Open Oceans and Marine Debris: Solutions for the Ineffective Enforcement of MARPOL Annex V

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Open Oceans and Marine Debris: Solutions for the Ineffective Enforcement of MARPOL Annex V

By ANDREW RAKESTRAW*

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I. Introduction

Accompanying once thriving marine life are vast islands of plastic swirling through the oceans, a product of discarded land and ship-based waste. This floating plastic mass revolves around the North Pacific subtropical gyre between San Francisco and Hawaii, situated in an area of sluggish currents and slack winds.\(^1\) Marine plastics wreak havoc on marine animal populations as the creatures ingest and become entangled in the plastic pieces scattered throughout the oceans.\(^2\) In addition to the impact on the marine wildlife populations, marine debris negatively impacts human health, tourism, the fishing industry, coastal communities, and can cause serious damage to boats.\(^3\)

Regulating marine debris at an international level presents numerous challenges. The immensity of the ocean and the lack of state jurisdiction beyond 200 miles off the coast make effective enforcement of plastics dumping regulations very challenging. The current regulatory system essentially leaves compliance with international standards up to the good will of the captain of the ship. Enforcement and compliance are delegated to individual states, and regulated by the International Maritime Organization (IMO).\(^4\) Although the IMO has enacted many rules,\(^5\) violators are not incentivized to comply, and largely feel free to discharge without fear of being caught.

This Note will address the regulatory difficulties surrounding the prevention of marine debris, and provide feasible recommendations for various stakeholders in the international arena. Though many different users of the ocean contribute to the marine debris problem, this Note will focus on reforms to the commercial shipping fleet. Regulating these cargo ships poses

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3. Id. at 39.
unique challenges because they are at sea for long periods of time, frequently have an international crew speaking multiple languages, and are often registered under flag states with open registries and lax enforcement, known as "flags of convenience."

Section II is an introduction to the background of the problem of marine debris and the international regulation of marine debris. This Note will argue that the glaring lack of compliance with Annex V of the International Convention for the Prevention of Pollution of Ships, modified by the 1978 Protocol (MARPOL), is largely due to the piecemeal enforcement structure and a culture of impunity. Ensuring compliance with Annex V will not involve direct enforcement of plastics dumping. Rather, compliance will require working with member nations on a regional level to establish incentives for compliance on the part of ship owners and operators. Furthermore, Section III will analyze the existing regulatory structure and propose practical solutions to close regulatory loopholes. Specifically, the Section will assert that IMO should create a centralized information clearinghouse for port state inspections, place pressure on states under which ships are registered (flag states) to disseminate educational information to sailors, and encourage member states to publish garbage dumping fees to work against the current race-to-the-bottom effect among port operators.

II. Background of the Problem

A. Marine Debris and Plastics

Approximately four-fifths of marine trash comes from land-based sources, while ocean-going vessels discharge one-fifth. Plastic trash presents a unique problem in that it takes centuries to break down in the ocean. For example, a piece of plastic found in an albatross stomach in 2005 bore a serial number traced to a World War II seaplane shot down in 1944. Additionally, the amount of plastic in the oceans is not decreasing. Despite heightened regulation, in a five-year study conducted by Ocean Conservancy that ended in 2007, results indicated that the accumulation of litter

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6. Weiss, *supra* note 1. Much of the plastic from ships consists of synthetic floats or other gear dumped to avoid the costs of disposal at port.
7. *Id.*
8. *Id.*
Hastings Int'l & Comp. L. Rev. on beaches in the United States is remaining constant. Since this plastic does not biodegrade, it gradually accumulates in the oceans, wreaking havoc on marine populations and eventually washing up on shore.

Plastics pose a serious threat to the marine environment. Entanglement and ingestion of plastics are the two main causes of mortality of marine species. Around 100,000 seals, sea lions, whales, dolphins, other marine mammals, and sea turtles asphyxiate or become entangled in plastic nets or other debris every year. On the Midway Atoll, an isolated series of islands located halfway between North America and Japan, albatross forage at sea and carry back nourishment for their chicks on land. The albatross feed hundreds of miles out at sea, frequently taking them into the heart of the Eastern Pacific garbage patch. Out of the 500,000 albatross chicks born at Midway each year, approximately 200,000 die, mainly from dehydration and starvation. A two-year study showed that chicks that died from those causes had twice the amount of plastic in their stomachs as those that died for other reasons. Albatross are not the only victims. An estimated one million seabirds suffocate or become entangled in plastic nets or debris each year.

Human populations are also threatened by the presence of marine plastics in the environment. When plastics break down into fragments, the tiny pieces become concentrated with toxic chemicals. Organic pollutants such as dichlorodiphenyl-trichloroethane (DDT), polychlorinated biphenyls (PCBs), and other oil-based pollutants known to cause birth defects and cancer in humans are concentrated in many plastic fragments. Mistaking

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12. Id.

13. Id.

14. Id.

15. Id.


17. Id.
the plastics for zooplankton, marine animals eat the toxic plastic particles and absorb the pollutants into their blood streams and hormone receptors.\textsuperscript{18} These toxins work their way up the food chain as larger animals and humans consume the fish.\textsuperscript{19}

Marine plastics have gained attention as the primary component of the Eastern and Western Pacific garbage patches, a vast area where marine debris converges.\textsuperscript{20} The Eastern Pacific garbage patch lies within the North Pacific subtropical gyre, a region between Hawaii and California.\textsuperscript{21} Though estimates vary widely as to the exact location and size of the patch, many studies estimate it to be about twice the size of Texas.\textsuperscript{22} In the Eastern Pacific Garbage Patch, plastic is so prevalent that it outweighs surface zooplankton by a factor of six to one.\textsuperscript{23} One piece of plastic caught in the Northern Pacific gyre can swirl for decades.\textsuperscript{24} As the plastic winds its way through the ocean, it breaks down into smaller particles, which remain just below the water’s surface.\textsuperscript{25} These pieces, the primary component of the garbage patch, are often invisible to the human eye.\textsuperscript{26}

\textbf{B. IMO and MARPOL}

The International Maritime Organization (IMO) is a specialized agency of the United Nations created in 1948 to establish uniform international regulation of the maritime industry.\textsuperscript{27} IMO initially focused on passing regulations focused on vessel safety, but major pollution events led to the passage of MARPOL.\textsuperscript{28} MARPOL is the

\begin{itemize}
\item \textsuperscript{18} Id.; see Algalita Marine Research Foundation, \textit{Plastic Debris from Rivers to Sea} [hereinafter Algalita], available at http://www.algalita.org/pdf/PLASTICDEBRIS ENGLISH.pdf.
\item \textsuperscript{19} Algalita, supra note 18.
\item \textsuperscript{21} Id.
\item \textsuperscript{22} Weiss, supra note 1.
\item \textsuperscript{23} Algalita, supra note 18.
\item \textsuperscript{24} Id.
\item \textsuperscript{25} Id.
\item \textsuperscript{26} Marine Debris Info, supra note 16.
\item \textsuperscript{27} NAT’L RESEARCH COUNCIL, supra note 2, at 52.
\end{itemize}
primary international convention addressing the prevention of pollution of the marine environment by ships. Currently, 150 member nations have ratified MARPOL, representing approximately ninety-nine percent of the gross tonnage distributed across the world. Member nations are not bound simply by signing the convention. Similar to other international conventions, member nations must implement domestic legislation to comply with MARPOL’s mandate.

MARPOL further contains six operational annexes, addressing the prevention of pollution by oil (Annex I), control of pollution by noxious liquid substances in bulk (Annex II), prevention of pollution by harmful substances carried by sea in packaged form (Annex III), prevention of pollution by sewage from ships (Annex IV), prevention of pollution by garbage from ships (Annex V), and prevention of air pollution by ships (Annex VI). This Note limits its discussion to Annex V regarding discharges of garbage, but recognizes that only by implementing a comprehensive regulatory scheme to address all six Annexes will the health of the oceans be ensured.

Annex V creates a disposal scheme for the discharge of garbage from ships at sea and is currently ratified by 139 member nations. Garbage is defined as:

all kinds of victual, domestic, and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in

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30. IMO, Status of Conventions, http://www.imo.org/About/Conventions/StatusOfConventions/Pages/Default.aspx (click on “Status of Conventions Summary” to download the attached file).
32. Dr. Z. Oya Özçayır, The Use of Port State Control in Maritime Industry and Application of the Paris MOU, 14 OCEAN & COASTAL L.J. 201, 204 (2009).
33. Id.
34. NAT'L RESEARCH COUNCIL, supra note 2, at 52.
35. Id. at 53.
other Annexes to the present convention.\textsuperscript{37}

There is an absolute ban on the dumping of plastics, including synthetic ropes, fishing nets and plastic garbage bags.\textsuperscript{38} Annex V specifies the distance from land from which various other wastes may be disposed, as well as the manner of disposal.\textsuperscript{39} Rather than ecosystem considerations, the distances (three, twelve, and twenty-five nautical miles) are based on historical definitions of state, territorial seas, and international waters, and therefore do not account for the impacts of garbage upon the marine environment.\textsuperscript{40} In response, a number of "Special Areas" have been established based on unique ecological and oceanographical considerations, which significantly increase the distance from shore that certain types of garbage can be dumped.\textsuperscript{41}

Similar to other international conventions, IMO has promulgated a voluntary set of guidelines, which can be used by nations in developing legislation for the implementation of MARPOL Annex V.\textsuperscript{42} The requirements of MARPOL are written in broad, sweeping language, while the guidelines detail specific methods to reach compliance. These guidelines describe matters such as port reception facilities, effective implementation of Annex V, and incinerator specifications for ships.\textsuperscript{43} States devising implementing legislation for MARPOL are encouraged to look to the guidelines for specific guidance on complex issues.\textsuperscript{44}

The Marine Environment Protection Committee (MEPC), an IMO committee that meets to develop and amend international conventions and regulations, has turned its focus towards the inadequacy of existing port reception facilities to accept waste discharge from ships.\textsuperscript{45} The MARPOL Guidelines state that:

\[A\]dequate facilities can be defined as those which \ldots fully meet

\begin{footnotesize}
\begin{enumerate}
\item International Convention for the Prevention of Pollution from Ships Annex V, Reg. 1(1), Nov. 2, 1972, 12 ILM 1319 [hereinafter MARPOL].
\item Id. reg. 3(1)(a).
\item Id. reg. 3(1).
\item NAT'L RESEARCH COUNCIL, supra note 2, at 54-55.
\item MARPOL, supra note 37, at Annex V, reg. 5.
\item See ANNEX V IMPLEMENTATION GUIDELINES, supra note 5.
\item Id.
\item Id.
\end{enumerate}
\end{footnotesize}
the needs of the ships regularly using them; do not provide mariners with a disincentive to use them; and contribute to the improvement of the marine environment.\textsuperscript{46}

In addition, the \textit{Comprehensive Manual on Port Reception Facilities}, a non-binding publication issued by IMO, encourages states to take responsible action on the issue of the adequacy of port reception facilities because the establishment of waste management standards and effluent standards are not within MARPOL.\textsuperscript{47}

The MEPC has also recognized that governments should not simply look to the adequacy of port reception facilities, but should also consider the technological problems associated with the treatment and ultimate disposal of garbage.\textsuperscript{48} The \textit{Comprehensive Manual on Port Reception Facilities} recognizes that "states' responsibilities don't end at establishing 'adequate' port reception facilities - UNCLOS [United Nations Convention on the Law of the Sea] requires proper treatment and disposal of these wastes, along with land-generated wastes."\textsuperscript{49} Port reception facilities are ineffective if the off-loaded garbage subsequently ends up in the ocean through improper land-based waste management practices.

MARPOL also mandates that ship operators establish procedures to track waste discharge while at sea. Under Regulation 9 of Annex V, which came into effect in 1995, ships over 400 gross tons are required to maintain a garbage management plan, which lays out written procedures for the collection, storage, processing, and disposal of all garbage generated onboard.\textsuperscript{50} Garbage record books are also mandatory under Regulation 9, requiring ship operators to provide a written record of all garbage discharges and incineration at sea including the date, time, position of the vessel, and description of the type of garbage discharged or incinerated.\textsuperscript{51} A template for the garbage record book is included as an appendix.

\textsuperscript{46} IMO, \textit{Guidelines For Ensuring The Adequacy of Port Waste Reception Facilities}, MEPC Res. 83(44) § 3.2 (Mar. 23, 2000) [hereinafter IMO Guidelines].

\textsuperscript{47} \textit{COMPREHENSIVE MANUAL}, supra note 5, at 23.

\textsuperscript{48} \textit{Id.} at 20.

\textsuperscript{49} \textit{Id.} at 18.


\textsuperscript{51} \textit{Id.}
to MARPOL Annex V. Ship owners must also post placards to notify passengers and crew of the disposal requirements of the regulation. These requirements are designed to compel ship owners to track and provide accurate records of garbage disposal to coastal authorities; yet their impact on compliance is minimal because of the procedural ease in maintaining some form of record without altering unlawful garbage discharge practices.

C. Port State Enforcement

Port states possess the ability to enforce pollution-prevention laws against those ships that visit their ports. Port state control involves the “powers and concomitant obligations vested in, exercised by, and imposed upon a national maritime authority (or its delegatee) by international convention or domestic statute or both.” MARPOL allows port state control officers to inspect a foreign-flagged vessel where there are grounds for believing that the crew is not familiar with shipboard procedures relating to the prevention of pollution from garbage. MARPOL additionally allows a ship to be detained until the situation is rectified. When observed deficiencies lead to detention, the flag state must be informed immediately in order to allow an opportunity to intervene in favor of the owner or operator.

The United Nations Convention for the Law of the Sea (UNCLOS) provides important jurisdictional guidelines for port state enforcement and MARPOL. Article 228(1) of UNCLOS

52. See MARPOL, supra note 37, at Annex V.
55. Prevention of Pollution by Garbage from Ships, supra note 53.
56. Id.
57. Doris König, Port State Control: An Assessment of European Practice, in MARINE ISSUES: FROM A SCIENTIFIC, POLITICAL AND LEGAL PERSPECTIVE 37, 43 (Peter Ehlers et al. eds., 2002).
58. “UNCLOS was a significant step in a different direction with respect to environmental law pertaining to the global commons for the world. In particular, UNCLOS precludes the view of the oceans and seas as an open dumping grounds for anyone choosing to do so.” Benedict Sheehy, International Marine Environment Law: A Case Study in the Wider Caribbean Region, 16 GEO. INT’L ENVTL. L. REV. 441, 448 (2003-2004).
mandates that proceedings taken against a foreign ship must be suspended if the flag state institutes proceedings within six months after the original charges were initiated.\textsuperscript{59} Additionally, Article 217 addresses the enforcement of international rules and standards by flag states and provides that such enforcement must take place "irrespective of where a violation occurs."\textsuperscript{60} Thus, flag states are the primary enforcers of international rules and can effectively supersede a port state's jurisdiction and dismiss any pending actions brought by that port state. Effective flag state enforcement is therefore crucial in order to carry out MARPOL's mandate of eliminating the discharge of plastics into the ocean.

**D. Flag State Enforcement and Flags of Convenience**

The enforcement of MARPOL relies primarily on the exercise of flag state jurisdiction.\textsuperscript{61} Violations of MARPOL Annex V are sanctioned under the law of the administration of the ship, wherever the violation occurs.\textsuperscript{62} The flag state possesses ultimate responsibility for the enforcement and sanction of offenders and the penalties "shall be adequate in severity to discharge violations of the present Convention and shall be equally severe irrespective of where the violation occurs."\textsuperscript{63} Therefore, a ship can largely evade MARPOL's requirements if a flag state cannot or will not enforce violations of international law.

Flags of convenience (FOC)\textsuperscript{64} refers to a common practice of states using open registries, which allow ship owners to register their vessels under the flag of a foreign country with which they have little to no ties.\textsuperscript{65} A lack of administrative machinery or power to effectively impose any government or international regulation is

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{60} Id. at 54.
\item \textsuperscript{61} Id. at 52.
\item \textsuperscript{62} MARPOL, supra note 37, art. 4, § 4.
\item \textsuperscript{63} Id.
\item \textsuperscript{64} The International Transport Worker's Federation (ITF) maintains a list of thirty-two FOC states worldwide. Int'l Transp. See Worker's Fed'n, What are Flags of Convenience? http://www.itfglobal.org/flags-convenience/sub-page.cfm (last visited Apr. 4, 2012).
\end{itemize}
\end{footnotesize}
commonly associated with FOC, placing a larger burden on port states to enforce these regulations because of the lack of FOC enforcement.66 Over one third of all ships throughout the world are registered under FOC.67 The decision where to flag a vessel usually stems from economic rather than political or geographical considerations68 and FOC states provide less stringent enforcement of environmental regulations, thereby giving ship owners the economic advantage of lower labor rates, relaxed safety standards and lower foreign tax rates.69 The largest FOC states are Liberia, Panama, Malta, the Bahamas, and Antigua.70 Of the thirty-two FOC states identified by the International Transport Worker’s Federation, ten are listed on the Paris MOU’s black list (see infra), which indicates a “very high” or “high” risk of inspection violations.71

FOC are often cited as a major cause of environmental pollution.72 Lack of regulation and inexpensive, untrained labor are the two major reasons for the disproportionately negative environmental impact of ships registered under FOC.73 Because a flag state maintains the responsibility for implementation and issuance of appropriate certificates, ship owners have little incentive to comply with MARPOL Annex V when regulations are not enforced.74 IMO has identified flag state enforcement and implementation of international agreements as a strong impediment to the effectiveness of conventions such as MARPOL, and has convened a Subcommittee on Flag State Implementation (FSI) to

67. Boos, supra note 65, at 412.
71. See the ITF list, supra note 64; see also THE PARIS MOU ON PORT STATE CONTROL, PORT STATE CONTROL: IN THE OFFING, 2009 ANNUAL REPORT, available at http://parismou.org/Publications/Annual_reports/.
73. Id. at 185.
74. PAMBORIDES, supra note 66, at 59.
address the issue. This subcommittee seeks to identify and correct the negligence of many flag states and encourage enforcement of international conventions. However, the subcommittee has made little progress in curtailing the failure of FOC to enforce international agreements.

Full Annex V compliance cannot be realized if flag states are not effectively enforcing international conventions. Concurrently, a key component of Annex V compliance, the education of crew and captains of discharge requirements, will not occur if flag states do not provide the necessary resources and ensure that education materials are widely used. FOC place a heavy burden upon port states to enforce international convention standards when the real responsibility should be placed upon the flag state.

E. Regional Memorandums of Understanding

Regional Memorandums of Understanding (MOU) further coordinate enforcement of international regulations. These administrative agreements are subscribed to and executed by maritime authorities of the party states in a cooperative framework. MOUs are not binding international conventions and do not establish new standards or enforce requirements on foreign vessels beyond the international conventions agreed upon in the MOU. The establishment of the MOU simply shows the will of the participating authorities to orchestrate similar procedures for carrying out inspections, exchange of gathered information, and implementation of the relevant instruments. There are currently nine regional port State control regime MOUs worldwide.

77. BIRNIE ET AL., supra note 75, at 76.
78. Özçayır, supra note 32, at 201.
79. Id. at 210.
80. Id.
81. Id. at 212.
82. Id. at 212.
The model for these MOUs is the Paris MOU, which was adopted in 1982 as a regional cooperative agreement to address the safety of life at sea, living and working conditions aboard ships, and the prevention of pollution from ships. There are currently twenty-seven participating maritime administrations acting through a coordinated system of port state control that encompass the waters of the European coastal states and the North Atlantic basin from North America to Europe. MARPOL has been designated a relevant instrument by the Paris MOU, and thus a component of the Paris MOU's enforcement scheme.

The Paris MOU is a system of port state control designed to target substandard ships. A number of different inspection regimes are in place, depending upon a ship's past inspection record and ship-risk profile calculation, a measure taking into account a ship's previous inspection record and flag state, among other factors. Port state control officers conduct their inspection based upon the applicable international conventions. Ships can be detained or banned depending on the results of the inspection. Member states are required to compile and send the results of their inspections to the central processing system in France.


85. Özçayır, supra note 32, at 210.
86. History, supra note 84.
89. The Paris MOU on Port State Control, Inspection Types, http://parismou.org/Inspection_efforts/Inspections/Inspection_types/ For example, an oil tank ship that is older than twelve years and is registered under a “high risk” flag is considered a “High Risk Ship,” whereas if that same ship were registered under a “medium risk” flag it would be considered a “Standard Risk Ship.”
91. Id.
of a detention, the member state must immediately notify the flag 
state and rely upon the flag state to effectively punish the detained 
vessel.93

The Paris MOU publishes an annual report compiling the 
results of the comprehensive inspection regime.94 Annex V 
violations, stemming from the lack of a garbage log or garbage 
management plan, are listed.95 The most recently published report 
indicated that in 2010, 0.95% of inspected ships had Annex V 
deficiencies.96 Despite the seemingly low number, even if only one 
in one hundred ships improperly dispose of garbage into the ocean, 
the sheer quantity of garbage and plastics from those ships would 
be staggering.

III. Proposed Solutions to the Difficulties of Regulating the 
Discharge of Marine Debris

Because the ocean spans millions of miles, direct enforcement of 
international environmental agreements relating to the discharge of 
trash is impracticable. As laid out above, the current regulatory 
structure for marine debris does not comprehensively address the 
root causes of its discharge – the ability to discharge without being 
captured. MARPOL recognizes the need to provide incentives to 
discharge trash at port reception facilities.97 However, this goal is 
not realized on a comprehensive international level because port 
states operators do not consistently enforce international 
regulations. IMO does not have a process for effectively dealing 
with non-compliance issues;98 therefore IMO needs to spur 
dialogues and agreements between port states. This Section will 
address some of the structural problems that prevent effective 
enforcement of MARPOL Annex V, and it will propose a number of 
Key Solutions that respond to the current deficiencies.

93. Id.
94. See THE PARIS MOU ON PORT STATE CONTROL, PORT STATE CONTROL: VOYAGE 
COMPLETED, A NEW HORIZON AHEAD, ANNUAL REPORT 2010 [hereinafter ANNUAL 
REPORT 2010], available at http://parismou.org/Publications/Annual_reports 
95. Id.; see also annex 10 of Paris MOU, supra note 92.
96. ANNUAL REPORT 2010, supra, note 94.
97. ANNEX V IMPLEMENTATION GUIDELINES, supra note 5, reg. 7.2.1.
98. BIRNIE, supra note 75, at 409.
A. Key Solutions

IMO should:

Compile information from regional MOUs about ship compliance records and pending enforcement actions into the GISIS to provide a reliable, centralized information source for port states.

Actively publicize those port reception facilities that are inadequate under MARPOL standards.

Convene a subcommittee to adopt common standards for port reception facilities that are enforceable against member states.

- Convene a subcommittee to conduct a comprehensive study on MARPOL Annex V compliance and enforcement.

- Convene a subcommittee to draft an Annex V Regulation that addresses the specific technical requirements needed to obtain an "adequate" port reception facility.

- Encourage port state enforcement by further defining "undue delay" in MARPOL Article 7.

Regional MOUs should:

- Standardize and enforce fines against ships that do not maintain a garbage log, garbage management plan, or post placards where required.

- Standardize charges for garbage disposal to reduce uncertain costs and incentivize lawful garbage discharge.

- Establish a penalty system for member states that do not maintain adequate port reception facilities.

- Place political and economic pressure on member states not providing adequate garbage reception facilities.

B. Port State Operators Lack a Reliable Information Source for Noncompliant Flag States and Ships

Port operators do not have access to a reliable and comprehensive source for information on noncompliant ships and flag states. Regulating marine debris at a portside level involves checking that a garbage log is being maintained and that ships carrying over fifteen passengers have a garbage management plan.99

Although inspection of these two documents rarely leads to direct

99. Amendments, supra note 50, at 9(2) and 9(3).
evidence of garbage dumping, the inspection process demands procedural compliance, thereby forcing ship operators to at least consider alternatives to dumping garbage into the ocean.

When inspecting a ship, port state inspectors are conducting the inspection blindly, with no knowledge about the ship’s previous deficiencies. Port state inspectors have such little time aboard the ship that every second is crucial.\textsuperscript{100} If port state inspectors are able to access previous inspection records for a ship on demand, the inspection process will be significantly more effective. The inspectors will be able to focus their time on affirming that past deficiencies have been corrected. For example, if one state refers a violation to the flag state for not possessing a comprehensive garbage management plan,\textsuperscript{101} a state official at another port of call will be able to enter the inspection with that knowledge, concentrating their efforts on previously recognized violations. This model is based on the Paris MOU’s use of a centralized data clearinghouse, which allows for port state operators to obtain information about a ship’s inspection record in other Paris MOU member nations.

Compared with other regional agreements, the Paris MOU has always been the strictest port state control program.\textsuperscript{102} The Paris MOU compiles a wealth of information on their website, including a list of previous ship inspections, detentions, and bannings.\textsuperscript{103} It also publishes an annual report detailing violation records.\textsuperscript{104} In addition, the organization classifies flag states as low risk, medium risk, or high risk, depending on the frequency of violations and detentions.\textsuperscript{105} The Paris MOU has recently adopted a new inspection regime, which takes into consideration a ship’s age, type, flag performance, organization, International Ship Management

\textsuperscript{100} Id. at Annex V, reg. 7(1). The Port of Rotterdam recognizes the need for speedy discharge of garbage, and has thus invested significant resources into streamlining the garbage discharge process once a boat enters the port. PORT OF ROTTERDAM, Any Waste, Any Time, http://www.portofrotterdam.com/nl/Over-de-haven/Haven-in-beeld/video/Pages/default.aspx?videold=27.

\textsuperscript{101} As required by MARPOL, Annex V, reg. 9(2). See MARPOL, supra note 37.

\textsuperscript{102} Özçayır, supra note 32, at 217.

\textsuperscript{103} The Paris MOU on Port State Control, Welcome to Paris MOU, http://parismou.org [hereinafter Welcome to Paris MOU].

\textsuperscript{104} ANNUAL REPORT 2010, supra note 94.

\textsuperscript{105} Id.
agency, and number of deficiencies and detentions. Low-risk ships are rewarded with longer intervals between inspections.

The goal of a centralized information clearinghouse is to name and shame flag states and ship operators into compliance with international treaty obligations. The names of the ship owner and classification society, as well as the name and address of the initial charterer of a ship carrying bulk cargoes, are collected by the Paris MOU's information clearinghouse. The ranking system results in direct pressure on the flag state to comply with their international obligations. The policy also promotes effective implementation because the consistent targeting of a specific flag could result in a reduction in tonnage of that flag, reducing its revenue. Classification societies and charterers must also consider the effects of port state control for the same reasons, as ships targeted by extensive inspections and costly delays may reregister. The Paris MOU publishes a list of vessels detained, as well as "Detained Vessels in the Spotlight," thereby publicly calling on the flag state to amend its oversight practices. Effective flag state oversight mechanisms like these will lead to better garbage management practices through education of the public and crew, and more effective supervision of garbage management practices.

In an article on port state control, Maritime Law Consultant Dr. Oya Özçayır argues that a potential difficulty of port state control is its ease of employment as a political tool to criticize certain flag states for not complying with international conventions. The risk of port state enforcement turning into a geopolitical game of showmanship, however, is likely unfounded. Port state inspections and detentions are a minor inconvenience, and if vessels from a

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107. Id.
109. Özçayır, supra note 32, at 217.
110. PAMBORIDES, supra note 66, at 70.
111. Id.
112. Özçayır, supra note 32, at 217.
113. See History, supra note 84.
114. Özçayır, supra note 32, at 238.
certain flag are unfairly detained or discriminated against, shipowners can bring a claim against the port state for undue delay.\textsuperscript{115} Article 7 of MARPOL specifies that ships unduly delayed shall be entitled to compensation for any loss or damage suffered.\textsuperscript{116} However, "undue delay" is not defined and subject to the interpretation of each captain,\textsuperscript{117} thereby reducing incentives for port states to conduct thorough inspections for fear of having a claim filed against them.

The IMO currently operates the Global Integrated Shipping Information System (GISIS), a database that details the port reception facilities at major ports throughout the world.\textsuperscript{118} It also provides reports and comments on deficient discharge facilities.\textsuperscript{119} Although IMO lacks effective enforcement power for debris discharges, its ability to disseminate information complements its ability to publicize violations. Data relating to the port reception facilities is far from complete though. The ambitious inspection database maintained by the Paris MOU could complement the IMO's port reception facility database. In this way, when port state inspectors board vessels, they are able to focus attention on documented substandard operational equipment, garbage sorting receptacles, placards, or certificates. IMO should utilize the Paris MOU's existing data and model to generate a similar system. By granting port reception facilities and ship operators access to the site, a real-time model of inspection records could be utilized, ultimately leading to a reduction in the amount of garbage dumped into the oceans.

IMO should also compile inspection information from the nine regional MOUs into the GISIS system. Port states could then have access to a greater knowledge base of offending ships. This pooled knowledge would also allow IMO to document effective port state control. With this information, IMO should conduct studies and create recommendations for regional MOUs to ensure compliance with MARPOL's regulations.

\textsuperscript{115} See MARPOL, supra note 37, art. 7.
\textsuperscript{116} Id.
\textsuperscript{117} Id.
\textsuperscript{118} IMO, Global Integrated Shipping Information System, http://gisis.imo.org/Public/Default.aspx (follow "Port Reception Facilities" link (requires registration)).
\textsuperscript{119} Id.
C. Lack of Standardized Port Reception Facilities

The lack of standardized port reception facilities is a major contributor to the poor disposal behavior of the commercial shipping fleet. When the availability, functionality, and cost of garbage reception facilities are uncertainties, ship operators are more likely to take the easy route of discharging at sea.

MARPOL requires ports to ensure adequate port reception facilities. Yet, because port state operators do not want to be viewed as having prohibitively expensive reception facilities, there has always been a "race to the bottom." For example, common perceptions among ship operators that the United States' port reception facilities are too expensive push the ship operators to either discharge their garbage at other ports or dump it into the ocean.

The IMO Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities define adequate facilities as those that "do not provide mariners with a disincentive to use them." The Guidelines further suggest that unreasonably high costs can deter the use of port reception facilities. IMO has also published the Comprehensive Manual on Port Reception Facilities, which complements the Guidelines. These two documents detail proposed methods to comply with the MARPOL Guidelines. Unfortunately, the documents languish as suggested compliance mechanisms and are not enforceable against member states.

Port states do not possess incentives to establish adequate port reception facilities when funds for improvements are scarce and enforcement of port reception facility standards is nonexistent. The Comprehensive Manual recognizes that adequate port reception facilities at a regional level are crucial for actual compliance. Ensuring that each port state has proper reception facilities for

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120. ANNEX V IMPLEMENTATION GUIDELINES, supra note 5, at 24.
121. NAT'L RESEARCH COUNCIL 2, supra note 10, at 166 n.19.
122. Id. at 166.
123. ANNEX V IMPLEMENTATION GUIDELINES, supra note 5, § 3.2.
124. Id. § 5.2; see also IMO, GUIDE TO GOOD PRACTICE FOR PORT RECEPTION FACILITY PROVIDERS AND USERS (2009), available at http://www.imo.org/OurWork/Environment/PollutionPrevention/PortReceptionFacilities/Documents/671.pdf.
125. See COMPREHENSIVE MANUAL, supra note 5.
126. Id.
127. Id. at 23.
garbage in a given region prevents one port from carrying the burden for the whole region and protects against creating incentives for ships to illegally discharge their garbage into the water. 128

To ameliorate the lack of standardized port facilities, IMO should more actively publicize those facilities that are inadequate under MARPOL standards. By publicly denouncing states without adequate port reception facilities, neighboring ports will likely recognize the unfair burden of disposal and environmental degradation placed on them. Public pressure upon the noncompliant states will lead them to acknowledge the need for proper reception facilities. The GISIS, mentioned supra, is a strong step in this direction. The GISIS can be strengthened as an information source by including the costs of garbage discharge in the information database.

IMO should also adopt minimum common standards for port reception facilities that are enforceable against port states. A subcommittee should be convened to draft an additional regulation for Annex V that addresses the specific technical requirements needed to obtain an “adequate” port reception facility. The subcommittee should identify specific challenges associated with inadequate garbage reception facilities and propose the most effective and lowest-cost methods for garbage management.

Regional MOUs should standardize charges for garbage disposal to reduce the uncertainty of costs, thereby discouraging a race to the bottom among ports within a region. 129 The Comprehensive Manual on Port Reception Facilities recognizes that by establishing adequacy at a regional level, one port or country does not share an unfair burden. 130 Regional MOUs are given the flexibility to best determine how to assess fees for garbage discharge. IMO should also capitalize on its role as an international institution to provide economic incentives for states to enter into regional agreements such as the Paris MOU, in order to standardize port reception facilities at a regional level.

Port states that are party to regional MOUs can also pool their shared knowledge to create a discharge system that is efficient and inexpensive for each state. Portside officers, marine engineers,

128. Id.
129. IMO Guidelines, supra note 46, § 5.2.
130. COMPREHENSIVE MANUAL, supra note 5, at 23.
dockside workers, ship crew, captains, and others involved in the proper functioning of a port facility should be tasked with discussing discharge issues at a logistical, on-the-ground level. With the knowledge gained from these dialogues, members of regional agreements should publish manuals and convene regular dialogues on technology and possible regulatory improvements related to garbage discharge.

Furthermore, regional MOUs could establish a penalty system when one member state does not comply with its obligation to maintain adequate port reception facilities. A monetary or trade sanction recognizes that if one port state’s reception facilities are not adequate, the entire region has to bear the cost of increased usage of their garbage facilities and the concomitant environmental degradation from dumping when there are not adequate reception facilities. These sanctions would have to be agreed upon in the terms of the MOU, and would have to be voluntarily assented to because of the nonbinding nature of a regional MOU. Economic sanctions are not likely to gain strong political approval unless the problems surrounding marine debris are recognized as a threat to environmental health, so as to catalyze political action. Regional MOUs are more nimble organizations than IMO and are able to spark political allegiances by appealing to the unique and shifting needs of their member states.

**D. Lack of Enforcement by Flag States**

States are not adequately enforcing the international requirements of Annex V against ships registered under their flag. In general, the enforcement of international conventions presents difficult problems: conventions can take a long time to integrate into the national legal system of the state;\(^1\) there might be inconsistencies between the convention and the implementing legislation;\(^2\) or implementation of a convention may not be a priority of the signatory state.\(^3\) This disconnect between ratification and implementation of international conventions is evidenced by the large number of violations catalogued by the Paris MOU.\(^4\)

\(^{131}\). Özçayır, supra note 32, at 204.
\(^{132}\). Id.
\(^{133}\). Id.
\(^{134}\). See Welcome to Paris MOU, supra note 103.
MARPOL enforcement relies almost exclusively upon flag states to sanction and remedy the violations they receive from port states that document infringements.\textsuperscript{135} When a coastal state detects an alleged violation, it is required to either take action under its own laws or forward the case to the flag state for consideration.\textsuperscript{136} But when an offense occurs in international waters, the responsibility for imposing the penalty lies with the flag state.\textsuperscript{137} In the case of garbage discharge, detecting violations in international waters is nearly impossible, so the true enforcement lies in the regular maintenance of a garbage record book and the construction of a viable garbage management plan, which are dependent upon flag state enforcement. International regulations are essentially voluntary without flag state enforcement.

Shipowners currently violate MARPOL with impunity because of ineffective enforcement of regulations.\textsuperscript{138} Experience dictates that if shipowners find laws objectionable, they will seek legal methods to evade the laws provided that no negative consequences will result.\textsuperscript{139} Simply referring alleged violations to flag states has not resulted in significant action. A 2000 Government Accountability Office Report on cruise ship marine pollution indicated that when the Coast Guard referred violations to flag states, the response rate was dismal.\textsuperscript{140} The Coast Guard received no information at all about eleven of the seventeen cases from 1993 to 1995, one ship was fined an unknown sum, and another ship was to be "surveyed," although the flag state indicated it had a "reasonable doubt" about the incident. In the final four cases, the flag state indicated it would take no action whatsoever.\textsuperscript{141}

These cases illustrate the fact that national governments have

\begin{itemize}
  \item \textsuperscript{135} See MARPOL, \textit{supra} note 37, art. 7.
  \item \textsuperscript{136} U.S. GOV'T ACCOUNTABILITY OFFICE, GAO/RCED-00-48, \textsc{Progress Made to Reduce Marine Pollution by Cruise Ships, But Important Issues Remain} 20 (2000) [hereinafter GAO REPORT].
  \item \textsuperscript{138} Gerard Peet, \textit{International Co-operation to Prevent Oil Spills at Sea: Not Quite the Success It Should Be}, in \textsc{Green Globe Yearbook on International Co-operation on Environment and Development} 1994, at 41, 49 (Helge Ole Bergesen & Georg Parmann eds., 1994).
  \item \textsuperscript{139} L.F.E. Goldie, \textit{Environmental Catastrophes and Flags of Convenience - Does the Present Law Pose Special Liability Issues?}, 3 \textsc{Pace Y.B. Int'l L.} 63, 82 (1991).
  \item \textsuperscript{140} GAO REPORT, \textit{supra} note 136, at 20.
  \item \textsuperscript{141} Id.
\end{itemize}
not effectively implemented MARPOL. Gerard Peet’s report on MARPOL enforcement, detailing state compliance with various MARPOL requirements,\(^{142}\) concludes that state compliance with MARPOL should not be accomplished by new international regulations but by effective enforcement of the existing regulations.\(^{143}\) The Peet study looked at Article 11(e) and (f) of MARPOL, which require annual reports delivered to the IMO about the status of the convention. Only Australia had submitted reports every year since MARPOL entered into force.\(^{144}\) Seven countries had submitted reports for every year excluding one and more than 30 parties had never submitted a report at all.\(^{145}\) Yearly reports, though a bureaucratic formality, are crucial to the effective implementation of MARPOL.\(^{146}\) The IMO needs sufficient data to assess MARPOL’s effectiveness, and if a member party is not complying with such a simple procedural requirement as filing reports there is cause for concern regarding compliance with other more substantial requirements.\(^{147}\) Therefore, the IMO should “name and shame” noncompliant member states in order to ensure compliance with the procedural and substantive requirements mandated by MARPOL.

Lack of action by flag states can be incentivized through a centralized processing system, proposed *infra*, that provides statistics of enforcement actions taken by flag states. The Internet site would include pending, resolved, and outstanding enforcement actions. Regional MOUs could require flag states to submit information about the outcome of the actions. This would eradicate a culture of impunity that flag states encourage by naming and shaming flag states that do not act on reported violations and by publicizing noncompliant flag states through the Internet and publications. IMO does not currently maintain a comprehensive database of flag state enforcement, and accurate numbers are needed to effectively understand and reform the MARPOL system. The compilation and distillation of enforcement actions in one centralized location will encourage studies that act as a call to arms.

\(^{142}\) Peet, *infra* note 138.
\(^{143}\) *Id.* at 51.
\(^{144}\) *Id.* at 47.
\(^{145}\) *Id.*
\(^{146}\) *Id.*
\(^{147}\) *Id.*
for effective Annex V enforcement.

MARPOL's lack of measures for monitoring state compliance significantly prejudices its potential to achieve its objectives.\textsuperscript{148} IMO should convene a subcommittee to assess MARPOL compliance. The committee should look at the implementing legislation for MARPOL, flag state responsiveness to reported violations, compliance with regular reports on the status of MARPOL to IMO, and port state inspection regimes, among other indicia. By conducting a study measuring compliance with MARPOL, IMO will gain a fuller understanding of where to most effectively target its limited resources.

\textbf{E. Lack of Enforcement by Port States}

Port states are unable to directly enforce Annex V violations because of the vast expanse of the territorial waters. The current port state enforcement strategy is summed up in Gerard Peet's study:

"[T]here was little chance that ships would be detected when making illegal discharges at sea; when ships were seen while illegally discharging at sea, there was little chance that they would be brought before justice; when ships involved in unlawful discharges were brought before justice, chances were small that penalties would be given; and when penalties were given, these would generally be very low and definitely not adequate in severity to discourage MARPOL 73/78 violations."\textsuperscript{149}

While Peet's study focused on oil discharge under MARPOL, his conclusions apply equally to marine debris. In an ideal world, flag states would conduct all enforcement actions, and port states would not have to police noncompliance.\textsuperscript{150} The Peet study also looked at Article 4 of MARPOL, which requires contracting parties to act upon violations of the requirements of MARPOL.\textsuperscript{151} In most cases (1,077 out of 1,335 in the sample) the action is left up to the flag

\begin{footnotesize}
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  \item \textsuperscript{148} Sheehy, supra note 58, at 454.
  \item \textsuperscript{149} Peet, supra note 138, at 49–50 (citing M.J. Stoop, Olieverontreiniging door schepen op de Noordzee over de periode 1982-1987, opsporing en vervolging (Oil Pollution by Ships in the North Over the Period 1982-1987, Investigation and Prosecution 10 (1990) (only in the Dutch language; an English language summary was given in IMO Document MEPC 29/10/3, 1990)).
  \item \textsuperscript{150} Özçayır, supra note 32, at 201.
  \item \textsuperscript{151} Peet, supra note 138, at 48.
\end{enumerate}
\end{footnotesize}
state. Of the remaining 258 cases, 68 reported pending action, 93 revealed insufficient evidence, 72 imposed a fine, and 12 took an undetermined "another action." This data highlights the ineffectiveness of the existing regulatory regime and the crucial role of flag state enforcement against noncomplying vessels.

Recognizing that effective port state enforcement relies upon incentives provided to mariners to discharge their garbage at port reception facilities, port states must induce compliance by conducting thorough on-board inspections. Pooling resources on a regional level can address the lack of funds and technical equipment at a port state level. Regional MOUs should actively assist other member states by holding regular meetings and sharing knowledge about inexpensive solutions to improve inadequate port reception facilities.

Standardizing enforcement fines against ships will give port states a reason to enforce MARPOL Annex V. The IMO should create a system where the port state is able to collect against both a flag state and ship operator for repeated violations involving incomplete garbage logs, lack of placards, or lack of garbage management plans. By creating a fine system that operates with a strict liability tort theory, port states will actively pursue violators. This would allow for enforcement fines regardless of a vessel or state's culpability. An amendment should be made to MARPOL and integrated into regional MOUs that allows states to collect a predetermined amount of damages when a court proves ships have dumped garbage.

The IMO should additionally incentivize port inspections by allowing states that are parties to a regional MOU to receive more representation at the IMO. This can be accomplished by restructuring the IMO voting process to cater more toward regional interests. Members within regional MOUs could hold each other accountable for effective port state enforcement by providing standards. Regional MOUs could also pool resources to improve

152. Id.
153. Id. at 48–49.
154. IMO, MEPC Circular 309, The Lack of Reception Facilities for Ship-Generated Waste in Many Ports, available at http://www.ehikoo.com/ehikoo/browseTech.do?techTreeld=31911&lang=en ("One reason given by many Members for their lack of sufficient reception facilities is the cost involved. IMO decided to assist in this matter and has established a Correspondence Group on a financing scheme for reception facilities.").
the port reception facilities for member states that do not have the funds to provide effective port reception facilities.

Finally, IMO should provide further clarification to MARPOL Article 7, which states that civil penalties may be brought against port states that unduly delay ships. The "undue delay" language is meant to prevent overeager enforcers, but has the effect of discouraging any enforcement at all. The broad language should be narrowed to prevent port states operators from being sued for conducting regular inspection processes.

**F. Future MEPC Changes to Annex V**

The Marine Environment Protection Committee adopted amendments to Annex V at its July 15, 2011 meeting. The amendments, which go into effect January 1, 2013, modify Annex V by specifying that discharge of all garbage into the sea is prohibited, except as expressly provided otherwise and by expanding the requirements for placards and garbage management plans to fixed and floating platforms. These amendments reflect a clear realization by IMO that dumping from ships is per se damaging to the environment and local economies. However, they do not fully address the enormity of the problem of plastics in the marine environment. As discussed previously, IMO should engage with port and flag states, port operators, and ship owners to ensure compliance with Annex V. Strict language in international agreements is meaningless unless the standards are actually enforced.

**IV. Final Conclusions**

Dumping of plastics into the ocean is a classic example of the tragedy of the commons. Since there is not an effective regulatory scheme to address garbage dumping, ships continue to discharge largely unchecked. The difficulties surrounding the regulation of marine plastics dumping are daunting. IMO must incentivize compliance and enforcement, while recognizing the objections that will erupt if IMO is viewed as an impediment to the free flow of

155. See MARPOL, supra note 37, art. 7.


157. Id. reg. 3(1).
goods across the seas. This note has addressed just a few of the regulatory difficulties surrounding MARPOL Annex V and routes to effectively improve them.

Scientists, politicians, regulatory agencies, and the media should publicize the problems of marine dumping and the concurrent dangers to human and marine animal populations on a grand scale. Further research must also be done surrounding the enforcement of MARPOL Annex V, and its relation to identifiable harms perpetrated upon the global commons. Only if individuals around the world know of the destructive effects of marine debris on the ecosystem and human populations will the problem truly be tackled. The global community must therefore reform the political and economic factors underlying the ineffective regulatory structure that allowed our oceans to be transformed into a garbage dumping ground.
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