



CYBUTRYNE USAGE BAN IN ANTI-FOULING COATING SYSTEMS

Amendments to the International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention) adopted by the IMO ban the presence of cybutryne in hull coatings beginning 1 January 2023.

WHAT IS CYBUTRYNE AND ITS EFFECT ON THE MARINE ECOSYSTEM?

Cybutryne, also known under its industry name Irgarol-1051 is applied to hulls of ships as an anti-fouling agent with generic anti-fouling benefit by inhibiting the electron transport in algae and plants.

As an increasing number of studies have become available on the environmental and ecological impacts of cybutryne, together with an equally increasing number of environmental risk assessment evaluations, the toxicity and persistence of this substance has been determined, in some instances even more harmful than tributyltin (TBT). It has been shown to be highly persistent in the environment, accumulating in the sediment and causing long-term effects in the marine environment. This has been demonstrated to be especially true for non-target and non-fouling marine algae that are highly sensitive at extremely low concentrations of the substance. This is particularly critical, as algae are considered the pillar for the ecosystem structure and function as they provide the food base for most marine food chains.

When used as an anti-fouling agent, cybutryne leaches, following the physical mechanism well known to self-polishing anti-fouling paints and then becomes available in the environment, together with other degradation products of its original formulation which can also be characterized as toxic and persistent.

AFS CONVENTION AMENDMENTS

The AFS Convention prohibits the use of harmful anti-fouling agents, establishing controls which lead Parties to the AFS Convention to prohibit and/or restrict use of harmful anti-fouling systems on:

1. Ships flying their flag
2. Ships not entitled to fly their flag, but which operate under their authority and,

KEY NOTES

- Applicable Vessel Types: All Ships with exceptions stated in this document
- Required Actions: Only approved anti-fouling systems without cybutryne substance to be used from 1st January 2023 in anti-fouling systems applied on ships
- References: Resolutions
MEPC.331(76)
MEPC.356(78)
MEPC.357(78)
MEPC.358(78)

- Ships that enter a port, shipyard, or offshore terminal of a Party. Anti-fouling systems to be prohibited or controlled are listed in Annex 1 to the AFS Convention, which is open to possible updates and revisions, subject to the provisions of article 6.

Despite the ban of harmful organotin compounds acting as anti-fouling systems, there is today a variety of different products, known as "booster biocides", that are used in the composition of different self-polishing anti-fouling paints. Their impact on the marine environment and ecological systems has been extensively studied with substantial evidence collected and conclusions derived as to their effects on non-target organisms. One of these active substances is cybutryne.

At MEPC 71, a new output to amend Annex 1 to the AFS Convention was proposed to include controls on cybutryne and was agreed to include a new output on "Consideration of the initial proposal to amend Annex 1 to the AFS Convention to include controls on cybutryne".

During the review process, the Technical Group developed the draft amendment to Annex 1 of the AFS Convention and after several reviews, developed its final version and published amendments in IMO Resolution [MEPC.331\(76\)](#) prohibiting ships from applying or re-applying anti-fouling systems containing cybutryne on or after 1 January 2023.

IMPLEMENTATION AND REQUIREMENTS

Introduction of new amendments to the AFS Convention prohibits usage of cybutryne (CAS No. 28159-98-0) in anti-fouling systems for new applications as well as for ships those already have applied with an anti-fouling system which contain cybutryne.

The following rows are added to the table in Annex 1 to the 2001 AFS Convention:

Anti-fouling system	Control measures	Application	Effective date
Cybutryne CAS No. 28159-98-0	Ships shall not apply or re-apply anti-fouling systems containing this substance	All ships	1 January 2023
Cybutryne CAS No. 28159-98-0	Ships bearing an anti-fouling system that contains this substance in the external coating layer of their hulls or external parts or surfaces on 1 January 2023 shall either: (1) remove the anti-fouling system; or (2) apply a coating that forms a barrier to this substance leaching from the underlying non-compliant anti-fouling system	All ships except: (1) fixed and floating platforms, FSUs and FPSOs that have been constructed prior to 1 January 2023 and that have not been in dry-dock on or after 1 January 2023. (2) ships not engaged in international voyages; and (3) ships of less than 400 gross tonnage engaged in international voyages, if accepted by the coastal State(s)	At the next scheduled renewal of the anti-fouling system after 1 January 2023, but no later than 60 months following the last application to the ship of an anti-fouling system containing cybutryne

In addition to table above, a revised model form of the International Antifouling System (IAFS) Certificate is amended to Annex 4 of the AFS Convention. Compliance options for controlled anti-fouling systems can now be reflected in the newly issued certificates.

Based on the new amendments as mentioned in the above table:

- **New construction** vessels with delivery date after 1st January 2023, shall be delivered as Cybutryne free which is required to be declared by paint/coating manufacturer at the time of vessel's delivery.
- **Existing vessels** in operation shall comply with this requirement by the next scheduled anti-fouling system renewal survey after 1st January 2023, but no later than 60 months following the last application to the ship of an anti-fouling system containing cybutryne.

All existing ships bearing an anti-fouling system that contains cybutryne in the external coating layer of their hulls or external parts must either:

1. Remove the anti-fouling system; or
2. Apply a coating that forms a barrier (Sealing coating) to this substance leaching from the underlying non-compliant anti-fouling system.

- **Exceptions** for existing coating systems are given for the following ship types and conditions:
 1. Below installations that have been constructed prior to 1 January 2023 and that have not been in dry-dock on or after 1 January 2023
 - a. Fixed and floating platforms
 - b. Floating Storage Units (FSUs)
 - c. Floating Production Storage and Offloading (FPSOs)
 2. Ships not engaged in international voyages; and
 3. Ships of less than 400 gross tonnage engaged in international voyages, if accepted by the coastal State(s)

REVISED GUIDELINES ON ANTI-FOULING SYSTEM SAMPLING, INSPECTION AND CERTIFICATION

In support of the controls on anti-fouling systems containing cybutryne, three guidance documents related to the AFS Convention have been updated to reflect the regulations which entered into force on 1 January 2023. The following resolutions have been adopted:

Resolution	Title
MEPC.356(78)	<i>2022 Guidelines for Brief Sampling of Anti-Fouling Systems on Ships</i> (superseding MEPC.104(49))
MEPC.357(78)	<i>2022 Guidelines for Inspection of Anti-Fouling Systems on Ships</i> (superseding MEPC.195(61))
MEPC.358(78)	<i>2022 Guidelines for Survey and Certification of Anti-Fouling Systems on Ships</i> (superseding MEPC 208(62))

The revisions made to these three guidelines incorporate the previously adopted implementation schedule for the ban on cybutryne and also provide additional details for confirming compliance, such as:

- 1) Definition of compliance – sampling of the anti-fouling system paint should confirm cybutryne at a level which does not provide a biocidal effect (i.e. maximum 1,000 mg cybutryne per kg of dry paint);
- 2) Tolerance Range – the tolerance range is 250 mg cybutryne per kg of dry paint (25%) in addition to the threshold value.

- 3) Sampling – when testing for cybutryne, every sample to be taken in duplicate, providing one specimen for analysis and one for storage/back-up;
- 4) Analysis – details provided for one-step analysis of AFS samples to detect cybutryne;

REQUIRED ACTIONS

Actions by: Ship Owners, Ship Managers, Ship Operators, Shipbuilders/Shipyards, Ship Designers, Paint Manufacturers

All concerned parties mentioned above are recommended to be aware of this development and make the necessary arrangements accordingly when scheduling drydocking for existing vessels as well as newbuilding projects with delivery date after 1st January 2023. During the planning stage, the paint manufacturer is to be consulted for compliance options such as the procurement of Cybutryne-free paints or in the case of existing vessels with anti-fouling system containing Cybutryne, arrangements to remove the existing anti-fouling system or apply a sealing coating in compliance with the above-mentioned requirements. The anti-fouling system needs to be supplemented by a Cybutryne-free declaration or statement issued by the paint manufacturer. Compliance shall be verified by an attending ABS surveyor who will issue the new form of the IAFS Certificate.

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