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**Sewage from Ships – Guidelines**

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Reference: MARPOL Annex IV

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**Sewage from Ships – Better Guidelines are Needed**

The IMO’s MARPOL Annex IV Convention aims at the “Prevention of pollution by sewage from ships.” Installing an approved sewage treatment plant has been a popular option for ships sailing internationally. The Marine Environmental Protection Committee (MEPC) has developed Guidelines on sewage treatment plant effluent standards and performance test specifications. However, in the absence of an effective enforcement regime, the vast majority of the sewage treatment plants installed are “discharging virtually untreated sewage” (MEPC 67/8/1).

To make matters worse, some approved sewage treatment plants do not conform to the Guidelines, and in some cases, do not even conform to environmental science and engineering principles, turning impossibilities into certified technologies. Such non-conformities and “magic boxes” have found their way into new ships in their hundreds.

**Back to basics**

Simple improvements can be made by introducing some basic concepts. The existing disinfection requirements and analysis methods are poorly defined. Sewage treatment plants using active substances other than chlorine have not been subject to the residual disinfectant limits. Sewage sludge has not been defined, lending excuses to certified impossibilities such as a no sludge claim. For those that do produce sludge, the common discharge pipe used for the treated effluent and sewage sludge caused post-contamination. Sewage treatment plants are also sometimes used to

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make other wastes disappear. Food waste and the related waste streams are sent to a sewage treatment plant. These aspects can be easily corrected.

Over the years, the weakness of the sewage Guideline has been exploited to the full. Some Sewage treatment plants have a built-in by-pass to the most critical treatment stages, which can be in use without any alarms or records. A more “competitive” form of bypass can be a hole in the wall dividing a sewage tank and an effluent tank. The chemical tank may be empty, the dosing pump may stop, the UV chamber may contain fouled lamps, if at all, without the system raising any alarms. Even advanced wastewater treatment systems may have facilitated discharge of partially treated sewage. Robust guidelines are needed for approvals and inspections.

### **Visibility is key**

The existing effluent standards are, at best, aspirational, judging by the poor performance status of the approved sewage treatment plants. In the absence of visibilities, no one knows the true limits of available technologies; no one knows whether the existing effluent standards are achievable without entailing excess costs. We can't control what we don't measure. Visibility is key.

For example, on-line monitoring of an sewage treatment plant's effluent flow and turbidity will provide the most basic visibilities. Bench-top or handheld instruments may be introduced as cost effective tools to keep other important parameters in check. For example, total nitrogen (TN) and total phosphorus (TP) analysis kits shall be provided with sewage treatment plant's certified for nutrient removals. Analysis of other parameters essential to effective chemical and UV disinfection processes may be facilitated by suitable instruments for spot checks.

Key operational parameters highlighted in vendors' O&M manual may be measured and recorded too, albeit product specific.

### Is an improved Guideline enough?

No. enforcement is essential, and correction of non-conformities and magic boxes is a must. An enforcement regime needs to encompass a sewage management plan, record book, performance verifications and inspections. An experience building phase may help to facilitate performance data collection and reviewed in a transparent manner. This can pave the way for evidence-based, practicable, and sustainable rules that are beneficial to both environment and the industry.

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## To address non-conformities

The approval regime is in the blood of marine industry. It saves lives and keeps the industry strong. But when it comes to controlling ship's sewage pollution, it has failed miserably so far. When MEPC.227(64) introduced a dilution compensation factor in 2016 to combat dilution machines, not a single sewage treatment plant approved to use dilution water has facilitated any visibilities, rendering the initiative meaningless. Some of the non-conformity issues had been raised since 2014, to the Member States, to the approval assessment bodies, and in the public domain in conferences and publications.

## REFERENCES:

- MARPOL IV, Courtesy: *Wei Chen, Manager at Wärtsilä.*

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