

Ballast water treatment (BWT) by carbon dioxide

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In order to prevent marine pollution, the International Ballast Water Management Convention has been in force since 2004 by the International Maritime Organization (IMO). Accordingly, ballast water treatment equipment needs to be installed in all managed ships by 2020. Therefore, a number of researches are conducted on a method and an apparatus for treating ballast water such as electrolysis, cavitation, ozone sterilization and so on. However, technologies developed in the prior art may cause various problems associated with the safety, human health and environment.

In this study, carbon dioxide was injected into the inlet flow stream of ballast water. Compared with present technologies, CO₂ treatment technology was safe and eco-friendly for operators and ships. The mortality of treated BWT samples at different conditions was monitored up to 60 hours. In addition, the effect of oxygen contact on the treated BWT was also investigated. Strains were successfully sterilized by CO₂ injection in a continuous reactor.

Keywords: Ballast Water Treatment, Carbon dioxide, Sterization