

International Convention on the Control of Harmful Anti-Fouling Systems on Ships 2001

Regulatory Impact Statement

1. Problem

1.1. Organotin compounds are formed by combining tin with materials that contain carbon, and are used to make plastics, food packages, plastic pipes, pesticides, paints, and pest repellents. Organotin-based compounds, such as tributyltin (TBT), have been used in anti-fouling paints on vessel hulls and infrastructure since the 1970's. The toxicity of TBT prevents the growth of algae, barnacles and other marine organisms on the ship's hull for up to five years, meaning ships are able to travel faster through the water and consume less fuel. Research conducted by the US Navy in 2002 indicates that the speed loss of an aircraft carrier caused by heavy fouling was 1.5 knots, with a 40% increase in fuel required to maintain a speed of 20 knots. For a 250,000 ton oil tanker, if 5% of the underwater hull is fouled, fuel costs increase by 17%. Not only is energy conserved by effective anti-fouling systems, the improved efficiency of maritime transport reduces carbon dioxide emissions.

1.2. The harmful effects of such compounds were first recognised in oyster farms on the Atlantic coast of France in the early 1980s, and since that time a range of marine species have been contaminated and affected by organotins. Sediments in many port areas around the world have been contaminated, resulting in long-term impacts on benthic invertebrates, like molluscs and amphipods, which are living in close contact with the sediment. In Australia, research conducted in the late 1980's found evidence of TBT contamination in Sydney rock oysters. Research also indicates adverse affects such as inhibition of growth and reproduction on a range of invertebrate species in the vicinity of other ports and marinas around the Australian coastline.

1.3. While there have been few studies to quantify the cost of environmental damage caused by organotin compounds, a 1999 Victorian Environment Protection Authority Report considered that organotins threatened biodiversity and ecosystem health, eco-tourism and related activities valued at \$96 million each year and aquaculture and fisheries, particularly mollusc production valued at \$55 million each year.

1.4. Significant costs are incurred by port authorities in disposing of contaminated waste from shipyards and dredge spoil. In some circumstances, heavily contaminated spoil must be disposed of at approved land-based disposal sites at 2-3 times the cost of disposal at sea. There are also significant costs associated with removing TBT based paint from coral reefs after ship groundings. The removal of contaminated sediment and associated waste following a recent grounding at Sudbury Reef in the Great Barrier Reef Marine Park was completed in 70 days at a cost of some \$1.5 million, with ongoing monitoring costs.

1.5. The threat to human health from organotins has not yet been studied in detail. However, there are concerns about the potential for impact on humans who consume large quantities of seafood in their normal diet, as organotins may disrupt the critical function of human immune cells, particularly those which fight infection. A study recently completed in the United States shows that shipyard workers exposed to TBT for just a few minutes developed breathing difficulties, skin irritation, dizziness, and flu-like symptoms. The report also states that prolonged exposure can cause chronic disease in humans.

1.6. In 1982, the French Government banned the use of TBT based anti-fouling paints on boats and ships less than 25m overall length, and the European Union introduced similar legislation in 1989. Legislation applying the same general requirements was progressively introduced by each Australian State and Territory, a process that was completed in 1991. Today the use of TBT in anti-fouling on boats less than 25m overall length is banned nearly worldwide. This approach has addressed concerns regarding smaller recreational vessels such as yachts and pleasure craft.

1.7. While there is evidence suggesting that the banning of the use of TBT based anti-fouling paints on small vessels has decreased levels of pollution in many localised areas, effects on invertebrates are still being detected in many species around the world. It is also emerging that marine mammals have been found contaminated with organotin compounds, indicating a more global distribution of organotins in the oceans. While some mammals can expel or degrade organotins from the body, others such as dolphins show increasing levels of organotins as they grow older.

1.8. Elements of TBT based antifouling paints are highly toxic to a range of marine reef biota. There are also strong indications that the presence of residual TBT based anti-foulants at ship grounding sites may present an ongoing impediment to coral reef recovery.

1.9. Consequently, it was recognised by many governments that, while domestic use of TBT based anti-fouling paints was generally strictly controlled, a mechanism was required to regulate the harmful effects of TBT used on international trading vessels. The implementation of an overall ban on the use of TBT based anti-fouling paint through international co-operation (with standard IMO treaty exemptions for Government vessels) was seen as the only way to avoid global and regional pollution by organotin compounds.

1.10. In response to these calls from the global community for international action, the International Maritime Organization (IMO) developed proposals for international regulations over a period of several years, leading to the successful conclusion of the International Convention on the Control of Harmful Anti-fouling Systems on Ships (the AFS Convention) at a Diplomatic Conference in October 2001.

1.11. The AFS Convention will provide for the protection of the marine environment and human health from adverse effects of anti-fouling systems on ships. The Convention will prohibit the application of harmful anti-fouling systems on ships by 1 January 2003. By 1 January 2008, all ships will be banned from having such compounds on their hulls or external surfaces, or will be required to have a coating that forms a barrier to such compounds leaching from the underlying non-compliant anti-fouling systems. The Convention also provides a risk assessment regime to identify and evaluate new antifouling systems.

1.12. The Convention applies to all ships either registered in a State Party or operating under the authority of a State Party, as well as any other ships that enter a port, shipyard or offshore terminal of a Party. Parties to the Convention will be required to prohibit and/or restrict the use of harmful anti-fouling systems on ships flying their flag, as well as ships not entitled to fly their flag but which operate under their authority and all ships that enter a port, shipyard or offshore terminal. The Convention also applies to ships such as fixed or floating platforms, floating storage units, and Floating Production Storage and Offtake units used by the oil production industry.

1.13. The Convention will not apply to any warship, naval auxiliary, or other ships owned or operated by the country and used only on government non-commercial service. However, Australia needs to ensure, by the adoption of appropriate measures not impairing the operational capabilities of such ships, that they act in a manner consistent, so far as is reasonable and practicable with the Convention.

1.14. A survey will be required for ships of 400 gross tons and above engaged in international voyages before they are put into service or before an International Anti-fouling System Certificate is issued for the first time. A survey will also be required when an anti-fouling system is changed or replaced. Ships of 24 metres or more in length but less than 400 gross tons engaged in international voyages will have to carry a Declaration on Anti-fouling Systems signed by the owner or authorised agent.

1.15. The Convention will enter into force 1 year after 25 States representing 25% of the world's merchant shipping tonnage have either signed it without reservation as to ratification, acceptance or approval or have deposited instruments of ratification, acceptance approval or accession with the IMO Secretary-General. At this time no countries have ratified the Convention, although several (including Australia) have signed subject to ratification, and others have advised they are actively considering the Convention. It is expected that the Convention will enter into force internationally in 2004/2005.

1.16. Australia signed the AFS Convention, subject to ratification, on 19 August 2002. If the Convention is to be ratified, Government action is required to develop legislation to give effect to the AFS Convention in Australia, and once legislation is in place, to ratify the Convention. In a letter dated 23 May 2002, the Office of International Law, Attorney-General's Department, confirmed that legislation will be required to implement the AFS Convention in Australia.

1.17. The need for government action is a consequence of market failure to address the problem within a suitable timeframe. Without the intervention of governments, working through the auspices of the IMO, there would have been little incentive for the shipping and marine coatings industries to restrict the use of harmful anti-fouling systems and develop replacement systems. Collective actions by governments, through the IMO, has now seen this market failure addressed.

1.18. Since the need for international action was first recognised by IMO in the late 1980's, governments, regional organisations and the marine coating industry have been working to ensure TBT-free anti-fouling products will be available in the marketplace. This work has gained momentum since the text of the AFS Convention was adopted in 2001.

1.19. The Convention is in accordance with Australia's Oceans Policy, which commits Australia to banning the application of TBT to vessels being repainted in Australian docks from 1 January 2006, unless the IMO introduces an earlier date, in which case Australia would follow suit. The Oceans Policy commitment recognises that, while IMO environmental conventions generally do not apply to naval vessels, Australian Defence Force vessels seek to comply with international environmental standards as far as practicable, taking into account that in some circumstances operation requirements may take precedence.

1.20. However, the Defence Science and Technology Organisation is particularly active in assessing alternatives, having begun trials in 1990, and all efforts will be made to avoid the need to use TBT. Should such products need to be used on naval vessels, the paint would be applied by private contractors and the Australian Defence Force would require compliance with all relevant OH&S and environmental regulations, including those relating to disposal of any TBT contaminated waste.

1.21. Additionally, in recognition of the OH&S risks already identified in the use of TBT antifouling paints, to continue the authorised use of the product under the relevant Agvet Code legislation, registration of the product will be contingent on satisfactorily addressing the risks involved and the conditions of its use.

2. Objectives

2.1 The objectives of developing legislation enabling Australia to adopt the AFS Convention are:

- to ensure, to the maximum extent available under international law, the best available protection for the Australian marine environment from the harmful effects of anti-fouling systems used on ships;
- to protect human health during the application or removal of anti-fouling systems; and
- to adopt uniform international rules and procedures for protecting the global environment from the harmful effects of anti-fouling systems used on ships.

2.2 It is proposed that legislation to give effect to the AFS Convention in Australia will be developed as part of the existing “Protection of the Sea” legislation package giving effect to IMO environmental conventions. The legislation will be developed in close consultation with Environment Australia, which has responsibility for several policy and administrative aspects of the Convention.

2.3 It is proposed that Australia consents to be bound by the AFS Convention through lodgement of an instrument of ratification with the Secretary-General of IMO as soon as practicable after Australia’s domestic requirements for implementation have been met.

2.4 Regulations and policies currently in place in Australia are primarily those implemented in each State and Territory to ban the use of TBT based anti-fouling on vessels of less than 25 metres in length.

2.5 All anti-fouling substances used in Australia require registration with the Commonwealth National Registration Authority for Agriculture and Veterinary Chemicals (NRA) under pesticide laws. Once registered, the following restrictions are applicable:

- TBT Anti-fouling must not be applied to vessels less than 25 metres in length.
- TBT anti-fouling applied must have a release rate less than 5µg TBT/cm²/day.

3. Options

3.1 Having signed the AFS Convention subject to ratification, Australia’s options are:

1. Not to ratify the AFS Convention and maintain the current situation, i.e. not implement the AFS Convention and continue to rely on the existing State/NT legislation and NRA registration relating to vessels of less than 25 metres in length; or
2. Develop legislation enabling Australia to ratify the AFS Convention; or
3. Limit the use of TBT anti-fouling through other regulatory measures such as an environmental tax on the sale of TBT based anti fouling paints.

4. Impact Analysis

4.1 Option (1) would mean no change to the current arrangements. This would result in additional costs to the community in that the level of environmental protection would be lower than internationally adopted standards. Costs associated with this option are discussed in the “Problem” section above, and include threats to biodiversity and aquaculture, and disposal of contaminated waste and dredge spoil.

4.2 Australia would not be in a position to take advantage of, and enforce the full range of controls on, anti-fouling systems against foreign flag and Australian vessels. Australia played an active role in developing the Convention, and internationally, has been a strong supporter of its early entry into force.

4.3 The lack of a national approach to the issue could result in States/NT implementing their own requirements for larger vessels, potentially resulting in different requirements around the Australian coast and applicable only to internal and coastal waters up to 3 nautical miles from the coast. Waters under Commonwealth control i.e. beyond 3 nautical miles to the limit of the 200 nautical mile exclusive economic zone would not be covered, resulting in inadequate protection from this type of pollution. This option would also not be in accordance with the Australia's general obligations as a signatory to the United Nations Convention on the Law of the Sea 1982, which provides for nations to adopt generally accepted international rules and standards when implementing laws and regulations to prevent, reduce and control pollution of the marine environment from vessels (Article 211).

4.4 Australian ships trading to overseas ports would incur additional costs as a result of the need to have proper documentation confirming compliance with the AFS Convention. Such documentation can only be issued by Administrations that have adopted the Convention.

4.5 Option (2) involves ratifying and, on international entry into force, applying the AFS Convention in Australian waters. Both domestic and international shipowners and the sector of the paint industry involved in the production of anti-fouling systems will be affected by this proposal.

4.6 An assessment of the overall effect of option (2) needs to take into account the international actions that have already been taken on a voluntary basis. A resolution adopted at the 2001 Diplomatic Conference, entitled "Early and Effective Application of the Convention", invites member States of the Organization to do their utmost to prepare for implementing the Convention as a matter of urgency. It also urges the relevant industries to refrain from marketing, sale and application of the substances controlled by the Convention. This resolution has had a noticeable impact in several areas:

- The International Chamber of Shipping has urged shipowners to assume that the dates included in the AFS Convention will be universally adopted, notwithstanding the fact that the Convention will not be in force by 1 January 2003. Due to this voluntary action, it might be expected that shipowners worldwide will no longer apply TBT based anti-fouling paints on their ships from that date.
- The European Commission has taken action to implement the dates for the banning of TBT as set out in the AFS Convention. Commission Directive 2002/62/EC of 9 July 2002 effectively bans the application of TBT anti-fouling paints to all ships in the EU countries from 1 January 2003. Japan and New Zealand have taken similar decisions.

- Indications are that all major manufacturers and suppliers of anti-foulings in Australia have recognised the development of the AFS Convention, as well as developments in Europe, and consequently will not supply TBT based anti-foulings from that date. Diminishing market supply of TBT based anti-fouling paint will impact on the ability of the navy to source the necessary levels of stock. Defence anticipates that a successful transition to alternative products will occur.

4.7 The short-term alternatives available are likely to be copper or silicone-based anti-fouling paints. In Australia, the NRA has registered a number of anti-fouling paint products that do not contain TBT. However, the majority of these formulations were developed for the pleasure craft market and are therefore unsuitable for commercial trading vessels. There are however 2 biocides registered by the NRA that are particularly effective for vessels with a 60 month docking cycle. Concerns have been raised by the Australian Shipowners Association over the small number of alternative TBT free anti-fouling paints currently available in Australia suitable for commercial trading vessels, and that this has resulted in premium costs for these products due to a lack of competition. However, higher costs in Australia are at least in part attributable to the relatively small market, which does not justify the use of cheaper automated manufacturing equipment. The costs in Australia are also not significantly higher – Singapore is widely recognized globally as one of the cheapest locations for anti-fouling systems, with prices typically 20% lower than Australia.

4.8 It is expected that competition from the availability of more paints will reduce these costs, although there are likely to be some cost implications for shipowners in the short term, depending on the particular vessel's dry docking cycle. For ships operating on the basis of a 2 - 2 ½ year dry docking cycle, the cost of TBT free anti-fouling paint is around 3% lower. Most Australian ships operate on this basis. However, ships operating on longer dry docking cycles of up to 5 years will initially incur higher costs. There are many more alternative TBT free anti-fouling paints available overseas, and discussions have been held with the National Registration Authority to streamline the Australian assessment and registration process.

4.9 In the longer term, research into new methods of fouling control is examining extracts of different marine plants and animals that are able to resist fouling pressure in their natural environment, as well as the possible development of new biocides.

4.10 It is also relevant that as the requirement is based on an international convention, provided Australian shipowners have the same level of access to non TBT based systems, any additional costs would be incurred for international trading vessels whether or not Australia adopts the new Convention.

4.11 The effect on the shipping industry of the certification requirement in the AFS Convention will be minimal. Consistent with international practice, Australian ships undergo regular survey by approved Classification Societies to verify compliance with a broad range of IMO conventions relating to safety and protection of the marine environment. Inspection of the anti-fouling system and issue of an additional certificate will become part of this process and may give rise to a slight increase in the cost of such surveys. However, these costs will also be borne by international trading vessels, so there will be no cost differential.

4.12 The effect on paint manufacturers will be minimal. Overall demand for anti-fouling paint will not be affected, and there may even be opportunities arising from the obligation that existing TBT based systems may be over-coated. In Australia, there are six main suppliers of anti-fouling paints. Two of these companies produce anti-fouling paint in Australia, with the remainder distributing paint manufactured overseas. The sale of anti-fouling paints is a small part of overall business – the largest Australian manufacturer estimates that anti-fouling paint represents 2% of total sales. Only one manufacturer expects to have any stock of TBT based paint after 31 December 2002. The Department of Defence intends to retain control of their stock of TBT based anti-fouling paint already in hand for use in the short-term for repairs to vessels that are yet to be transitioned to TBT-free coatings.

4.13 It is proposed that the Commonwealth implementing legislation will form part of the “Protection of the Sea” suite of acts which give effect to the IMO environmental conventions. As such, it will apply to all State/NT coastal and internal waters, with a “roll-back” provision preserving the operation of State/NT legislation. The existing State/NT legislation applicable to ships of less than 25 metres in length will need to be examined in detail to ensure there are no omissions, inconsistencies or duplication of requirements. It is not anticipated there will be any significant difficulties – the State/NT legislation has no certification or survey requirements, and the ban on TBT based anti-fouling systems is consistent with the AFS Convention.

4.14 Option (3) involves developing domestic regulatory measures to limit the use of TBT based anti fouling paint through regulatory measures such as an environmental tax on the sale or use of TBT based anti-fouling paints. This option would involve Australia taking unilateral action and would therefore be difficult to enforce in respect of foreign registered vessels visiting Australian ports. Given the vast majority of Australian trade is carried out in foreign registered vessels, this option would not address the main source of environmental threat.

4.15 As for option (1), option 3 would not contribute to the development of international law, would be inconsistent with the United Nations Convention on the Law of the Sea, and would result in additional costs being incurred by Australian ships traveling to overseas ports where the AFS Convention is applied.

5. Consultation

5.1 The Australian Shipowners Association and Shipping Australia have been consulted at all stages in the development of the Convention and provided input and briefing on a number of issues for the IMO Marine Environment Protection Committee meetings. Additionally, the international shipping industry has consultative status at IMO and participates actively in deliberations. The only concerns raised relates to the limited number of alternatives to TBT based anti-fouling systems currently available in Australia. As noted above in paragraph 4.7, this will be addressed as more alternatives are approved for use in Australia.

5.2 Consultation with State/NT transport agencies has been undertaken through the Australian Transport Council (ATC), which recommended Australian adoption of the AFS Convention at its meeting on 8 November 2002. The outcomes of the ATC meeting will be passed for information to the Environment Protection and Heritage Ministerial Council.

5.3 Consultation was also undertaken with relevant Commonwealth agencies, Premiers/Chief Ministers Departments in all States/NT, CSIRO, Association of Australian Ports and Marine Authorities, Australian Paint Manufacturers Federation, World Wide Fund for Nature, and the Australian Marine Conservation Society.

5.4 In respect of paint manufacturers, the NRA developed and circulated an information document dealing specifically with the efficacy requirements for anti-fouling paints and conducted a seminar for registrants of anti-fouling paints at which the requirements of the AFS Convention were fully described and discussed.

6. Conclusion and recommended option

6.1 The preferred option is Option 2, namely to develop legislation enabling Australia to adopt the AFS Convention. Option 2 would provide Australia with consistent national standards that can also effectively be applied to any foreign or domestic ships operating in Australian waters. Option 2 would also ensure that human health and Australia's marine environment is protected by applying the most up-to-date international environmental standards.

7. Implementation and review

7.1 While Environment Australia has led on the development and presentation of Australia's negotiating position at the IMO, Ministers have agreed that the Department of Transport and Regional Services will assume responsibility for the steps leading to ratification as the Convention will principally affect the maritime transport industry and compliance with the terms of the Convention will be administered by the Australian Maritime Safety Authority (AMSA).

7.2 This is consistent with AMSA's role in administering the Commonwealth's other environmental legislation associated with shipping. Environment Australia's role will be to assist the consultation process and development of legislation, by providing policy advice, and participate in the assessment of alternatives to tributyltin based paints. The latter role will be through the provision of advice to the National Registration Authority for Agricultural and Veterinary Chemicals which has a statutory role to assess and register chemical products such as anti-fouling systems.

7.3 Administration and enforcement of the AFS Convention will be by way of established procedures applied to other IMO environmental conventions. This involves primarily a system of port State control inspections undertaken by AMSA. AMSA produces reports setting out details of deficiencies found during port State control inspections.

7.4 Consultation with the shipping industry would be on-going in respect of any proposed changes to the AFS Convention or problems being experienced by industry that might need to be raised at IMO meetings. The AFS Convention provides a mechanism involving the establishment of a technical group to consider any proposals for listing additional harmful anti-fouling systems. The Convention also places an obligation on Parties to promote and facilitate scientific and technical research on the effects of anti-fouling systems as well as monitoring such effects.

7.5 It is proposed that penalties for non-compliance will be consistent with other IMO environmental conventions, i.e. up to \$220,000 for an individual and \$1.1 million for a corporation. Article 14 of the AFS Convention sets out procedures to be followed in the event of a dispute between parties.