION

The Oceans in the Nuclear Age: Legacies and Risk ("Oceans") comprises a collection of articles assessing the impact of the nuclear age on the ocean environment and the consequent risks this impact imposes. Oceans addresses both the policies affecting how oceans are currently responding to the unique challenges of the nuclear age and the legal agenda regarding the challenges posed by both past legacies and future risks. The book addresses these issues by dividing the articles into four categories: (1) oceans’ use as a dumpsite; (2) oceans as a means of transporting nuclear material; (3) nuclear weapons and the ocean; and (4) nuclear activities and radioactive waste in the Arctic.

Oceans’ explicit goals are to help readers understand and to illuminate various perspectives of the nuclear age, a period spanning from the end of World War II to the present, rather than to take a firm position or cause debate. But while the book does bridge some gaps in understanding, it does so mainly from a developed countries’ perspective and neglects to consider the perspective of poorer and politically disenfranchised countries. In order to promote the health, safety, and future political interests of the global community bound together and connected by the world’s oceans, a more current and extensive survey of perspectives from all countries affected by the nuclear age must be conducted.

I. BACKGROUND

A. Nuclear Waste in the Oceans

In the past, nuclear waste disposal has exposed the need for local communities to play active roles in international efforts to clean up waste. Bikini Atoll of the Marshall Islands was the site of twenty-three nuclear tests.
during Operation Crossroads, which caused three islands to vaporize and one hundred ships to sink during one of the tests. Similarly, the Maralinga Islands were the site of some minor weapon testing trials as well. During these trials, plumes of plutonium dust were spread over 500 square kilometers, causing widespread topsoil contamination. Because these trials rendered the test sites uninhabitable, the native population has since evacuated the islands and remained absent for sixty years. Recent efforts for rehabilitation, however, have been successful. The success is attributed to the United States’ decision to allow local governments to take part in the planning and management of the cleanup efforts while continuing its monetary support to the islands. The native communities are in a better position to know and manage the long-term risks of their native land than foreign nations seeking to facilitate rehabilitation.

The aftermath of nuclear testing, the resolution of nuclear waste disposal, as well as the development of better technology through data collection, all highlight the importance of international cooperation. Nuclear testing and its displacement of local populations opened up several class action suits by the locals; all required resolution through the international framework. Additionally, waste disposal programs require substantial and well-developed international cooperation. Coordinated international surveys can produce better data, ecological information, and technology. Monitoring programs would be more effective with more international cooperation. Inadequate compliance by states can lead to the lack of awareness for radiation contamination, endangering human health and decreasing the capacity for the rehabilitation of ecological health.

Efforts towards the deep-sea disposal of high-level radioactive waste have been thwarted, however, by opposition from environmental activist groups as well as uncertainties regarding the feasibility of the technology that makes such dispositions possible. There must be more international awareness regarding the

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5. Id. at 43.
6. Id.
7. Id. at 42.
8. Id. at 46.
9. Id. at 47.
10. Id.
13. Id. at 105.
14. See id. at 102.
15. Id. at 103.
benefits of deep-sea disposals so that environmental organizations are less likely to categorically reject these schemes out of concern for the health of ocean waters.\textsuperscript{17} An international framework can facilitate the international awareness of the benefits of deep-sea disposals and strengthen efforts for disposal by instituting clear regulations governing international efforts.\textsuperscript{18}

\textbf{B. Ocean Transport of Radioactive Fuel and Waste}

Tensions between nuclear countries exporting radioactive material and coastal countries whose waters carry such shipments also highlight the need for effective international protocols to facilitate communication. For instance, Japan exports nuclear waste to Britain and France for reprocessing and imports the reprocessed fuel.\textsuperscript{19} This back-and-forth shipping between France and Japan is made possible via passage through the Panama Canal, and has exposed the Caribbean countries to the danger of nuclear fallouts.\textsuperscript{20} Since 1992, the Caribbean countries have demonstrated unwavering opposition to the shipment of this nuclear material.

The states with nuclear technology have defended such passages as “innocent” passages during which the nuclear transports meet all requirements and standards for safety.\textsuperscript{21} Additionally, they have argued that nuclear energy helps to satisfy the demand for electricity and mitigates air pollution.\textsuperscript{22} But dissenters are unconvinced that such safety measures are adequate. Many have argued that fragmented evaluations of particular shipments fail to address the issue that continued transport would inevitably lead to a catastrophic accident which would greatly endanger the population.\textsuperscript{23} Additionally, the Caribbean states have advanced their opposition using scientific evidence emphasizing the importance of the Caribbean’s coral reefs, which garner much economic value and health benefits.\textsuperscript{24} To resolve the dispute between the states that ship nuclear material and coastal states, countries must address the issues of alternative energy production,\textsuperscript{25} the passage of nuclear waste as it relates to the long established right of innocent passage,\textsuperscript{26} and the impossibility of preventing human or mechanical error absolutely.\textsuperscript{27}

\begin{itemize}
  \item \textsuperscript{17} See id. at 133–34.
  \item \textsuperscript{18} See Fitzmaurice, supra note 13, at 103.
  \item \textsuperscript{19} Luis E. Rodríguez-Rivera, \textit{Transportation of Radioactive Materials Through the Caribbean Sea: The Development of a Nuclear-Free Zone}, in \textit{THE OCEANS IN THE NUCLEAR AGE: LEGACIES AND RISKS} 169, 169–70.
  \item \textsuperscript{20} Id.
  \item \textsuperscript{21} Id. at 190.
  \item \textsuperscript{23} Rodríguez-Rivera, supra note 21, at 191.
  \item \textsuperscript{24} Id. at 189.
  \item \textsuperscript{25} Miyoshi, supra note 25, at 197.
  \item \textsuperscript{26} Id. at 215.
  \item \textsuperscript{27} Rodríguez-Rivera, supra note 21, at 194.
\end{itemize}
As a compromise, a series of international conventions have established protocols for the transport of nuclear cargoes through unwilling coastal states. Nuclear states must notify the coastal states of their cargoes’ passage, but do not necessarily need the authorization of the coastal states to complete their passage. The goal is to promote transparency and maintain dialogue and consultation so as to improve mutual understanding, confidence, and enhanced communication instead of settling for a confrontational approach. To facilitate more effective communication regarding nuclear transport, international representatives can serve as neutral facilitators of discussion to help countries maintain dialogues and arrive at agreements.

C. Nuclear Weapons and Weapon Grade Material on the Oceans

September 11, 2001 steered global attention toward terrorism, and the international community responded by intensifying efforts to prevent nuclear proliferation. Anxious states formed haphazard and unilateral agreements. The 2005 Proliferation Security Initiatives (PSI) made it easier for states to board and inspect foreign vessels, presuming consent to board unless flag states have previously specified otherwise; these measures reflect the global concern that vessels may be used in the transport of biological weapons and terrorists.

Countries have dealt with nuclear waste transport with varying degrees of intrusiveness on the flag states’ rights over their own vessels. The United States formed six agreements with various countries to strengthen proliferation security measures. One effect of the agreements was to ease access to board and inspect ships for weapons of mass destruction (WMD). The legitimacy of these measures, however, is undercut by the limited participation by nuclear countries, the belief that the United States’ goals are self-serving and a double standard, and by the lack of a cohesive system with which to integrate these protocols.

For example, China’s support of the PSI is critical because of its control of sea lanes to North Korea. However, it has not joined the initiatives.

29. Id. at 219–20.
30. Id. at 233.
31. Id. at 235.
33. Id. at 243.
34. Id. at 253.
35. Id. at 244.
37. Id. at 274.
38. Id.
Furthermore, the intent of the United States in promoting the PSI may be self-serving; while the United States is allowed to continue manufacturing WMD, it has restricted the ability of the smaller states to develop such weapons for self-defense.\(^{39}\) Furthermore, the United States has declared certain countries unfriendly to U.S. interests as “rogue states” to justify pre-emption.\(^{40}\) The shortcomings of these initiatives can be overcome by first loosening U.S. control, and then formally bringing the initiatives into the United Nations system for less arbitrary and more effective management.\(^{41}\)

In the wake of the Cuban Missile Crisis (1962), countries in Latin America, the Caribbean, the South Pacific, Southeast Asia, and Africa have gone farther than the PSI in an effort to exclude WMD from their territorial and adjacent waters.\(^{42}\) They have formed four distinct Nuclear-Free Zones that collectively cover almost the entire inhabited area of the southern hemisphere.\(^{43}\) The Treaties of Tlatelolco, Bankok, Rarotonga, and Pelindaba restrict vessels bearing WMD from entering the special economic zones and the continental shelves of the affected states in their respective regions.\(^{44}\)

Opponents have criticized these treaties because they curtail the freedom of the seas for the nuclear armed.\(^{45}\) These concerns can be addressed by an international system like the United Nations, which would have the legitimacy necessary to enforce international measures that strike a balance between self-defense and protecting freedom of the sea.\(^{46}\)

**D. Nuclear Activities and Radioactive Wastes in the Arctic**

Lastly, the management of nuclear material in the Arctic also highlights the importance of international coordination by exposing the inability of individual countries to control nuclear material on their own. Canada has been challenged in its jurisdiction over sea lanes in the Arctic because it has asserted its authority inconsistently and has not demonstrated that it can afford to protect its territories in the Arctic.\(^{47}\) The countries challenging Canada reasoned that, in order for Canada to legitimately assert its rights, it must effectively control and enforce interdictions to preserve the fragile ecology of the Arctic.\(^{48}\)

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39. Id. at 267.
40. Id. at 267–68.
41. Id. at 282.
43. Id. at 337.
44. Id. at 338.
45. Id. at 341.
46. Lakshman D. Guruswamy, *Arctic Nuclear Pollution*, in *The Oceans in the Nuclear Age: Legacies and Risks* 423, 463
47. Elizabeth B. Elliot-Meisel, *Canada, the United States and the Northwest Passage*, in *The Oceans in the Nuclear Age: Legacies and Risks* 373, 382.
48. Id. at 389.
Canada’s sovereignty in the Arctic could be maintained by recruiting the United States in the control and enforcement of its claimed territorial waters.\textsuperscript{49}  

Furthermore, other states bordering the Arctic are unprepared to deal with nuclear waste disposal, thus endangering the health of the Arctic ecosystem. Post-Cold War records show that Russia’s solid radioactive wastes were deposited in the seabed of the Arctic region from 1959 to 1993.\textsuperscript{50}  These wastes were packaged in steel containers, or were packed onto decommissioned ships or submarines, and were sunk at selected dumping sites.\textsuperscript{51}  Scientists are concerned for sensitive life forms near the dumping sites (such as fertilized fish eggs) that are especially susceptible to exposure.\textsuperscript{52}  

The Russian government has passed legislation to facilitate the management of all radioactive material, binding all individuals and businesses to the specified procedures for managing nuclear material.\textsuperscript{53}  However, the retired and decrepit nuclear submarines within Russia’s Soviet-era fleet still present a major problem.\textsuperscript{54}  The decommissioning process is limited because Russia does not have the financial capability to dismantle more than one submarine per year.\textsuperscript{55}  Additionally, the Russian demand for nuclear electrical production is rising steadily as the nuclear power plants from the Soviet are approaching the age for retirement and must be dismantled.\textsuperscript{56}  The result of the slow pace of both activities is that more waste must be stored, but there is increasing international pressure to limit such storage in the ocean.\textsuperscript{57}  

Russia needs international intervention to assist in the timely decommissioning and disposal of old nuclear reactors and submarines,\textsuperscript{58}  just as Canada needs assistance to fully protect its Arctic regions from the possibility of nuclear fallouts.\textsuperscript{59}  International treaties need to overcome the deficiencies of the sovereignty-based system of international governance to affect mutually beneficial agreements.\textsuperscript{60}  Similarly, environmental problems must be overcome by a consensual legal system of states working together.\textsuperscript{61}  

\textsuperscript{49}  Id.  
\textsuperscript{50}  Alexander S. Skaridov, The Russian Approach to the Protection of the Arctic Seas from Radioactive Wastes, in The Oceans in the Nuclear Age: Legacies and Risks 391, 396 \textsuperscript{51}  Id. at 397.  
\textsuperscript{52}  Id. at 402.  
\textsuperscript{53}  Id. at 410.  
\textsuperscript{54}  Guruswamy, supra note 46, at 434.  
\textsuperscript{55}  Id. at 440–41.  
\textsuperscript{56}  Id. at 442, 444.  
\textsuperscript{57}  Miles, supra note 16, at 133.  
\textsuperscript{58}  Guruswamy, supra note 46, at 460–61.  
\textsuperscript{59}  Elliot-Meisel, supra note 47, at 389.  
\textsuperscript{60}  Guruswamy, supra note 46, at 463.  
\textsuperscript{61}  Id.
II. ANALYSIS

*Oceans*’ goal is to illuminate various perspectives regarding the effect of the nuclear age on the oceans, and to do so without taking a position or causing debate.\(^{62}\) The book is a compilation of articles surveying the impact of historic as well as recent nuclear events on the ecological and human interactions with the oceans. However, despite its declaration to not take a stand on the legal issues surrounding nuclear impact on the oceans, the book takes a clear position in asserting that the international community must come together to address the environmental, health, and safety concerns imposed by the presence of nuclear activities.

While this assertion appears to be a fair suggestion based on the book’s review of nuclear transport and storage throughout the world’s oceans, it may lead to a solution tending to favor the dominant, wealthy, western nations. There are three reasons for this bias: (1) the book itself is an incomplete and Euro-centric review of nuclear impact concerning mainly Western or westernized nations such as the United States, Britain, and Japan; (2) the book disregards the perspectives of nuclear countries of the Far East and of regions that have united in opposition to nuclear transport; and (3) by calling for organized, international efforts under the existing framework to address the issues of nuclear waste and weapons, the smaller, less wealthy nations would be inevitably silenced; the structure of an effective international organization must contain a forum in which the voices of the smaller states can be heard.

First, the book examines many of the international disputes and settlements regarding nuclear waste and transport through the lens of dominant political powers, such as the United States. In addressing the rehabilitation of the Marshall and Maralinga Islands after nuclear testing, the book casts the United States in the paternalistic role of a guardian who must guide the islanders in their quest to recover.\(^{63}\) The islanders are given little chance to evince their own perspectives on rehabilitation of their oceans within the scope of the book. Additionally, the United States seems to be the tireless rescuer coming to the aid of damsels in distress, who cannot afford, without aid, to enforce their maritime regulations.\(^{64}\) The book similarly depicts Russia as needing the United States’ help to decommission its old nuclear plants and submarines.\(^{65}\) The book grants neither Canada nor Russia the right to resolve their troubles within their own timeline or on their own capabilities.

Second, despite acknowledging that Eastern countries such as China and India have developed nuclear weapons, and that restricting nuclear proliferation would be difficult without these countries’ compliance, the book only focuses on the interactions of the West in the proliferation of security measures. Only

\(^{62}\) Caron & Scheiber, *supra* note 3, at 3.

\(^{63}\) See Leschine, *supra* note 4, at 47.

\(^{64}\) See Elliot-Meisel, *supra* note 47, at 389.

\(^{65}\) Guruswamy, *supra* note 46, at 460.
one out of the twenty-four chapters was devoted to addressing the four major treaties that led to the formation of four expansive oceanic nuclear-free zones that encompasses almost the entire southern hemisphere. Not only did the chapter gloss over the details of the rationale and the process of the treaty formation (which must have demanded significant collaboration amongst the nations within each region), the chapter was also overwhelmingly dismissive of the nuclear-free zones’ viability. The chapter reasoned that the zones’ viability was threatened because the western nuclear states would be inconvenienced by the treaties’ restrictions on western warships’ right to freedom of the seas, but failed to balance that perspective with that of the locals.

Third, each section of the book (nuclear waste dumping, transport, weapon management, and arctic management) concludes that more extensive international collaboration must be developed to facilitate all four activities. The trouble with fostering international collaboration is that the more wealthy, powerful, and western voices tend to dominate the stage, as in the PSI, in which the United States has established its leading role. As such, the other voices making up the supposedly “international” collaboration may be silenced. The result is that decisions will be made unilaterally by the dominant states to potentially serve their own interests if left unchecked. Smaller states, by agreeing to “collaboration,” can thus be bullied into giving up some sovereign privileges in the name of curtailing nuclear proliferation. As such, any international framework for nuclear management must contain a forum that guarantees the voices of the smaller nations to be heard. Perhaps countries can adopt a bicameral structure, in which the more powerful nations and the smaller nations operate within separate forums, and any resolution must meet the both forums’ approval before its installation.

**CONCLUSION**

The nature of international cooperation, coupled with the Euro-centric perspective on nuclear issues, can become a recipe for further subjugating weaker nations to the dishonorable intent of the dominant states. The book, instead of recommending an international institutional framework to address nuclear issues, should focus more on a broader survey of perspectives. Additional views from small, coastal, non-nuclear states or from unrepresented nuclear states can shed light on previously unexamined problems, and offer a more comprehensive world perspective on oceans in the nuclear age.

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67. _Id._ at 341.

We welcome responses to this Book Review. If you are interested in submitting a response for our online companion journal, *Ecology Law Currents*, please contact ecologylawcurrents@boalt.org. Responses to articles may be viewed at our website, [http://www.boalt.org/elq](http://www.boalt.org/elq).