Addressing Global Scale Environmental Issues: Developing an International Convention for the Control of Ballast Water

by

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Masters project submitted in partial fulfillment of the
requirements for the Master of Environmental Management degree in
the Nicholas School of the Environment and Earth Sciences of
Duke University
2002

ABSTRACT

Environmental concerns regarding international shipping transcend national boundaries and therefore need to be addressed through an international forum. One such forum, the International Maritime Organization (IMO) is facilitating the creation of a treaty for the management of ballast water to prevent the transfer of invasive species throughout the globe.

Having a universal set of regulations for ballast water is important for the shipping industry as well as the global environment. At the international level, there are many hurdles to reaching agreement on an appropriate action, including the complexity of the issue, frequent scientific uncertainty, and a wide range of actors and interests. These obstacles have lengthened the draft negotiation period for the ballast water treaty beyond the original desired timeline and beyond that of the Convention on Harmful Anti-fouling Systems on Ships, which began being drafted at the same time, yet was adopted in 2001. In addition, economic, procedural, and political factors absent from the ballast water negotiation process accelerated the negotiating process for the anti-fouling treaty.

The IMO plans to hold a diplomatic conference to adopt the ballast water treaty in 2004; however major aspects of the treaty are still under debate. Consequently, the likelihood that the treaty will prevent transfer of species is still undeterminable in my opinion. Progress in upcoming IMO meetings will determine if the draft will be ready for a 2004 diplomatic conference. If a treaty is to be generated, it is imperative that the organization hold the conference in 2004 to minimize unilateral actions that would create a complex web of regulations. Progress for the group has been slow, but the work the group is doing creates precedent for future pollution treaties.

Table of Contents

FORWARD

Like most international environmental negotiations, the ballast water debate is political. Politics greatly affects all outcomes and discussions. Backroom deals and hallway discussions play a significant role in what goes on in IMO sessions. These important, but unrecorded events present a considerable research challenge, especially for someone new to the arena. It was difficult to get diplomats to discuss the more political side of the process, especially since negotiations are still taking place. Please keep this in mind when reviewing this document. Understand that hidden agendas and political expediency, to which I was not privy, may underlie the issues and events discussed in this paper.

ACKNOWLEDGEMENTS

I would like to thank my advisor, Dr. Dan Rittschof for his support and guidance on this project. I'd also like to thank Dr. Michael Orbach for helping me understand the sociopolitical issues involved and for his assistance during my preparations to travel to the IMO ballast water meeting. Thank you to WWF-UK and Sian Pullen for allowing me to attend the Ballast Water Working Group as one of their delegates, so I could see first hand the ballast water negotiations.

Thank you to all the present and past IMO delegates who were willing to discuss the treaties with me – Dr. Jim Carlton, Mr. Bob Martin, Ms. Kathy Metcalfe, Mr. Bryan Wood-Thomas, Mr. Ricardo Coutinho, Mr. Andreas Tveteraas, Mr. Scott Newsham, Dr. Richard Everett, and Ms. Lindy Johnson. I greatly appreciate their assistance and candidness. I would like to especially thank Lindy Johnson for introducing me to the international debate and helping me get on the WWF delegation to the IMO-MEPC-BWWG. Without her help, none of this could have been possible.

I'd like to thank Allegra Cangelosi from the Northeast-Midwest Institute for giving me my first experience with ballast water policy and for her willingness to help me understand the details of the issue. I'd also like to thank my fellow students and the Duke Marine Lab staff for their support and advice during this project.

INTRODUCTION

While nation states have the ultimate responsibility to protect their environment and natural resources, some environmental and natural resource concerns transcend national boundaries. This is particularly true for ocean resources. In order to address global environmental problems adequately, the international community must cooperate. International Organizations play an important role in facilitating international discussion and cooperation concerning the environment. They help forge consensus on issues and create multi-lateral agreements for action.

Global environmental impacts, such as introduction of invasive species due to international shipping, must be addressed at the international level for efficient resolution. The International Maritime Organization (IMO) addresses these environmental concerns regarding international shipping for the UN and is at present facilitating the creation of regulations for the control and management of ballast water in order to prevent the transfer of invasive species throughout the globe. Having a universal set of regulations for ballast water is important for the industry as well as the global environment.

However, "global environmental problems pose important diplomatic and legal challenges to the international community" by requiring a considerable amount of international cooperation (Chasek 1997). There are many hurdles to reaching agreement on an appropriate action, including the complexity of the issue, scientific uncertainty, and a wide range of actors and interests (Chasek 1997). These factors contribute to a complicated and usually slow process of international treaty development. The developers of the ballast water convention have had to face these challenges as well as a lack of clear precedence for drafting the document.

In this paper, I will examine the progression towards an international convention for ballast water management within the IMO Marine Environmental Protection Committee and discuss potential outcomes for the treaty and our environment. I will also make

recommendations on how to assist the development process in the working groups of the IMO.

METHODS FOR ANALYSIS

This case study involves investigating the major factors inhibiting and facilitating the development of the draft convention on ballast water management. I examined the current literature, internal International Maritime Organization (IMO) documents, and interviewed IMO Marine Environmental Protection Committee (MEPC) Working Group participants. First, I reviewed the current literature on aquatic invasive species and ballast water to determine the current knowledge and available technology alternatives. I also reviewed past and present regulatory initiatives for the control of ballast water within the United States and internationally. Since the convention is being drafted through the IMO, its history, structure and procedures are important to treaty development. Therefore, I conducted a review of the structure and function of the organization and its successful development of the international treaty addressing ships' antifouling systems.

To analyze the treaty development progress, I reviewed various MEPC reports, supporting documents, and interviewed participants (see Appendix A) from the group charged with drafting the document, the Ballast Water Working Group. As part of this analysis, I compared the progress history of the Convention on the Control of Harmful Anti-fouling Systems and the draft Convention for the Control and Management of Ship's Ballast Water and Sediments since there are similarities to the two cases. I compared timelines and key progress steps of these two initiatives by reviewing past IMO MEPC working group reports and interviewing MEPC working group participants (see Appendix A) from both treaties.

To analyze the progression towards consensus on the ballast water convention, I compared four subsequent ballast water convention drafts starting with the 2001 US draft of the ballast water treaty, which was adopted by the Working Group in 2001 as the consolidated draft text. In addition, I personally observed the debate on the subjects of

continued contention during the MEPC Ballast Water Working Group meeting from September 30- October 4, 2002 in London. I also questioned participants about contentious issues. Using the information I gathered I attempted to determine the roots of disagreements. From this information I draw conclusions on what and when the outcome of negotiations will be and give recommendations on how to assist the development process in the MEPC working groups.

AQUATIC INVASIVE SPECIES AS A NATIONAL AND GLOBAL ISSUE

After habitat loss, introduced species are considered the second largest threat to biodiversity (Carlton 2001). Forty-two percent of listed endangered species are significantly impacted by introduced species (Pimentel 1999). These species (also called exotic, foreign, alien, non-native, and nonindigenous) enter ecosystems outside of their historic range through human-mediated pathways – or vectors. Some species become established in a new ecosystem and begin to adversely impact its function. These species are termed invasive or nuisance species. Invasive species threaten our ecosystems, economy, and public health (NEMWI 2003).

The problem of Invasive Species

Invasive species alter species interactions, nutrient cycling, and/or energy flow in an ecosystem, which can lead to cascading effects (Carlton 2001), including the removal of native species from the system. Interruptions in ecosystem processes, caused by invasive species, can lead to adverse impacts on commercial and recreational fisheries, impediment of waterways, increased costs for industrial water users, and human health risks. Invasive species cost the US approximately $138 billion dollars annually (Pimentel 1999). For example, controlling the invasive zebra mussel costs Great Lakes water users $30 million dollars a year (ANS Task Force 2002). In addition, excessive growth of invasive aquatic plants impedes navigation, recreation, and flood control and depresses property values (ANS Task Force 2002). The establishment of the American comb jelly, *Mnemiopsis leidyi*, in the Black Sea assisted in the demise of the anchovy and sprat

fisheries, and toxic blooms of invasive algal species have caused past closures of the New Zealand shellfish industry, causing irreparable harm to these industries (Shine 2000).

Invasive species have become a major threat to the United States' aquatic and coastal ecosystems. Over 145 invasive species have colonized the Great Lakes system in the last 200 years (Ricardi & MacIssac 2000). Up to 99% of the biomass and 97% of the organisms in the San Francisco Bay are non-native (Cohen 1998). The rate of these invasions has been increasing exponentially since the 1800's (Carlton 2001).

Aquatic invasive species are moved around the earth by a variety of human-mediated vectors. A vector is a physical means or agent by which a species is transported (Carlton 2001). These vectors include ships' hulls, sea chests, and ballast water; movement of floating platforms; importation for the aquarium/pet trade, aquaculture, and the live seafood trade; and recreational boats and fishing activities.

Ballast Water as a Vector of Introduction

At present ballast water is said to be the leading vector of new aquatic invasive species introductions. With more than 45,000 commercial cargo vessels (Lloyd's Register 2000) alone traveling the seas and 2,642 billion gallons of ballast water transferred annually (Shine 2000); it is easy to see why ballast water is one of the leading pathways of introduction. Most marine species spend at least part of their life cycle as plankton or nekton, so ballast water has the potential of transferring most marine taxa. Jim Carlton, a leading invasive species researcher, estimates at least 7,000 marine species are likely transported around the world each day, making ships "a virtual floating biological island" (2001).

Currently, the only method commercially available to prevent ballast water mediated introductions is a process called Ballast Water Exchange (BWE). Ballast Water Exchange is conducted on the high seas (greater than 200 nautical miles from any coastline) and is used to release the organism-rich coastal water in the ballast tanks and replace it with organism-sparse mid-ocean water. This method is used because mid-

ocean species are less able to become established at the ship's coastal destination than coastal species. There are two ways that ships conduct BWE at present: empty-refill and continuous flow-through exchange. For empty-refill, existing guidelines recommend 95% replacement of tank water (Champ 2003). If a ship is using the continuous flow-through method, it must exchange at least 3 times the tank volume (Champ 2003), which regulators estimate is equivalent to 95% replacement.

Unfortunately, BWE is not always practical or effective. Exchange can not be conducted when it may be a danger to the ship's stability. On some ships, exchange methods can result in unacceptable bending and shear stress to the vessel (Champ 2003). If weather is rough, it is too dangerous for a vessel to conduct BWE and when it is conducted it is not always to the recommended guidelines. BWE's effectiveness of species removal is inconsistent. BWE effectiveness of removal ranges from 39% to 99.9%, depending upon the taxonomic groups, ship, and BWE method studied (Cangelosi 2002), making it an unreliable method of protection. Consequently, there is pressure now from many stakeholders to use Ballast Water Treatment (BWT) methods to remove or kill organisms. However, currently no methods have been approved or used on a large-scale.

Many BWT technologies are being considered, including physical removal technologies and various methods which kill organisms in ballast water. These potential technologies can be grouped into 4 categories: mechanical (filtration and separation), physical (sterilization by UV light, and heat), chemical (ozone and biocides), and combination processes (Champ 2003). However, the development of these technologies is still experimental. Systems that can handle the large volume of water in various ballast tanks – 60,000 tonnes for some bulk carriers (Champ 2003) – or the high flow rates – up to 3,000 m^3/hr (Champ 2003) – have not been developed. In addition to these performance requirements, treatment technologies must be economical and physically fit into a ship's design without interfering with the ship's operation (Champ 2003). Finally, they must be safe for crew and environmentally benign. Governments around the globe have been discussing the creation of regulations (containing certification standards and procedures)

to prevent transfer of invasive species and to advance research and development of appropriate technologies.

Ballast Water Management Regulations around the Globe

Australia, New Zealand, Israel, Chile and the United States have created legislation attempting to address invasive species and ballast water (INTERTANKO 2003). Most of these regulations contain guidelines for ballast water management, requesting ballast water exchange to be conducted in the open ocean. Most insist on mandatory reporting of ballast water operations and provide for random sampling of tanks for compliance verification.

In the United States since the 1990s, stakeholders at the national level have moved forward on regulating this problem. In 1990, the US Congress enacted the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA). Spurred by the growing concern over the zebra mussel invasion in the Great Lakes, NANPCA created a multi-agency task force, the Aquatic Nuisance Species Task Force (ANS Task Force), to address the issue of aquatic invaders. NANPCA also instructed the Coast Guard to develop guidelines for ballast water management in the Great Lakes. In 1996, the US Congress reauthorized NANPCA by creating the National Invasive Species Act (NISA) which made the Great Lakes voluntary program mandatory and expanded the voluntary ballast water program to a national voluntary program, to be made mandatory if compliance is not sufficient. At present, ships can be refused entry into the Great Lakes if they have not exchanged their ballast or they must retain it on board. The national program only requires mandatory reporting; however the Coast Guard is designing a mandatory nation-wide program which would include standards for ballast water treatment.

The present voluntary ballast water exchange programs do not prevent introduction of invasive species. Compliance data compiled by the US Coast Guard and the Smithsonian Environmental Research Center illustrate this point. For the US national program, approximately 40% of regulated ships submitted ballast water reports and of those 40%

only 51.2% reported conducting some amount of BWE (US Coast Guard 2001), meaning not all 51.2% of vessels conducted a full exchange. Conducting only a partial exchange reduces the reliability of BWE to prevent species transfer. Vessels very often can not perform the exchange due to constraints on their itinerary and route, short duration of their voyages, and safety concerns for the crew and vessel.

A few individual ports and one US state, California, have introduced their own regulations. Vancouver, Buenos Aires, and the Orkney Islands all have some form of ballast water regulations (INTERTANKO 2003). California has surpassed national US regulations by creating a mandatory ballast water exchange program, complete with fees and penalties (INTERTANKO 2003). These many different unilateral actions create a complicated ballast water management regime for the shipping industry and potentially undermine international attempts at regulation. However, these efforts may assist in pressuring industry to take action.

International Ballast Water Management Guidelines

At present, the international guidelines state that all ships should have a ballast water management plan on board and maintain appropriate records of ballast operations (IMO Resolution A.868(20)). The ship's ballast water management plan will detail the guidelines it must follow in regards to ballast water operations. Ships should avoid or minimize uptake of ballast water in certain areas of concern, such as areas of known outbreaks or blooms, turbid waters, shallow water and areas near sewage outfalls (IMO Resolution A.868(20)). Ships should also avoid unnecessary discharge of ballast water and should routinely clean their tanks of sediments (IMO Resolution A.868(20)). When practicable, ships should conduct an open ocean ballast water exchange, taking into consideration all safety precautions (IMO Resolution A.868(20)). Ships also have the option of retaining ballast on board or utilizing a suitable treatment technology that has proven viable (IMO Resolution A.868(20)). While these guidelines are helpful in attempting to minimize the transfer of species, they do very little to control this transfer. Ships are not required to conduct any of the procedures. In addition, the vague language regarding areas to avoid and suitable treatment technology do little for the development

of appropriate standards and alternatives for use. Many groups are calling for more stringent and descriptive measures. Therefore in 1998, the IMO's Marine Environmental Protection Committee began drafting a legally binding instrument for ballast water control.

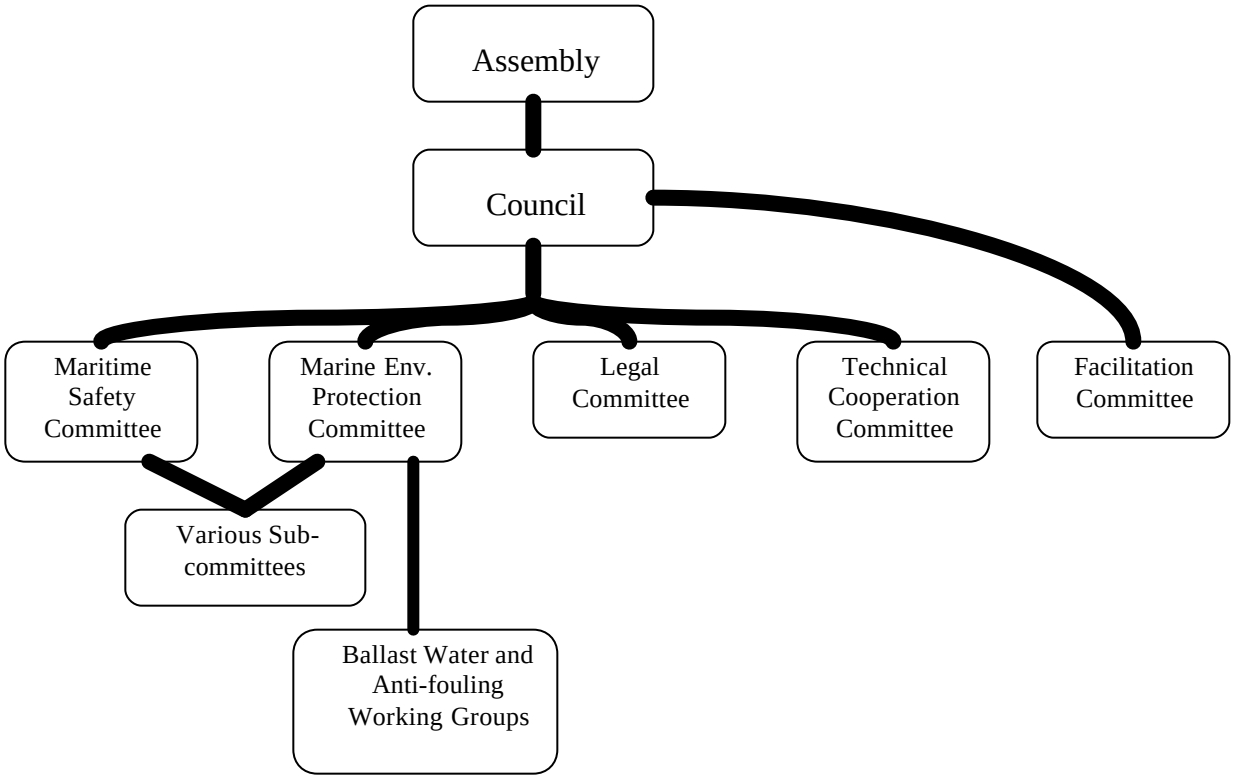
HISTORY OF THE IMO AND ITS ROLE IN MARINE PROTECTION

The International Maritime Organization (IMO), first known as the Inter-Governmental Maritime Consultative Organization, was established in 1958, the consensus product of the United Nations Maritime Conference of 1948 (IMO 2000). Historically, one of the least known UN specialized agencies (Watt 1985), the IMO provides a forum for cooperation among governments regarding the technical matters of international shipping trade. The IMO is charged with encouraging and facilitating the adoption of standards concerning maritime safety, navigation efficiency, and the prevention and control of marine pollution from ships (IMO 2000). This mission, the IMO's determination to proceed by consensus (Watt 1985), and the respect it has gained from both the shipping industry and environmental groups has made it the primary medium for managing marine pollution from ships.

Structure of the IMO

The IMO consists of an Assembly, a Council, and 4 main committees with various sub-committees and working groups underneath the committees (see Figure 1). The highest governing body the Assembly consists of all 162 member states and meets every two years to approve the work program, budget, and any resolutions put forth by committees (IMO 2000). It also decides whether to hold diplomatic conferences on proposed treaties (Mankabady 1986). The council consists of 32 member states, elected every two years, and supervises the IMO's work as the executive branch of the organization (IMO 2000). The council is set up to give equal representation to states providing shipping services and to states interested in international trade and transport. Equal geographic orientation is also taken into consideration when electing members to the council.

Figure 1: Structure of IMO Bodies (based on Mankabady 1986)



Note: The Ballast Water and Anti-fouling Systems Working Groups (the bodies in charge of drafting the two conventions pertaining to these two issues) fall under the jurisdiction of the Marine Environmental Protection Committee.

Marine Pollution issues fall under the jurisdiction of the Marine Environmental Protection Committee (MEPC) with occasional assistance from the Maritime Safety Committee (MSC). Committees usually meet two times a year to consider the work and reports of their sub-committees and report their results to the council and assembly (Mankabady 1986).

The Secretariat carries out the administrative duties for the organization. It serves all the bodies of the IMO as well as any conferences convened (Mankabady 1986). The Secretariat keeps in close contact with member states and other UN bodies on issues being addressed at the IMO (Mankabady 1986).

The MEPC is in charge of all issues pertaining to marine pollution from ships. The MEPC plays an active role in fostering technical cooperation among member states (Mankabady 1986) and is a forum for discussing important pollution issues. The MEPC organizes seminars, workshops, and training courses on pollution matters (Mankabady 1986), and its sub-committees and working groups are in charge of drafting resolutions, codes and treaties on marine pollution issues. Invasive species transfer via ballast water is deemed to be a type of biological pollution discharge from ships and therefore falls under the jurisdiction of the committee.

Creating Legislation at the IMO

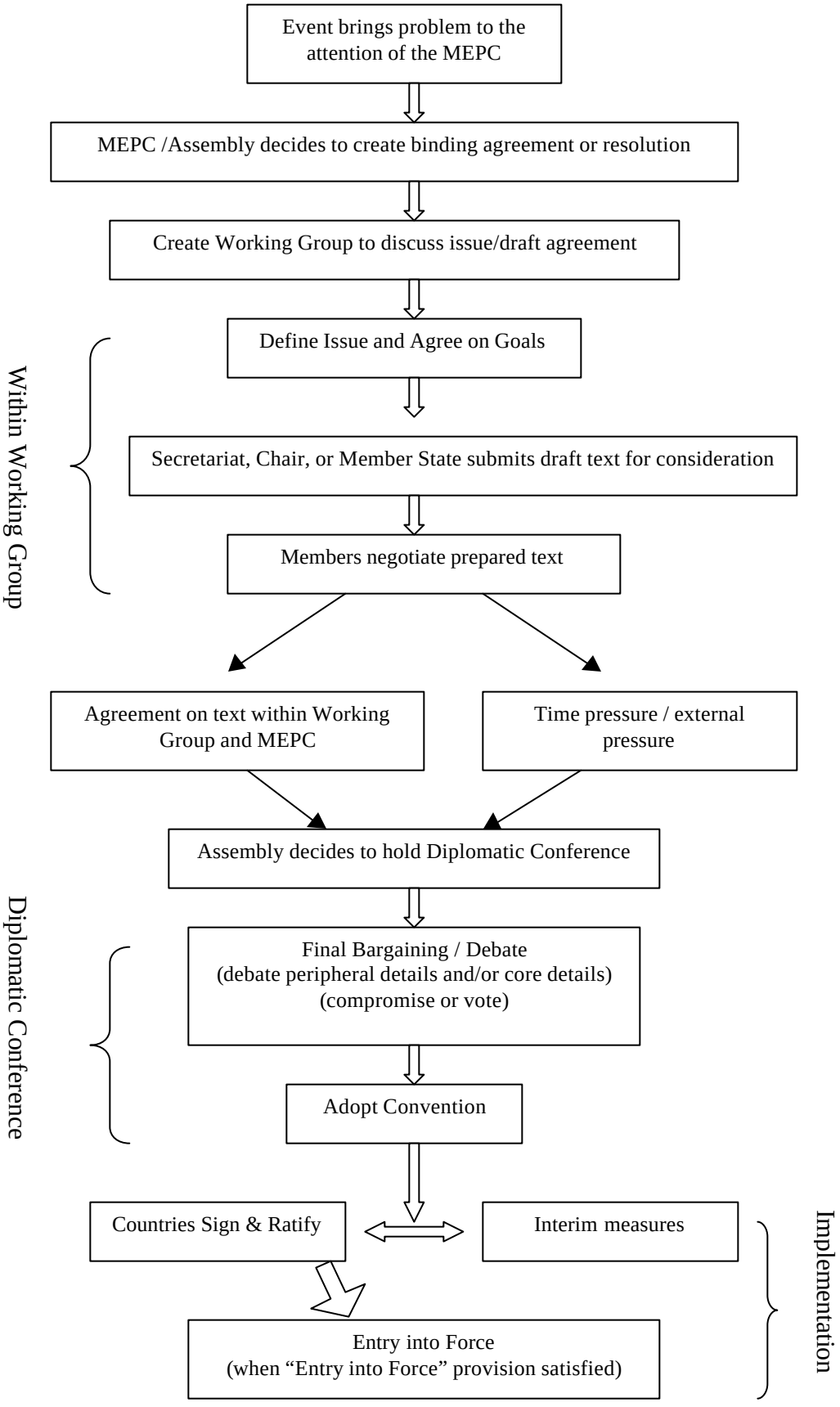
The IMO is primarily a legislative body and a forum where members can discuss their views on the state of international shipping practices (Mankabady 1986). The agreements the IMO creates take three forms: conventions, codes, and resolutions. Normally, resolutions are recommendations to member states, while conventions, once ratified by a member, are legally binding (Mankabady 1986). Codes fall somewhere in between these two distinctions (Mankabady 1986). Resolutions may also be created to supplement provisions of treaties (Makabady 1986).

IMO has successfully enacted six conventions regarding marine pollution from ships. The largest and most well known is the International Convention for the Prevention of Pollution from Ships or MARPOL, adopted in 1973. MARPOL regulates accidental and operational pollution from oil, noxious chemicals, transported hazardous materials, garbage, and air pollution (IMO 2003). The IMO has also facilitated the adoption of conventions addressing preparedness and response to oil and chemical spills. Most recently in October of 2001, the IMO facilitated the adoption of the International Convention on the Control of Harmful Anti-fouling Systems on Ships, which calls for a ban on tributyltin based antifouling coatings.

The MEPC's Ballast Water Working Group is presently drafting a convention on the control of ship's ballast water. The MEPC also drafted the International Convention on

the Control of Harmful Anti-fouling Systems on Ships. In Figure 2, a flow-chart depicts

Figure 2: Environmental Treaty Development Process at IMO (based on Chasek 1997)



the major steps of a treaty's development at the IMO through the MEPC, taking into considerations the findings of Pamela Chasek on multilateral negotiations (1997). The flow-chart shows the process from the initial definition of the problem to the treaty's "entry into force".

Typically a proposal to create a binding agreement is made by a member within the committee (Mankabady 1986). When agreement is reached, the MEPC will submit this proposal to the Assembly for approval to proceed (Mankabady 1986). If the assembly approves the proposal to create a convention, its drafting will be assigned to a working group or subcommittee. When the draft is completed, it is reported to the assembly with a recommendation to convene a conference to consider its formal adoption (Mankabady 1986). The assembly decides whether to hold a diplomatic conference to adopt the treaty. All parties to the United Nations are invited to attend the diplomatic conference (organizations with consultative status in the IMO may send observers) to either approve, amend, or refuse the draft document (Mankabady 1986).

Adoption of the convention is the first step towards implementing the convention (Mankabady 1986). Before the convention comes into force and is legally binding, signatory countries must ratify the treaty (Mankabady 1986). By ratifying a convention, a nation commits to giving the convention the force of law (Mankabady 1986). This ratification period can take a long time (Mankabady 1986). A nation state may have to change national law or create special facilities before it is able to ratify (Mankabady 1986). A treaty can not enter into force until its provisions on "entry into force" are met. These provisions typically state how many countries must ratify the treaty before it becomes binding. In the case of IMO treaties, the typical entry into force provisions contain both a number of countries that must ratify and a percentage of the world's shipping tonnage that must ratify. For example, MARPOL calls for ratification by 15 States, with a combined merchant fleet of not less than 50 percent of world shipping by gross tonnage (IMO 2003 b). This inclusion of shipping tonnage is important to insure adequate compliance. Unless a major portion of the shipping community has ratified, the convention will not apply to their practices.

The ratification process for IMO facilitated treaties typically takes three to six years. In the case of MARPOL, it took 10 years before the treaty entered into force and it did so only after the IMO modified the time frame to which annex II would become binding (IMO 2003 b). This long period concerns many groups who are major proponents of a treaty's adoption. Therefore, entry into force provisions are typically very controversial and a push for interim measures frequently accompanies negotiations.

Representation and Budget

The IMO has 162 voting member states from the various regions of the world and has granted consultative status to 61 non-governmental organizations (IMO 2003 c). Since certain organizations' expertise is valuable to the IMO and these organizations' members are affected by IMO regulations, the assembly may grant consultative status to organizations that would make a significant contribution to the IMO's work (Mankabady 1986). This status allows the IMO to obtain outside expert opinion and allows NGOs (environmental and industry organizations) to express their viewpoints to the members (Mankabady 1986). If an organization has consultative status, it may receive the agenda for Assembly, Council, and Committee meetings; submit written statements on agenda items; send an observer to certain Assembly, Council, and Committee meetings; and receive texts of resolutions and some Committee recommendations (Mankabady 1986). NGOs have no voting rights, but their observers may be allowed to speak on agenda items of concern to them, if invited by the Chair (Mankabady 1986). Within the Working Groups of the Marine Environmental Protection Committee, proceedings are typically more relaxed, allowing NGOs and member states to have fairly equal participation in deliberating treaty content and language.

Member state contributions are used to fund IMO activities and are determined using a complex formula based on a member's percentage assessment for the UN's budget as well as the proportion of the world's tonnage that the member state has in its merchant fleet (Mankabady 1986). Eighty percent, of the budget is calculated on this tonnage basis

(Mankabady 1986). Table 1 shows the top ten contributing nations for the 2003 budget. All of these nations play a significant role in IMO treaty development.

Table 1: Top Ten Contributors to IMO in 2003 (IMO 2003 d)

Member States	Amount Paid	% of Total Budget
Panama	£ 3,715,464	19.12 %
Liberia	£ 1,534,505	7.89 %
Bahamas	£ 1,009,345	5.19 %
Greece	£ 863,545	4.44 %
Malta	£ 812,212	4.18 %
Japan	£ 799,865	4.11 %
United Kingdom	£ 739,266	3.80 %
United States	£ 700,096	3.60 %
Cyprus	£ 685,278	3.52 %
Norway	£ 680,728	3.50 %

STAKEHOLDER DYNAMICS

If one were to divide the various stakeholders of the ballast water issue into groups, one could divide the interested parties into four main groups: environmental groups, coastal and port states, shipping industry groups, and flag states. However, it is important to remember that several parties fit into more than one of these categories. Some groups have major interests in more than one area of concern. For example, lesser developed nations have environmental concerns, but must consider economic constraints foremost.

Environmental groups support a precautionary approach (all ballast water is a potential threat) and insist the treaty cover all ships and all areas. In general, they want the treaty to come into effect as soon as possible and are not in favor of extensive grandfathering provisions (i.e. a longer phase-in period for existing vessels' compliance). They support a standard that offers 'true protection'. This is a standard that is clear, stringent, and pertains to all vessels. They are also in favor of phasing-out questionable protection methods, such as ballast water exchange, and hope interim measures will be considered.

Coastal states' (nations bordering an ocean or enclosed sea) and port states' (coastal countries containing ports) primary focus is in protecting their coastal waters from further invasion of organisms. They wish to have precise regulations for ballast water and control over verifying compliance to those regulations. In addition, some coastal and port states wish to retain the ability to create stricter regulations, if necessary, or create special ocean areas covered by stricter regulations.

The shipping industry is generally in favor of an international regime in order to avoid a complex web of local regulations (Fayette 2000). They are in favor of a practical, environmentally protective treaty that minimizes disruption to the flow of maritime commerce (Metcalfe 2003). According to the Chamber of Shipping of America, there are 4 critical elements that they request are included in regulations. 1) They support the creation of standardized testing protocols and a technologically achievable standard. They also request that technology be easily installable on new and existing vessels with minimum disruption to ship operations. 2) They believe providing assistance opportunities for experimental shipboard testing of potential technologies should be considered. 3) They think grandfathering provisions should be included for existing vessels. 4) They fully support consistency between local, national, and international control efforts.

Flag states – countries under which the majority of vessels are flagged – want a low cost solution that has the least impact on the shipping business. They feel that they should have control over vessel certification and compliance. They also support grandfathering provisions for existing vessels and oppose additional unilateral measures.

There are approximately 35 countries and organizations currently working together to address transfer of invasive species through ballast water. Table 2 lists the major parties in the discussion within the Ballast Water Working Group at the IMO. This list does not include all of the interest groups working on this issue. Only a small group of NGOs are invited to participate in the IMO discussions and some countries can not afford to send delegates on a regular basis.

Table 2: Major Parties in Ballast Water Management Debate *(in alphabetical order)*

Countries	**NGOs**
Argentina	Friends of the Earth International
Australia	International Association of Classification Societies (IACS)
Bahamas	International Association of Independent Tanker Owners (INTERTANKO)
Brazil	International Chamber of Shipping (ICS)
Canada	International Union for Conservation of Nature and Natural Resources (IUCN)
Cyprus	Oil Companies International Marine Forum (OCIMF)
Germany	World Wildlife Fund (WWF)
Greece	
Israel	**IGOs**
Japan	GEF/UNDP/ IMO Global Ballast Water Programme
Liberia	International Council for the Exploration of the Sea (ICES)
Netherlands	
New Zealand	
Norway	
Panama	
Singapore	
Spain	
United Kingdom	
United States	

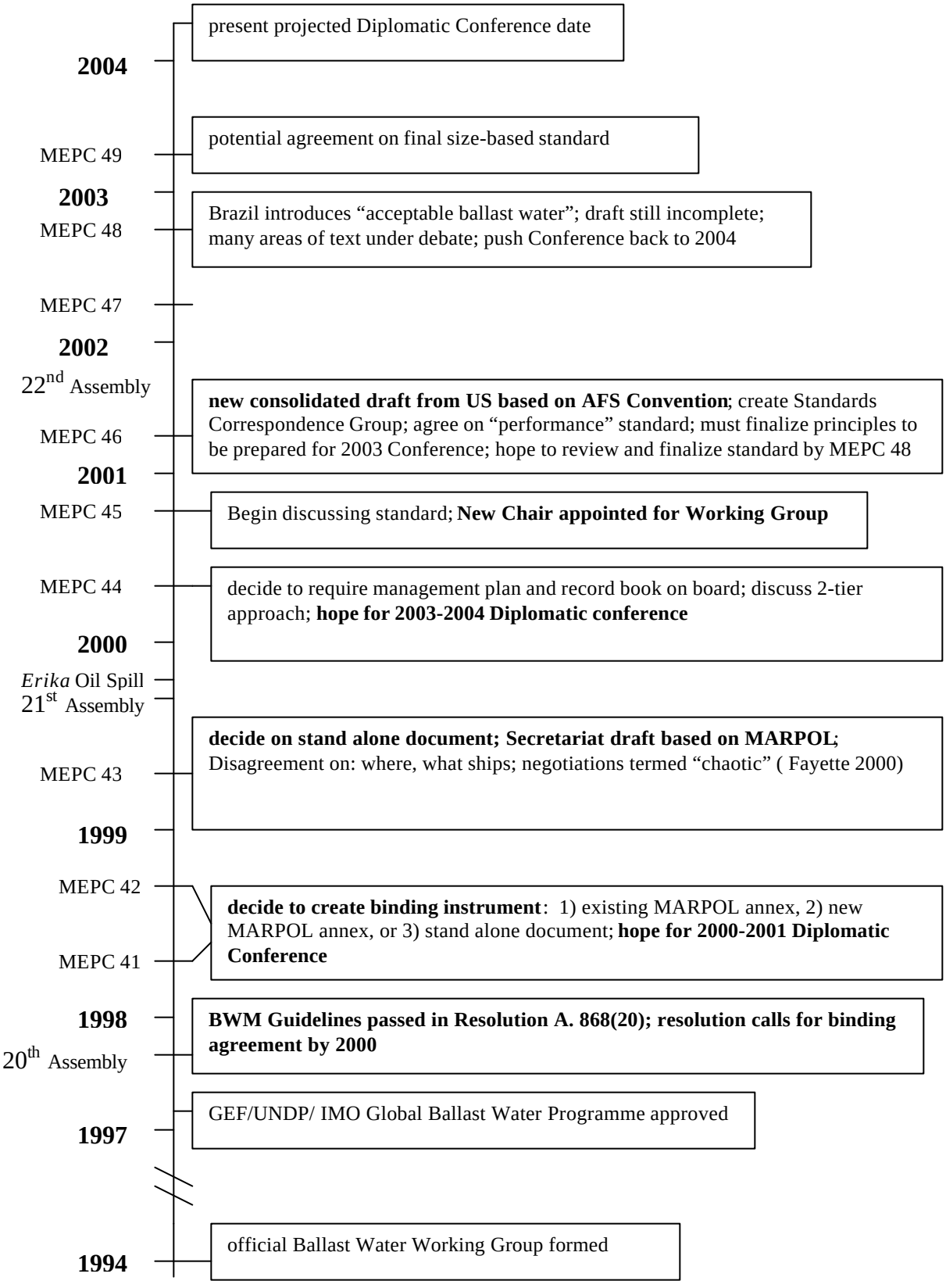
DEVELOPMENT HISTORY OF THE BALLAST WATER TREATY

Although ballast water management has been discussed at the International Maritime Organization (IMO) for more than a decade, the working group has only been developing a binding agreement for the last 6 years. The group has faced many obstacles over the years, including changing scientific information, participants, and draft format. Figure 3 contains a timeline of the major steps in the treaty development within the Marine Environmental Protection Committee (MEPC).

Participants began discussing the problem of invasive species in ballast water around 1989. Australia and the United States were the major proponents of creating some method to deal with the issue. They were motivated by two prominent invasion problems in their own countries, specifically toxic Japanese dinoflagellates in Australia and the zebra mussel in the US. In the beginning, a few interested parties (approximately 15

Figure 3: Development Timeline for the Ballast Water Management Treaty

important events between 1994 and 2004 pertaining to the development of the ballast water treaty



delegates) discussed ballast water management in informal evening meetings during the week-long MEPC meetings. The only groups at the table at that time were the US, Australia, and some interested European countries, such as Germany and Sweden. None of the major shipping countries were involved initially. When developing agreements at the IMO, little progress is made without the involvement of the principle shipping countries. Although these other countries are influential, they do not have a large shipping fleet. As one participant stated it, at that time the issue was very much "low man on the totem pole".

As the issue gained more attention at the IMO, more countries got involved in the discussion, and in 1994 an official Working Group began to deliberate the issue during intersessional meetings. During this time, the basics of the issue had to be repeated for each new party to the group, a phenomenon one participant termed the "Ground-Hog Day phenomenon" after the movie by the same name in which the main character had to repeat the same day over and over. Much time was spent getting participants "up to speed" on the issue. When the major flag states (such as Japan, Greece, Liberia, and Panama) finally got involved the importance of the issue had to be explained again as if no previous discussion had taken place. This era of the debate was a slow learning and acceptance process. Initially, some countries and industry groups did not believe that ballast water posed a major threat needing a binding agreement or resolution in order to protect the environment. However, in the mid to late '90s rapid development took place.

In 1997, Australia called for the Committee to pursue an annex to MARPOL to be created to address ballast water management (MEPC 41/9). A formal agreement was thought necessary because of the many individual states considering unilateral actions. In this same year, the Committee submitted a draft resolution to the Assembly containing ballast water management guidelines (MEPC 41/9), which was then passed as IMO Resolution A.868(20). The resolution contained language calling for this annex to MARPOL to be created by 2000.

1n 1998, the group began drafting treaty text and debating the form in which this new agreement should take. Some countries, like Australia, were urging for a new annex to MARPOL to be created (MEPC 42/8). Others, like Norway wanted to see the regulations take the form of a code (MEPC 41/9). Still others, like the US wanted a new stand alone document. A stand alone document would allow the drafters greater freedom and allow new entry into force provisions (potentially less restrictive ones) to be created.

However, many consider MARPOL to be a strong document. It is widely known even outside of the IMO and the provisions are understood by many. As one participant puts it, it has the "weight of the constitution" when it comes to marine pollution. Other IMO treaties are not as powerful. Some parties wanted to see an annex to MARPOL created because its reputation for strength would impart the importance of the issue and lead to increased compliance. Others wanted to see ballast water regulations as an annex to MARPOL because the entry into force provisions (15 countries/50% tonnage) are stringent and could delay implementation. As one participant commented, if a certain six countries do not ratify the treaty it would be impossible to reach the 50% requirement. If two don't sign it, it could delay implementation for a decade or more. If the treaty was created as an annex to MARPOL, it would have to be drafted within the same structure of the 1973 document, which some argue is archaic. There would be a strong argument to draft items in a certain fashion because they must fit under the overall framework. If the group drafted the treaty as a stand alone document, they would not be constrained by MARPOL's article language.

During the two Working Group sessions in 1998, the ballast water issue was further defined, existing knowledge of potential regulations were compiled, and different aspects of the regulations began to be debated. For example, the responsibility of various parties (flag and port states), regional ballast water zones, and ballast water management plans and reporting were all discussed (MEPC 43/3). The group thought it could complete a draft treaty in the next two sessions in preparation for a diplomatic conference in 2000-2001 (Fayette 1999).

In 1999, the Committee decided to draft the convention as a stand alone document because they would avoid any conflicts between various MARPOL articles and the proposed ballast water regulations. However, the Working Group agreed to keep the framework similar to the MARPOL framework (MEPC 44/4) because the chairman, Mr. Dennis Paterson from Australia, felt that this structure was advantageous. He felt that the procedure to amend appendices would be easier (MEPC 44/4). (i.e. appendices may be amended in light of new technological developments by the MEPC rather than through a diplomatic conference (MEPC 44/4)). Therefore, the group proceeded with a document drafted by the Secretariat based on the MARPOL framework.

In 2000, the Working Group realized that determining the design of the overall regulatory system was vital and needed to be addressed as soon as possible (MEPC 45/2). This conclusion led to discussion concerning a possible 'two-tier approach', which creates a two tier system for implementation. In Tier 1, all ships would have to abide by some universal requirements. Tier 2 would allow certain threatened areas to be designated as "ballast water discharge control areas" or certain hazardous areas to be designated as "ballast water uptake control areas" where additional measures would be established (MEPC 45/2). Although this two-tier approach is no longer in the draft, this concept of special control areas remains controversial, as well as the idea of stricter regulations proposed by port states. At MEPC 45, the group began discussing potential standards for ballast water (Fayette 2001). In the case of standards, the Global Ballast Water GEF/UNDP/IMO Management Programme aided discussion by providing scientific opinion through a serious of workshops. However, developing a standard has been difficult with the lack of adequate scientific information and alternative technologies to guide the group's discussion.

IMO activities in 2000 were dominated by reactions to the *Erika* oil spill off the coast of France making the MEPC busy addressing emergency response and compensation issues involving oil disasters (Fayette 2001). The group concluded that the convention would not be ready for diplomatic conference until the 2003-2004 biennium (Fayette 2001), perhaps due in part to the committee's concentration on other pressing issues. Because

the old chairman stepped down, at MEPC 45, the Working Group was chaired by a new chairman, Mr. Mike Hunter from the United Kingdom.

Since, the group was having difficulty finalizing the agreement and many changes to the original Secretariat draft had taken place, prior to MEPC 46, Hunter asked the United States to draft a new consolidated draft text, which they based closely to the new Convention on Harmful Anti-fouling Systems on Ships. During MEPC 46 (2001) The Working Group decided to move forward with this new draft. They also decided to form a correspondence group to work out the details of a performance standard, which enabled the Working Group to focus on deliberating the many remaining principles under debate during meetings. The group would need to finalize the principles of the draft at MEPC 48 in order to be ready for a diplomatic conference in 2003, which they asked to be provisionally scheduled (MEPC 47/2).

In 2002, the group debated many issues with little resolution. Although the treaty was redrafted to the framework of the Anti-fouling treaty to help move the discussion along, it seemed as if more text was becoming contentious not less. For example, at MEPC 48 Brazil introduced a new term 'acceptable ballast water' that would allow for certain ballast water to be considered benign. They also introduced alternative text for the objective of the treaty based on this concept. In addition, Japan wanted to reorganize the whole draft by removing the articles pertaining to surveys and violations and moving them to the annexes. At MEPC 48, the group agreed that the treaty would not be ready for diplomatic conference in 2003.

As of 2003, many issues (e.g. the objective, enforcement provisions, and "more stringent measures") are still under debate. However, at the Intersessional Working Group Meeting in preparation for MEPC 49, the group provisionally agreed to a biological performance standard. One participant remarked that the group had been "chasing its tail" about a specific standard and implementation structure for this standard. For the last 10 years, it had been discussing separate interim and final standards for ballast water. However, the group changed this formula to one final biological standard, on which all

methods would be judged. This new formula establishes phase-in periods for new and existing ships as well as various ship types. At present, the group hopes to hold diplomatic conference in 2004.

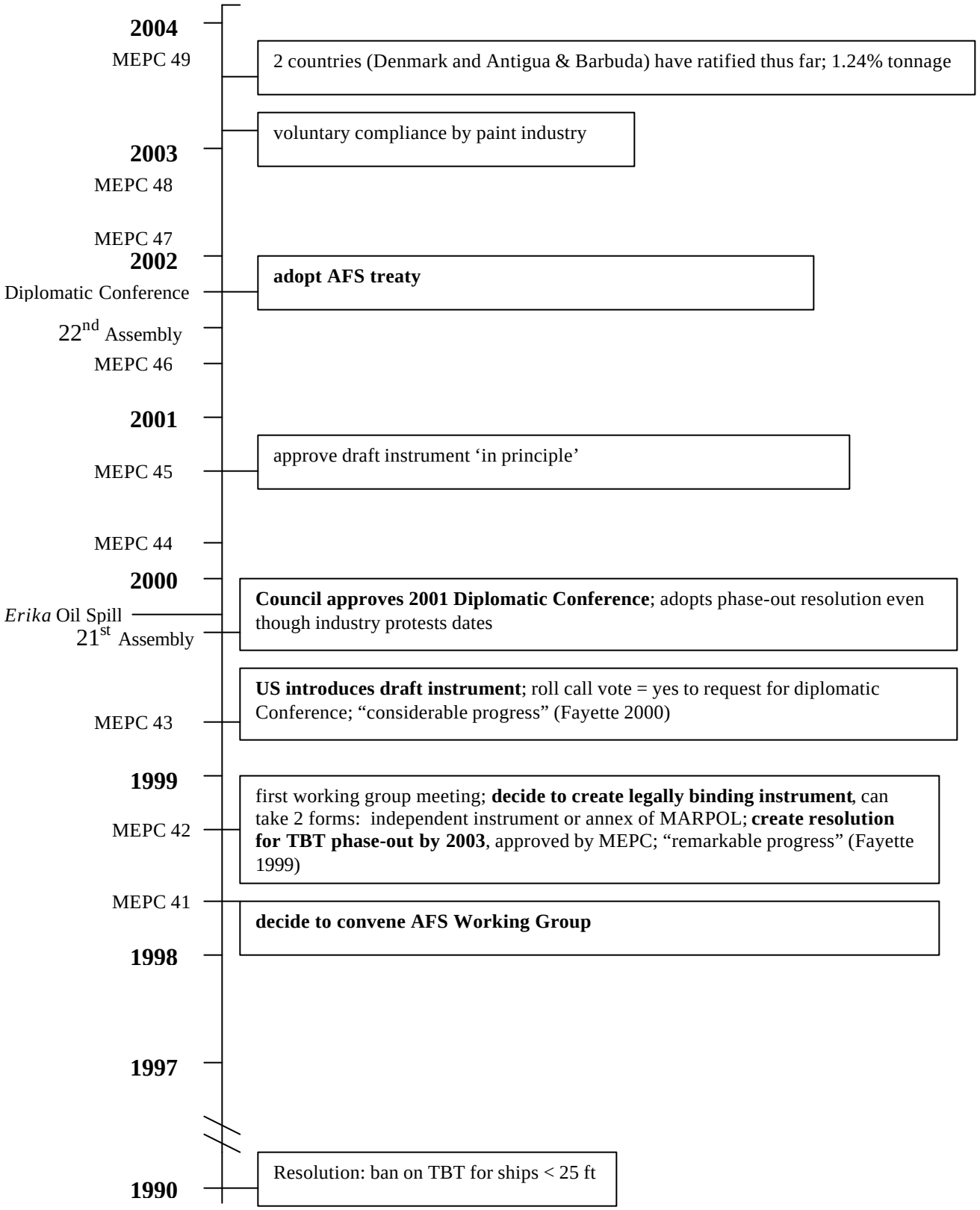
DEVELOPMENT HISTORY OF THE HARMFUL ANTI-FOULING SYSTEMS TREATY

In 1998, the same year the MEPC decided to create a binding agreement on ballast water management, the MEPC also decided to create a binding agreement on harmful anti-fouling systems on ships. However, this convention was adopted in October of 2001 and 2 countries have ratified it as of 2003. A timeline for the development of the harmful anti-fouling systems treaty is contained in Figure 4 showing the major steps in the treaty's development from the decision to create a working group on anti-fouling coatings until the present.

In the 1980s, scientists began to discover the ecological effects that anti-fouling paints (the paint on ships' hulls designed to prevent organisms from attaching to the hull) had on the environment. Specifically, paints that contained tribuytltin (TBT), which were very effective, inexpensive, and widely used, were discovered to cause development disorders in various benthic organisms. As a result, in 1988 the US passed a law banning its use on boats less than 75 ft in length and in 1992 Japan discontinued use of tributyltin-based paints. Paint companies began to offer alternative paints, but they did not perform as well. These new paints were also more expensive.

Since a few countries deciding to discontinue use of TBT would not prevent international shipping from transporting the chemical around the globe, in 1996 a group of Northern European countries, lead by the Netherlands, presented to the MEPC a proposal calling for a total ban on TBT by 2006. The MEPC formed a correspondence group to discuss the issue and compile recommendations for action. The correspondence group recommended that a resolution be created to ban TBT. However, environmental groups

Figure 4: Development Timeline for the Harmful Anti-fouling Systems (AFS) Treaty
important events between 1990 and 2003 pertaining to the development of the anti-fouling systems treaty



declared that there were other compounds that were a threat to the environment, and over time the group decided to create a treaty to cover all potentially harmful anti-fouling systems.

In 1998, the MEPC formed an official Working Group to draft a binding agreement. The Working Group was chaired by Mr. Bryan Wood-Thomas from the United States. One participant remarked that he was a good choice for chair because he is pragmatic and could shepard action in a timely manner. He was able to facilitate the various interest groups in finding a middle ground.

In 1998, the Working Group drafted a resolution calling for the phasing-out of TBT by 2003 and for all ships to be TBT-free by 2008. The resolution was adopted by the Assembly in its next session in 1999. In 1999, the United States introduced a draft framework for a stand alone convention on harmful anti-fouling systems. It was decided that the treaty would contain an annex of banned substances which would be determined by review as the need arose. The Netherlands attempted to introduce the idea of a list of approved substances (i.e. a "white list"), but there was no support for such a system (Fayette 2000).

Since the resolution to ban TBT had been adopted, there was significant pressure to hold a diplomatic conference in 2001 because this would be the only way to stay with the timeline set out in the resolution. At MEPC 43, the chair concluded that the overall group opinion was to wait until 2003 to hold a conference. This announcement caused a huge disturbance and the Netherlands requested the issue be reopened for discussion. In doing so, it was determined that a role call vote was needed, which one participant remarked was unprecedented in IMO proceedings. The vote was 35-12 (MEPC 43/21), in favor of requesting a 2001 diplomatic conference. The Assembly approved the conference and the convention was adopted in October of 2001. As of 2003, two countries have ratified the treaty (Denmark and Antigua & Barbuda) and Panama, Japan, and the United States are expected to ratify soon.

One IMO delegate I interviewed believes that an alliance between the environmental groups and the paint industry played an important role in enabling this treaty to be adopted quickly. At first, the major paint companies did not support the treaty. They were not convinced that there were commercially viable alternatives. However, the co-biocide industry had alternative anti-fouling agents that had undergone US EPA review and similar review in other countries. Co-biocide based paints had also been used successfully in Japan. With these concrete examples, the non-TBT biocide industry was able to convince the paint companies to support these new products, which could give them an edge in the changing marketplace.

The environmental groups were against the use of any chemical biocide. However, the biocide industry explained to them that the technology was not ready for such a giant shift. It would be 10-20 years before non-biocide technology could be utilized, if ever (Rittschof 2000). They convinced the NGOs that by working with the paint industry, they could get rid of the persistent bioaccumulating biocides, like TBT as a first step. With the paint industry and the environmental lobby in agreement, the treaty passed much more smoothly. In fact, in 2003 the top 4 anti-fouling paint companies – Akzo Nobel, Jotun, Hempel, and Chugoku – voluntarily stopped producing TBT-based paints.

COMPARING THE PROPOSED BALLAST WATER TREATY TO THE HARMFUL ANTI-FOULING SYSTEMS TREATY

Divergent Timelines

Environmental concerns about invasive species in ballast water and the effects of anti-fouling coatings have both been discussed for more than a decade. The IMO decided to create binding agreements on both issues in the same year, yet the Convention on Harmful Anti-fouling Systems on Ships was adopted in 2001 and the debate over the draft ballast water convention continues. Originally, the IMO planned to finish the ballast water treaty by 2000. Why did these timelines become divergent? The Ballast

Water Working Group has had major obstacles (scientific uncertainty, no available alternatives, high economic burden to the shipping industry, and several changes in convention framework) that the anti-fouling systems working group did not have to deal with to such an extent. One MEPC participant believes that in the beginning certain parties overestimated the simplicity of creating a ballast water management system, but as more parties became involved, the group became aware of the complexity of the issue. In addition, three key factors (a specific deadline for implementation, a pragmatic facilitator, and early cooperation between environmental and industry representatives) assisted in accelerating the anti-fouling treaty's development.

Scientific uncertainty has played a greater role in the ballast water discussion than in the debate over tributyltin. In the case of tributyltin, researchers have had evidence since the 1980's that tributyltin adversely affects non-target organisms in the coastal environment. The only argument in the TBT case was whether or not there were commercially acceptable alternatives to TBT. For ballast water, researchers know that species are carried to other regions in ballast water, but they do not know all individual species' invasion potential or their exact effects on the host environment. This uncertainty complicates the discussion. In the beginning, most participants believed requiring Ballast Water Exchange would be the answer, but emerging research proved BWE to be a questionable prevention measure. In addition, one specific result of this lack of scientific data is the debate over the treaty's objective and the potentially correct idea of assuming some ballast water is benign.

One participant remarked that in the past IMO treaties have been based on "best available technology". The lack of available alternative treatment methods for ballast water has hampered the creation of a standard and regulating system for ballast water. Another IMO participant believes that the ability to prove there were effective alternatives to TBT greatly assisted the flow of debate on the anti-fouling treaty. It is difficult for stakeholders to imagine how the ballast water regulatory system will be structured without concrete working technology examples. Furthermore, it is difficult to get the

shipping industry and flag states to agree to a program without prediction of economic impacts and implementation costs.

Comparing the two treaties, the implementation costs for shipping will differ significantly. In the case of TBT phase-out, the shipping industry will only be burdened with slight cost increases for paints and slight decreases in duty cycle. In addition, using alternative paints will spare the industry from the expensive disposal costs for used TBT paints. However, in the case of ballast water, the shipping industry will bear the major burden of buying and installing new technology on their ships.

The ballast water convention had reoccurring changes to form that the anti-fouling convention did not. There was political pressure for ballast water management to be included as an annex to MARPOL. Even after the group decided to draft the document as a separate convention, the drafters based its framework on MARPOL. Then in 2001, the group decided to change this format to follow the anti-fouling convention's framework. Instead of focusing on the substance of the convention, participants have had to continually re-address the framework. This reoccurring reinvention of format has slowed the drafting work on this treaty.

Additionally, three factors helped accelerate the development of the anti-fouling treaty. One, when the anti-fouling systems working group agreed on a resolution containing specific phase-out dates, they gave themselves a deadline for finishing the draft treaty. This allowed for continual momentum towards the diplomatic conference. Two, the facilitator for the group was central in moving the discussion along. More than one participant remarked on the importance of the role of the Working Group chair in the debate. In addition, one participant remarked that Mr. Wood-Thomas was an excellent choice because he was able to facilitate compromise. Three, the fact that Japan (a major shipping nation) port states, environmental groups, and the paint industry were all in favor of creating a treaty helped the process advance more smoothly. Thus, the pressure for agreement came not only from port states and environmental groups, but also the paint industry and Japan.

How appropriate is the Anti-fouling systems treaty framework for the ballast water issue?

In 2001, the Ballast Water Working Group decided to adopt the US consolidated draft, which was based on the anti-fouling treaty. This was meant to assist the negotiating process. However, the anti-fouling treaty framework is not entirely appropriate for the ballast water issue. It creates a banned list of measures not an approved list of measures. It also does not consider set standards and testing protocols for evaluating additional substances for the list. Instead it reviews these substances on a "case by case" basis. Finally, its implementation timeline and survey system is less complex.

The anti-fouling treaty was based on a "black list" concept (i.e. a list of prohibited or restricted substances and systems). However, the ballast water treaty is designed to approve acceptable control measures based on a set standard (a "white list" of technologies). Therefore, the ballast water treaty has to include a standard and testing protocol which the anti-fouling treaty avoided by taking a "case by case" review approach. When the Netherlands proposed creating a "white list" for the anti-fouling treaty, the idea received minimal support (Fayette 2000). It is suggested by one participant that the decision to use a black list approach for the anti-fouling convention helped keep negotiations from getting bogged down.

Ballast tanks and ballast operations vary depending on the type of ship and its design. Bulk carriers and tankers have different ballast operations compared to cargo, container, and passenger ships. Due to these different tank configurations, certain types of vessels may be able to implement regulations before others. This means developing different regulation phase-in timelines for types of vessels, as well as new and existing ships. The anti-fouling convention only addressed new and existing ships, since all ships have similarly designed hulls. In addition, since compliance is based on verifying organisms are dead in the ballast water discharge and not just based on a simple detection of chemicals, the survey system design is more complex.

AREAS OF CONTINUED DEBATE

Although there has been much progress since the beginnings of the ballast water discussion at the IMO, there are many topics still to be resolved. Some major components still under debate are the treaty's objective, the standard provisions, the detection of violation provisions, and the provision for more stringent measures. The substance of these major aspects to the treaty will have a great effect on the strength of the treaty and its ability to protect the environment.

After MEPC 48 in October of 2002, there were two alternative texts for the treaty objective. The objective of the treaty was the object of much debate, especially during MEPC 48, due to the concept of "acceptable ballast water" introduced by the Brazilian delegation. The objective up until MEPC 48 read, "The objective of this treaty is to prevent, reduce, and eliminate the transfer of harmful aquatic organisms and pathogens…". (MEPC 48/2) However, if the treaty was to adopt the idea of acceptable ballast water as a concept foundation for the treaty, as Brazil proposes (MEPC-IBWWG 1/WP.1), it would change the text of the objective to "minimizing risks to the environment arising from transfer of harmful aquatic organisms…"(MEPC 48/WP.15).

As I understand it, "acceptable ballast water" puts forth the idea that not all ballast water is risky and a risk assessment should be undertaken before determining certain ballast is a risk. Some parties support this concept. If not all ballast water is risky (needing control measures), implementation of the ballast water treaty would be less expensive. However, others, especially the environmental interest groups, feel it reverses the burden of proof and undermines the strength of the treaty. Their position is that it is impossible to determine what ballast water is risky or not risky before it is discharged; thus, for a preventative approach, the first objective was more appropriate. During the Ballast Water Working Group intersessional meeting in March of 2003, the group decided to remove the objective text all together and address the concept in the preamble (MEPC

49/2/3). Regardless, the disagreement about whether all ballast water is risky will undoubtedly remain until more scientific evidence is provided.

Until the recent Ballast Water Working Group meeting in preparation for MEPC 49, creating a standard for ballast water was a complicated issue. Some parties wanted interim measures; others just wanted one final universal standard. Some wanted Ballast Water Exchange to be phased-out, others did not. There was also a large debate between having a size-based standard (X amount of organisms larger than Y microns to be removed or killed) and a percent kill/removal standard. Those opposed to a size-based standard say it favors filtration as a control method. Those opposed to percent removal standards say verification of compliance is too difficult and not all areas would be considered equal, i.e. a 95% reduction of Baltic water would leave more organisms than a 95% reduction of water from Rotterdam. Complex matrixes combining interim and final measures, along with phase-in dates for existing ships, were passed around and debated.

After the last meeting, there seems to be consensus on creating one universal standard based on particle size. This standard would have different size requirements for different classes of organisms. It would also be coupled to varying phase-in dates for different types of ships, depending on the ease to which the technology can be adapted for that class of vessels' ballast operations. It would also have different phase-in dates for existing and new ships. This system may seem complex, so it is amazing that the group can potentially agree on it. However, it is probable that the other plans will be brought up again at MEPC 49 and at the diplomatic conference.

The enforcement provisions (inspection of ships and detection of violations section of the treaty) are also under continued debate. As the regulations were written prior to MEPC 48, a port state could verify whether a ship had a valid certificate and take a brief sample of the ballast water. However, some flag states, such as the Bahamas, argue that the port states should only be allowed to review the documentation the ship has and only sample if there is probable cause. In addition, what a port state can do with a ship found in violation is debatable. These provisions have incited a battle between flag states, who

want to regulate themselves and keep ships from being unduly delayed, and port states, who what the authority to protect their coastal waters. At this point, there is no sign of a compromise before diplomatic conference.

"More stringent measures", specifically the idea that the treaty does not prevent countries from taking more stringent measures to prevent invasive species transfer, is an extremely contentious issue. Many countries believe in protecting their sovereign right to do what is best for their nation's environment. Some coastal and port states insist in including a provision that allows more stringent measures to be undertaken by individual states, if they deem it necessary. However, having many disparate regulations around the globe will undermine the purpose of having international regulations and increase implementation costs to the shipping industry. Certain shipping organizations and flag states maintain that port states should be required to seek approval from the IMO before being allowed to implement more stringent measures. I foresee this issue being debated until the last days of the diplomatic conference. It is a small piece of the treaty, but a very important one. Some countries may not sign the treaty without a provision on more stringent measures.

CONCLUSIONS

What does this all mean for the treaty and the environment?

It has been a long road for the Ballast Water Working Group, yet much progress has been made since the first discussions on ballast water began at the IMO, and many new revelations have improved the document's design and content. Nevertheless, much of the treaty remains under debate. Consequently, the likelihood that the treaty will prevent transfer of species is still undeterminable in my opinion. How the enforcement provisions, certification criteria, and even the preamble are written could greatly affect the treaty's ability to protect the environment.

Likewise, it is unlikely that every issue will have been fleshed out and agreed upon before the 2004 diplomatic conference date. As of MEPC 48 in October of 2002, the group had yet to discuss any of the eleven areas for which they wish to create guidelines. However, it is unlikely that the present diplomatic conference date will be changed. As one delegate at the October Working Group meeting noted, the IMO does not like to continually postpone conference dates. In addition, if they wait until 2005-2006, the chance that more unilateral measures will have been adopted is higher.

The approaching conference date applies pressure to the negotiating group to start compromising and building consensus (Chasek 1997). The developments from the March 2003 intersessional meeting of the Working Group illustrate this rush for consensus. For example, the group decided to work on two sets of guidelines through correspondence between meetings and the group finally compromised on the objective of the treaty by removing it all together (MEPC 49/2/3). MEPC 49 in July of 2003 is the final meeting of the committee before the proposed diplomatic conference; the proceedings during that week will determine how solid the draft text will be before the conference.

If the IMO goes forward with the diplomatic conference without reaching some consensus on the issues, what are the consequences? Some issues, such as entry into force provisions and amendment procedures, are best left for discussion at diplomatic conferences; however what about the other items? On the one hand, all items are re-opened for debate at the diplomatic conference (Taylor 2000), but postponing consideration of difficult issues until late in the process can have negative impacts on the strength of the treaty (Chasek 1997). If the group does not make significant progress towards consensus on key treaty items during MEPC 49, some countries may be uncomfortable about holding a diplomatic conference and the development of the treaty at the diplomatic conference will be more difficult.

In some cases, having many issues unresolved prior to a diplomatic conference could result in those same issues remaining unresolved after the conference; significant topics

would then need to be addressed in a supporting resolution. In the case of the anti-fouling systems convention, three sets of guidelines were left for the MEPC to create after the treaty was adopted. Leaving these items to be created as resolutions can be helpful, because resolutions are much easier to update than treaty text, especially when there are inadequate tacit amendment procedures. However, resolutions do not have the same weight as treaty terms, so the most critical elements must be in the body of the treaty or in one of its annexes.

In many situations, the threat of unilateral action has assisted in forcing the international community to act. In the case of the anti-fouling systems treaty, national action taken by the United States, Japan, and the European Union all assisted in moving treaty negotiations along. After the *Erika* disaster, the European Union threatened regional action, if the IMO did not act (Fayette 2001). The IMO rushed to respond before the EU could threaten its legislative supremacy and undermine the uniform global regime for shipping disaster response (Fayette 2001). Will this threat assist or hinder negotiations and the implementation of the ballast water treaty? It could do either one. At present, the proposed US national legislation is not going in the same direction as the international treaty. This divergence (or the outcome of certain debates) may prevent the United States from signing this treaty. Likewise, other countries may not wish to support the treaty based on certain sections.

Having the MEPC as a forum for discussion greatly assists the development of marine pollution treaties. Although some regard the IMO's pace to be that of a snail, this forum is vital; without it, the topic of ballast water might have taken even longer to reach the international agenda. The group negotiating the ballast water treaty has dealt with many complexities, such as varying party interests, scientific uncertainty, and lack of potential alternatives, yet their work will create new precedents for future marine pollution treaties dealing with big unknowns, and should lead to a continued advancement of the precautionary principle.

RECOMMENDATIONS

The discussion and negotiation process at the IMO reminds me of a large cement mixer. The issues and opinions churn and churn until, at some magical point, the decision to hold diplomatic conference oozes out. The length of time it takes for this process to culminate varies. In the case of the anti-fouling systems treaty, it was remarkably quick. For ballast water, it has taken longer. As one participant remarked, the time scale for the IMO is on the decadal level, and yet each year the group believes everything will be resolved in the next year.

The reality of 162 countries deliberating with many varying viewpoints, cultural differences, varying interpretations of language, different pressure from constituents, makes the negotiations a "political nightmare." Every nuance of proposed text is debated at length before consensus is reached on the broad concepts. The process at the international level is slow to some, but accomplishes much on its time scale. There may be little that could speed up this process, but from my limited exposure to the arena, I feel setting deadlines for implementation before negotiation begins and involving more scientists and industry representatives in the early development of the treaty could assist the process. In addition, having effective facilitators for the working group creates a smoother process and accelerates treaty evolution.

Having a set deadline for a treaty's development is often advantageous. Otherwise, the negotiating parties debate perpetually, until some external pressure forces them to come to consensus (Chasek 1997). In the case of the anti-fouling treaty, a resolution was created with specific dates for TBT phase-out before major development began on the treaty. The participants desire to meet these specific dates greatly assisted the decision to request diplomatic conference in 2001.

It is important to involve more scientists and industry representatives during the working group discussions, especially early on when the goal of the treaty is formulated and when parties are initially discussing their positions. These experts have the scientific and

technical knowledge that will help design a management framework. Many agency and military representatives that typically attend the negotiations must contact experts back in their country for advice during the process. It would be much more efficient to bring these scientists and industry experts to the negotiating table.

Effective facilitation of the negotiating group is imperative. More than one delegate remarked on the importance of the chair's facilitation. The chair of the working group is very influential and can move discussion along. Whether the facilitator is a secretariat employee or a respected member of the working group, this person should be recognized as fair, knowledgeable, and pragmatic. The facilitator should be able to communicate clearly and be an active listener. Facilitators should not wish to advance their own ideals; their first priority should be to enhance the group's established goal. Much attention should be paid to choosing facilitators, as they can greatly affect the smoothness and speed of the process.

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APPENDIX A
List of Interviewees

I supplemented the information I gleaned from IMO documents with information gathered through interviews via phone and internet with past and present IMO Marine Environmental Protection Committee meeting delegates.

Interviewed IMO Delegates:

Dr. Jim Carlton, Williams College Mystic Seaport (former US delegate)

Bob Martin, Arch Chemicals (former US delegate)

Kathy Metcalfe, Chamber of Shipping of America (US delegate)

Bryan Wood-Thomas, US Environmental Protection Agency (US delegate)

Ricardo Coutinho, Brazilian Navy (former Brazilian delegate)

Andreas Tveteraas, World Wildlife Fund-Norway (WWF delegate)

Commander Scott Newsham, US Coast Guard (US delegate)

Dr. Richard Everett, US Coast Guard (US delegate)