STATIC VS DYNAMIC SETTLEMENT AND ADHESION OF DIATOMS TO SHIP HULL COATINGS.

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Many experiments utilize static immersion tests to evaluate the performance of ship hull coatings. These provide valuable data, however, they do not accurately represent the conditions both the hull and fouling organisms encounter while a ship is underway. This study investigated the effect of static and dynamic immersion on the adhesion and settlement of diatoms to one antifouling coating (BRA 640), four fouling-release coatings (Intersleek® 700, Intersleek® 900, Hempasil X3, and Dow Corning 3140) and one standard surface (Intergard® 240 Epoxy). Differences in community composition were observed between the static and dynamic treatments. *Achnanthes longipes* was present on all coatings under static immersion, but was not present under dynamic immersion. This was also found for diatoms in the genera *Bacillaria* and *Gyrosigma*. *Melosira moniformis* was the only diatom to be present under dynamic conditions, but not static conditions. Several common fouling diatom genera were present on panels regardless of treatment: *Amphora*, *Cocconeis*, *Entomoneis*, *Cylindrotheca*, *Licmphora*, *Navicula*, *Nitzschia*, *Plagiotropis* and *Synedra*. Biofilm adhesion, diatom abundance and diatom diversity were found to be significantly different between static and dynamic treatments, however, the difference was dependent on coating and sampling date. Several coatings (Epoxy, DC 3140 and IS 700) had significantly higher biofilm adhesion on dynamically treated panels on at least one of the four sampling dates, while all coatings had significantly higher diatom abundance on at least one sampling date. Diversity was significantly greater on static panels than dynamic panels for Epoxy, IS 700 and HX3 at least once during the sampling period. The results demonstrate how hydrodynamic stress will significantly influence the microfouling community. Dynamic immersion testing is required to fully understand how antifouling surfaces will respond to biofilm formation when subjected to the stresses experienced by a ship underway.