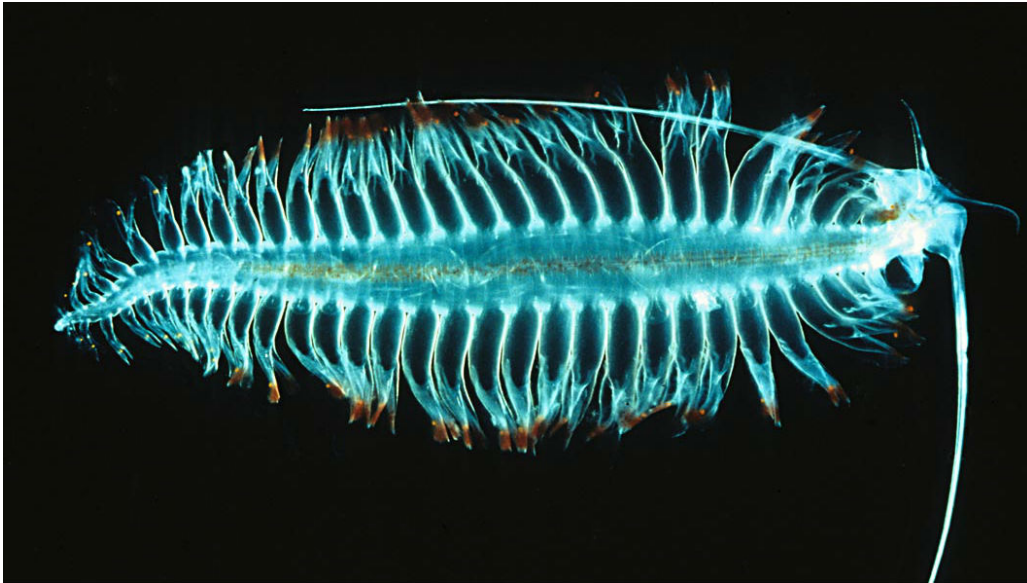


# Ballast Water Treatment: The Regrowth Problem



planktonic worm

By Wendy Laursen 2016-04-23 04:14:34 Published online by The Maritime Executive

The issue of the potential for in-tank organism regrowth after ballast water treatment was raised with IMO Secretary-General Kitack Lim during last week's Marine Environment Protection Committee meeting in London (MEPC 69).

Equipment manufacturer Coldharbour International wrote a letter to Lim, others attending the meeting and media, highlighting "an invisible threat to the smooth operation of numerous vessels post Ballast Water Management Convention ratification. A threat that has not been given the attention it deserves."

While thousands of ships can have ballast journeys of over a week, the Convention's current testing protocols only require water is held for five days to check system efficacy. The U.S. Coast Guard's equivalent testing protocol for type approval only calls for a holding time of one day, states the letter.

Regenerated organisms, at higher levels than those set by the Convention could therefore be discharged into new ecosystems despite the proper use of a lot of the presently approved ballast water treatment systems.

"The industry must become officially aware of the extent to which the smooth operation of tonnage will be affected so that remedial solutions can be found in time, where necessary," said Panos Smyroglou, Chief Commercial Officer of Coldharbour International.

"Members of the shipping community have started mentioning the fear that the Ballast Water Management Convention will result in a new "oily water separators' challenge" for the industry. However, arriving at a loading port with thousands of tons of undertreated ballast water is a far more significant problem," says Smyroglou.

Coldharbour recommends that type approval certificates should include information about a system's capabilities for treatment during de-ballasting and how long this would take.

The company's information included an assessment by marine biologist Dr Carolina Grob of issues she believes relate to the various treatment technologies currently employed in ballast water treatment systems:

According to Grob, it is widely accepted that the maximum dosage of sodium hypochlorite that is allowed in ballast tanks should be no higher than 10 ppm. Some, including at least one class society, recommend a limit of no more than five ppm if the integrity of the coatings and the long-term structural integrity of the vessel are not to be compromised. The presence of sodium hypochlorite in the ballast tanks immediately following initial treatment is unlikely to provide long term protection against regrowth because this compound breaks down and is reabsorbed into the seawater in as little as three days, she says.

Limitations of ozone treatment include the fact that ozone needs to be homogeneously distributed within the ballast tanks in order to be effective, she says, and, as for UV, an increase in particle concentration could reduce the disinfection efficiency for free-living bacteria.

Regardless of the method employed, the presence of dead organisms in treated ballast water could serve to provide bacteria with nutrients in the form dissolved organic matter. Additionally, there would be less plankton to consume the bacteria.

Bacterial regrowth has been detected between two and seven days after treating ballast water with UV, says Grob, as these organisms possess a number repair mechanisms, and even after surviving in the dark for 23 days, phytoplankton can regrow within four days after being put back into benign environmental conditions.

Port State Control testing is expected to include both laboratory-based regrowth analysis of samples taken on board, as well as "rapid testing" on board the vessel using simple handheld devices. Samples showing regrowth in less than five days could trigger a notice of non-compliance for the vessel operator with the attendant risk of fines or closer scrutiny of the next vessel from that operator to visit the port.

"The fact that only a few organisms typically survive ballast water treatment still means that there is a strong likelihood that these organisms, combined with the rich nutrient source available, will lead to significant regrowth in the ballast tanks, with the potential to reach numbers higher than accepted by IMO."

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