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**GUIDANCE FOR MINIMIZING THE TRANSFER OF INVASIVE AQUATIC SPECIES  
AS BIOFOULING (HULL FOULING) FOR RECREATIONAL CRAFT**

1 The Marine Environment Protection Committee, at its sixty-fourth session (1 to 5 October 2012), approved the Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft (see MEPC 64/23, paragraph 11.8), developed by the Sub-Committee on Bulk Liquids and Gases at its sixteenth session (30 January to 3 February 2012), as set out in the annex.

2 Member Governments are invited to bring the circular to the attention of all parties concerned.

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## ANNEX

### GUIDANCE FOR MINIMIZING THE TRANSFER OF INVASIVE AQUATIC SPECIES AS BIOFOULING (HULL FOULING) FOR RECREATIONAL CRAFT

#### 1 WHAT IS BIOFOULING?

Biofouling is the accumulation of aquatic organisms such as microorganisms, plants and animals, on surfaces and structures immersed in or exposed to the aquatic environment. Biofouling may also be known as hull fouling.

#### 2 WHY IS THE TRANSFER OF BIOFOULING ORGANISMS A PROBLEM?

Aquatic organisms may be transferred to new locations as biofouling and can be harmful and invasive in locations where they do not naturally occur.

The transfer of invasive aquatic organisms can threaten fresh water, brackish and marine environments, human, animal and plant life, and economic and cultural activities.

Even when there is no visible biofouling, it is important to undertake the minimizing measures outlined in this guidance as light fouling (e.g. the slime layer) is likely to be present and the measures will help ensure that heavier fouling does not develop. Once invasive aquatic species are established in a new location or habitat, they are often impossible to eradicate.

#### 3 WHAT INFLUENCES THE AMOUNT OF BIOFOULING ON A RECREATIONAL CRAFT?

All recreational craft have some biofouling, even if recently cleaned or anti-fouled. The amount of biofouling is influenced by factors such as:

- the type, age and condition of anti-fouling coating systems and hull cleaning practices;
- operating profile, including speeds, time underway compared with time moored or anchored, water temperature, and where the craft is normally kept (e.g. on land, in a marina or on an estuarine mooring);
- places visited; and
- design and construction, particularly areas that are more susceptible to biofouling (e.g. rudders, propellers and propeller shafts).

Actively minimizing the biofouling on your craft will greatly reduce the risk of transferring invasive aquatic species and can also improve fuel efficiency and operating speeds.

#### 4 WHO SHOULD USE THIS GUIDANCE MATERIAL?

This guidance is for use by all owners and operators of recreational craft less than 24 metres in length. All craft can potentially transfer invasive aquatic species, even trailered craft that are normally kept out of the water.

#### 5 HOW CAN BIOFOULING BE MINIMIZED?

If your recreational craft is normally kept in the water (regardless of whether it is trailerable or not), an appropriate anti-fouling coating system and good maintenance are the best way of preventing

biofouling accumulation. If you regularly operate recreational craft in both marine and fresh waters, this may help to reduce the accumulation of biofouling (many marine fouling species do not easily survive in fresh or brackish water and vice versa) however, a good maintenance regime is still essential.

## **6 IS ONE ANTI-FOULING COATING SYSTEM ACCEPTABLE FOR ALL CRAFT?**

Different anti-fouling coating systems suit different craft and activities. When choosing an anti-fouling coating system, you should seek expert advice and consider:

- planned periods between hauling/drying out or maintenance – to make sure the coating is effective for that time period;
- craft speed and patterns of use – biofouling can rapidly accumulate when craft are stationary or inactive in port or coastal waters;
- construction material (steel, wood, aluminium, etc.) – systems are specific for different hull materials; and
- location to be applied on the craft – different coating types may be required for different parts of the hull or structure, such as around the propeller shaft or rudders, due to water flow conditions.

Anti-fouling coating systems are subject to legal requirements and it is recommended that these requirements are considered when purchasing an anti-fouling coating system. For example, the International Maritime Organization (IMO) International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (AFS 2001) bans the use of anti-fouling paints that contain organotins such as TBT – highly poisonous tributyltin\*.

## **7 HOW CAN BIOFOULING BE MINIMIZED IN NICHE AREAS?**

Niche areas are parts of a craft that are particularly susceptible to biofouling growth due to different water flow conditions, the exposure of the anti-fouling coating system to wear or damage, or areas that may be inadequately coated. For example, any hull projections or indentations that may generate turbulent flow which causes greater wear on the coating. Niche areas may include:

- propellers, thrusters and/or propulsion units;
- rudder stocks and hinges;
- rope guards, stern tube seals and propeller shafts;
- apertures or free flooding spaces;
- areas prone to anti-fouling damage from groundings;
- outlets, inlets, cooling pipes and grates;
- anodes;
- anchors, anchor wells, chains and chain lockers; and
- echo sounders and probes.

Biofouling in the niche areas of your craft can be minimized by ensuring an appropriate anti-fouling coating system is applied, including the entrances to inlet and discharge pipes, rudder fixtures, bow and stern thrusters, propellers and shafts (unless polished), rope cutters,

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\* TBT has been proven to pose a substantial risk of toxicity and other chronic impacts to marine organisms and can also harm human health as a result of the consumption of affected seafood.

etc. When hauling out and applying an anti-fouling coating system, you need to make sure that you change the positions of blocks or slings to ensure these areas are also coated.

Some niche areas are not protected by an anti-fouling coating system, e.g. anodes. You can minimize biofouling associated with these anodes if they are flush-fitted, or a rubber backing pad is inserted between the anode and the hull, or the gap is caulked. Otherwise, you need to ensure that the hull under the anode and its strap has an anti-fouling coating system suitable for low water flow. If your anodes are attached by recessed bolts, then the recesses should be caulked.

If your craft is equipped with a Marine Growth Prevention System (MGPS) (for example, injections of chemicals in internal seawater systems), it is important that you regularly check correct operation of the MGPS in accordance with the manufacturer's instructions.

## **8 WHAT ABOUT CLEANING?**

It is important that you regularly assess the need for cleaning and the condition of the anti-fouling coating system. Where it is safe to do so, in-water inspections of your craft may be appropriate:

- at the beginning and end of a planned period of inactivity;
- before and after a significant change to the craft's operating profile; or
- following damage to, or failure of, the anti-fouling system.

Where craft can be readily hauled out it is always preferable to clean the hull and niche areas out of the water where the waste can be effectively captured for proper disposal in accordance with local requirements. When cleaning your craft it is important that you consider the following precautions:

- haul your craft out of the water to clean it at least once a year;
- always follow the manufacturer's instructions when applying and maintaining your anti-fouling coating system;
- use cleaning methods and facilities that capture biological, chemical and physical debris; and
- coordinate cleaning or maintenance of the anti-fouling coating system, hull and niche areas with voyage or trip planning to ensure that the craft starts significant journeys as clean as practical.

Checking, cleaning and drying gear and equipment such as anchors, chains, nets, bait wells, and sports equipment after each trip is also an effective way to avoid accidental transfer of invasive aquatic species between water bodies.

## **9 WHAT ABOUT IN-WATER CLEANING?**

In-water cleaning can be suitable for removing light fouling (e.g. the slime layer) with gentle techniques that minimize both the release of toxic substances from the anti-fouling and the degradation of the anti-fouling coating system.

Before undertaking any in-water cleaning, check with the local authorities for regulations regarding the in-water cleaning of boat hulls and/or the discharge of chemicals into the water column. If possible, use appropriate technology that captures biological, chemical and physical debris so that it can be disposed of to an appropriate onshore facility.

When cleaning an area coated with a biocidal anti-fouling coating system, use cleaning techniques that minimize the release of biocide into the environment. In-water scrubbing of large and distinct biofouling (e.g. barnacles, tubeworms or fronds of algae) generates waste or debris that may create a pulse of biocide that could harm the local environment. Biocide in the sediments could affect future

applications by the port authority for the disposal of dredge spoil. In-water scrubbing may also prematurely deplete the anti-fouling coating system which would then rapidly re-foul. Scrubbing your craft in-water is not recommended as an alternative to out-of-water cleaning beyond the specified service life of an anti-fouling coating system.

Craft with biocide-free anti-fouling coating systems are likely to require regular in-water cleaning. It is important to use cleaning techniques that do not damage the anti-fouling coating and impair its function.

## **10 IS RECORDING BIOFOULING ACTIVITIES IMPORTANT?**

It may be useful for you to retain your craft's biofouling management information in one place, such as the craft's logbook. This information could include details of the anti-fouling system used on your craft, any inspections made and notes on the effectiveness of the coating system. The anti-fouling manufacturer's product data sheets may also provide useful information. A diagram of the hull of your craft showing niche area locations and a summary of plans for minimizing biofouling (e.g. planned time interval between anti-fouling system renewals and how the different niche areas will and/or have been treated) is also useful. Example diagrams are shown at the end of this guidance. Having this information could also assist interested marina, port or harbour authorities to quickly and efficiently assess the potential biofouling risk of your craft and minimize delays to your journey or trip.

## **11 WHAT ABOUT TRAILED CRAFT KEPT OUT OF THE WATER?**

Even if your trailered craft is normally kept out of the water, it still has the potential to transfer invasive aquatic species from one area to another via the craft, its trailer or associated gear and equipment. To reduce this risk, the following measures should be taken after removing the craft from the water and before transporting to another water body or storing it on land:

- remove attached biofouling (e.g. seaweeds, barnacles, mussels) from the craft, gear, equipment and trailer;
- drain hull compartments, pipework and outboard engines;
- rinse the craft inside and out with fresh water and, if possible, dry all areas before moving;
- dispose of biofouling and waste water ashore where it cannot drain back into the water or drains; and
- inspect, clean and dry the gear and equipment after each journey or trip.

## **12 HOW IS IMO INVOLVED?**

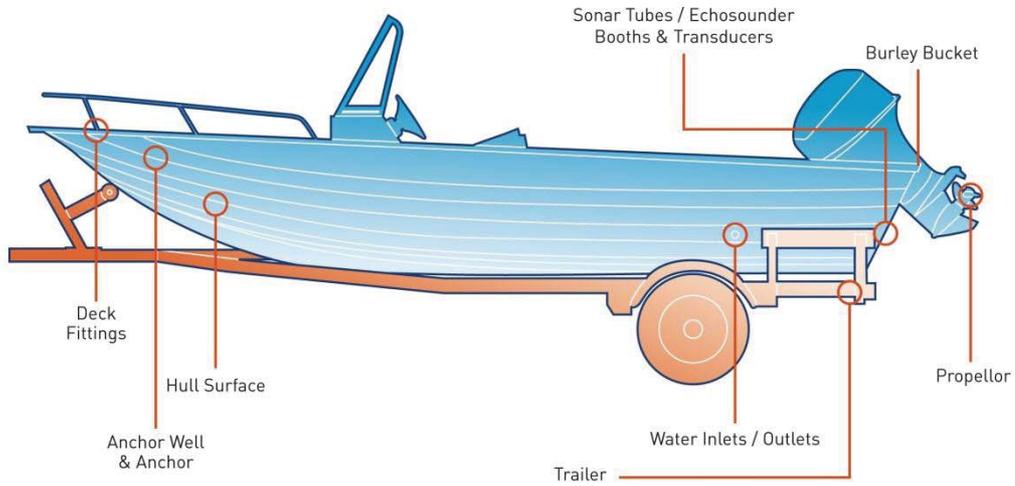
The International Maritime Organization (IMO) is the international body responsible for setting standards for the safety and security of shipping and prevention of marine pollution by ships. Some IMO regulations and/or guidelines may also apply to recreational craft. Due to global concerns about the effects of invasive aquatic species on the environment, IMO has adopted the Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species, adopted by resolution MEPC.207(62), to apply and provide information for ships of all sizes.

Please visit the link:

[http://www.imo.org/Knowledge Centre/How and where to find IMO information/Index of IMO resolutions/Marine Environment Protection Committee \(MEPC\)/MEPC.207\(62\)](http://www.imo.org/Knowledge Centre/How and where to find IMO information/Index of IMO resolutions/Marine Environment Protection Committee (MEPC)/MEPC.207(62))

This guidance document is specifically aimed at recreational craft less than 24 metres in length and provides information consistent with the IMO Guidelines.

**Example of a recreational trailered craft diagram**



**Example of a recreational craft diagram**

