

05 June 2024

Norwegian Maritime Authority
Attention: Linda Dehlin Fluvåg
Smedasundet 50 A
N-5528 HAUGESUND
Norway

**RE: Consultation on the proposed regulations on the management of hull biofouling,
Reference: 2024/20963-1**

Submitted VIA: email to: post@sdir.no, cc: ldfl@sdir.no

Dear Norwegian Maritime Authority,

The Ballastwater & Environmental Manufacturers' Association (BEMA) respectfully submits the enclosed comments regarding the Norwegian Maritime Authority's (NMA) "*Consultation - new Regulations on the management of hull biofouling*", Reference 2024/20963-1.

As a non-profit industry association, BEMA strives to be a technical resource for all stakeholders in the ballast water and biofouling sectors working toward the goal of preventing the spread of aquatic invasive species (AIS) through global shipping. As the only international industry association whose Members represent approximately 70% of the installed ballast water management systems (BWMS) worldwide, BEMA has extensive experience working with regulatory, scientific and industry stakeholders on national and international levels to contribute to regulatory processes to prevent AIS transfer. BEMA Members represent all forms of biofouling management and hull cleaning technologies (both capture and non-capture), and therefore, BEMA and its Members have the relevant expertise to provide technical information to support development of related global regulations and guidance. As a Non-Governmental Organization (NGO) that has been granted Consultative Status by the International Maritime Organization (IMO), BEMA aims to support the work of the IMO by providing technical information on the effective use and application of equipment designed to reduce environmental impacts of shipping. BEMA actively participates in proceedings of the IMO's Pollution Prevention and Response (PPR) Subcommittee and the Marine Environment Protection Committee (MEPC). Our Association recognizes the necessity to implement guidelines and regulations for management of AIS and also for maintaining a balanced ecology locally and within international waterways.

There are three key aspects that BEMA wishes to comment on regarding NMA's proposed biofouling management regulations, presented below.

1. Promoting clean ships reduces AIS risks

Clean ships present the lowest biological and ecological risk to local and international waterways. Cleaning vessels proactively (vs. reactively) when at the microfouling level only, as described in the IMO's *2023 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (Biofouling Guidelines, IMO resolution MEPC.378(80)), poses no documented biological risk and minimal ecological risk, with in-water capture or without. Utilization of hull cleaning technologies that are compatible with a ships' anti-fouling system (AFS), and apply the lowest contact pressure to the AFS, result in low biological and ecological risk to the environment.

The IMO Biofouling Guidelines include distinct levels of biofouling and how cleaning should be conducted for these different levels. For example, for a fouling level of 0 or 1 (defined as 'microfouling'), cleaning without capture is appropriate. For a fouling level of 2 to 4 (defined as

'macrofouling'), cleaning with capture is prescribed. These fouling levels and cleaning approaches are supported by scientific research (Swain *et al*, 2022 and Georgiades *et al*, 2023) that demonstrate lower relative biosecurity risks from biofilms and proactive cleaning.

BEMA recognizes that there will be cases where a ship is heavily fouled and using a cleaning solution capable of capturing as much biomass as possible will be needed. For this reason, BEMA supports the development of regulations to guide those cleaning activities and technologies. For example, the proposed regulations currently do not include provisions for what must be done with the water captured by a hull cleaning technology that uses capture, filtration capacity specifications or verification testing of capture claims. These aspects should be considered in the regulations.

Similar to the approaches of Australia, New Zealand and the United States, BEMA encourages Norway to recognize that clean ships and proactive biofouling management greatly reduces the level of fouling that develops on hulls, and therefore, reduces the environmental risks to Norwegian and international waters.

2. Inclusiveness of all hull cleaning technologies

The proposed regulations allow only for capture technologies to be used as a solution available to shipowners, which raises challenges. For instance, this requirement would apply to all Norwegian flagged ships, even when in international waters (excluding ships trading only in domestic routes) and would limit those ships to using in-water capture cleaning methods even if a local jurisdiction allows other hull cleaning solutions. Additionally, by overlooking non-capture solutions as an option for hull cleaning, shipowners lose flexibility in their biofouling management planning, which may result in unintended deferral of cleanings. Deferred cleanings can result in more heavily fouled ships transiting from port to port, unintentionally increasing the potential for the AIS to spread, as macrofouling is well documented as being the critical threat vector.

The proposed regulations present capture as a uniform, completely effective solution that poses no risk. Capture solutions are highly effective, but it is not feasible to expect 100% capture rate or zero risk, as not all technologies are designed to filter and treat effluent in the same manner or to the same level, and as such may be no more effective than a non-capture solution. Pathogens such as bacteria and viruses may be much smaller than a filtration system is designed to collect. Collection systems may not work as effectively on curved or complex hull surfaces allowing dislodged macrofouling to enter the water column untreated. These risks associated with cleaning heavily fouled surfaces, even with the best capture technologies available, should be evaluated and compared to the risks posed by gentle cleaning of microfouling with purpose built, compatible proactive non-capture cleaning solutions.

As drafted, the regulations indicate that "...if documentary evidence can be provided demonstrating that hull cleaning without capture will sufficiently prevent the spread of hazardous non-indigenous species, alternative cleaning methods may be accepted." While this creates an opportunity for non-capture solutions to be used, it also creates differing standards and unequal approval barriers for non-capture technologies. BEMA supports the development of regulations that support inclusion of all emerging, innovative technologies and that require both capture and non-capture solutions to equally demonstrate their effectiveness, as well as an equal approval process.

3. Global harmonization

In BEMA's view, a major challenge in the proposed regulations are the significant deviations from the latest IMO Biofouling Guidelines adopted by MEPC 80 (IMO resolution MEPC.378(80)), particularly in terms of how to manage the different levels of hull fouling in terms of cleaning. For BEMA

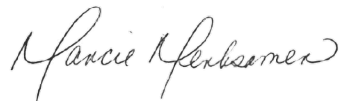
representing an international network of manufacturers, non-harmonized international regulations are considered an obstacle toward the goal of maintaining international biodiversity. Hence, BEMA is in favour of national regulations, including Norwegian regulations, that align as closely as possible with the IMO Biofouling Guidelines. The regulations should provide clear requirements for how to identify and minimise the risk of cleaning hulls by having requirements for capture or non-capture cleaning systems, as well as having clear documentation requirements and procedures for how to conduct in-water cleaning.

BEMA strongly supports national regulations that align with the IMO guidelines as this supports more frequent cleaning, less development of macrofouling, and reduction of AIS risks. Norway is also encouraged to consider the ongoing International Organization for Standardization (ISO) process for standard number ISO 6319 that will also include guidance for documentation of in-water cleaning practices. Harmonized regulations also enable the maritime industry to develop more robust Biofouling Management Plans, which can include frequent cleaning as a primary tool to maintain a clean ship. This will also support other environmental goals such as reduction of greenhouse gas (GHG) emissions from ships.

In summary, BEMA supports the development of strong regulations, for both capture and non-capture solutions, to protect global aquatic environments. As a regulatory priority, BEMA believes that the regulations should be written to ensure that clean ships conducting proactive management of hull biofouling are sailing the oceans, and deferring hull cleaning to the level of macrofouling should be discouraged. All hull cleaning technologies and solutions should be an option for shipowners to choose from, and regulations should be written to allow future technological innovation aimed to support environmental goals, while also creating a level playing field for all technologies to obtain any required approvals. International harmonization of biofouling management regulations, to the highest degree possible, will provide clear direction for all stakeholders and facilitate global implementation.

BEMA greatly appreciates consideration of this input and the opportunity to participate in the NMA's regulatory process. Should there be any questions or clarification needed on these submitted comments, or should NMA seek additional technical input from BEMA, please contact me using the information below.

Sincerely,



Marcie Merksamer
Secretary General
Ballastwater & Environmental Manufacturers' Association
info@bwema.org
+1 805.331.0740

References:

Georgiades et al. (2023). Biofilms associated with ship submerged surfaces: implications for ship biofouling management and the environment. *Front. Mar. Sci.* 10:1197366, page 4

Swain et al. (2022) Proactive In-Water Ship Hull Grooming as a Method to Reduce the Environmental Footprint of Ships.

More information about BEMA Members and their hull cleaning / biofouling management technologies can be accessed by each Member website (presented in alphabetical order):

Fleet Robotics - <https://www.fleetrobotics.ai/>

Greensea IQ - <https://greenseaiq.com/solutions/everclean/>

Jotun - <https://www.jotun.com/us-en/industries/solutions-and-brands/hullkeeper/the-hullkeeper-program>

NakAI Robotics - <https://www.nakairobotics.com/>

Shipshave A/S - <https://shipshave.no/>

Subsea Global Solutions - <https://www.subseaglobalsolutions.com/>
