

## Alternatives Assessment Examples Review

**Document Title:** Washington State Antifouling Boat Paint Alternatives Assessment Report

**Link to Document:** [https://www.northwestgreenchemistry.org/s/Washington-CuBPAA\\_Final\\_2017.pdf](https://www.northwestgreenchemistry.org/s/Washington-CuBPAA_Final_2017.pdf)

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**Purpose of the Report:** This report presents an alternative assessment prepared for the Washington State Department of Ecology for copper-based antifouling boat paint. This report follows the Washington State Alternatives Assessment Guide for Small and Medium Businesses (WA Guide), which is based on the Interstate Chemicals Clearinghouse Alternatives Assessment Guide (IC2 Guide). Relevant endpoints considered include hazard, exposure, performance, cost, and market availability.

**Report Summary:** The report assesses alternatives to copper-based antifouling paint following the WA Guide through a formal stakeholder engagement. The results suggest that cost-effective copper-free antifouling alternatives are currently available on the market and that several of them are likely to meet performance expectations with reduced impact to human and marine health.

### **Key Findings:**

Product requirements: Performance evaluation in this study uses manufacturers' claims about product longevity to calibrate ratings based on a combination of panel tests and limited boat tests data. The report clearly documents the data source and evaluation methods based on credibility and verifiability of data sources. The report also discusses the mechanism of antifouling coating and technology attributes, such as substrate compatibility and application conditions. Further performance testing is identified as a primary research need.

Identification of alternatives: The study identifies both chemical alternatives, including biocidal paints and nonbiocidal paints, and nonchemical alternative technology based on different antifouling mechanisms.

Initial screening: The report follows the steps outlined in the WA Guide. Some decisions documented include: (1) the rationale used to screen alternatives such as biocidal and nonbiocidal paints, ceramic coatings, silicone and wax like polymer coatings, sound-emitting technologies, and mechanical processes; (2) the rationale used to eliminate alternatives; (3) the tools and criteria used to evaluate the hazards for each alternative (e.g., GreenScreen, Quick Chemical Assessment Tool (QCAT), List Translator, and EPISuite); (4) collecting stakeholder input on the alternatives and closing data gaps for the Safety Data Sheets; and (5) the use of performance test data in the decision-making process. An overall summary of results of the alternatives assessment is presented in the Selection Guide (Section 1.1) as well as a supplemental Excel worksheet. This format facilitates consideration of multiple endpoints as well as boaters' needs and preferences during decision-making.

Exposure: Comparative exposure assessments are conducted for human and environmental exposure following the IC2 Guide. The study considers the exposure to workers and to the marine environment separately, with qualitative and semi-quantitative metrics based on product use patterns. The total amount of product applied over time and the release of volatile organic compounds serve as proxies for exposure. Rationales are provided for the exposure factors considered along the life cycle of the product. Data gaps are addressed in the report. There is also a discussion on how the use of personal protective equipment and the application methods can affect exposure.

Data gaps and uncertainty: The report documents the data gaps and uncertainties on chemical ingredients, performance, exposure, and hazard assessment. Most data gaps in hazard assessment are noted according to the GreenScreen guideline.