

TOXIC EFFECTS OF ANTIFOULING PAINT PARTICLES (APPs) ON THE  
SURVIVAL OF *ARTEMIA FRANCISCANA*

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**INTRODUCTION:** During vessel maintenance, removal of old coatings generates antifouling paint particles (APPs), which reach aquatic environments and act as long-term sources of contamination. Modern antifouling paints may contain up to four combined organic or organometallic co-biocides to enhance toxicity of metals.

**OBJECTIVE:** To evaluate the toxicity of APPs from Supermarine AF Ionex paint (Renner®) through an acute toxicity test with *Artemia franciscana*.

**MATERIAL AND METHODS:** *Artemia* cysts were hatched in artificial seawater (ASW – 35 PSU), under aeration and continuous light (25 W). Nauplii at 72 h post-hatching were used in the assays. The APPs, obtained by scraping the hull of a Renner®-painted vessel at a shipyard in Rio Grande, were sieved (1 mm) and stored at 4 °C. The concentrations tested (0, 2, 6, and 18 mg/L) were prepared in ASW in 50 mL Falcon tubes, maintained at 25 °C, in the dark, on an orbital shaker (110 rpm) for 24 h. Each treatment had 5 replicates with 15 nauplii. Mortality was the observed endpoint, considering individuals as dead when showing no movement after stimulation. Statistical analyses were performed using GraphPad Prism 8.4.

**RESULTS AND CONCLUSION:** Mortality in the control group was  $15 \pm 6.67\%$ . At concentrations of 2, 6, and 18 mg/L, mortality rates were  $66.3 \pm 38.91\%$ ,  $100 \pm 0\%$ , and  $100 \pm 0\%$ , respectively, with an estimated LC50 of 0.406 mg/L. This effect is associated with the APP composition, which contains the co-biocides DCOIT, Diuron, Irgarol, and TCMTB — all proven to be toxic to the oyster *Crassostrea gigas*. Additionally, the particles present high concentrations of copper and zinc, metals also known to affect survival of the mysid *Neomysis integer*. The presence of these contaminants in Renner® APPs, whose toxicity has been confirmed for *Hyalella azteca* and *Monokalliapseudes schubarti*, supports the results of this study, highlighting their toxic effects on *Artemia franciscana*.

**Keywords:** APPs; branchiopods; ecotoxicological tests.