

Nontoxic Antifouling Strategies Economic Incentives Study

California Senate Bill 315 of 2004 directed California Department of Boating and Waterways to fund a study of incentives for boat owners to use nontoxic boat bottom paints. The law also created the San Diego Advisory Committee for Environmentally Superior Antifouling Paints to advise on the study. In 2002 University of California Sea Grant Extension Program and UC San Diego Economics Department conducted the research, consulted the advisory committee and wrote the report *Transitioning to Non-Metal Antifouling Paints on Marine Recreational Boats in San Diego Bay*. UC Davis Center for Pest Management, Research, and Education and California Sea Grant Extension Program also funded the study.

Data collection in 2002 included:

- Survey of 200 randomly selected San Diego Bay recreational boat owners ;
- Interviews with representatives of five underwater hull cleaning companies, four boat repair yards, several marinas and yacht clubs and numerous bottom coating manufacturers;
- Review of scientific literature.

In 2003, ten boat repair yards were surveyed in San Diego and Orange Counties on the frequency of stripping copper-based paints from boat bottoms.



Surveying Recreational Boater at San Diego Bay Marina

Important Factors in Deciding to Switch to a Nontoxic Coating

Some boat owners were asked to choose among paints after they were told that copper-based paints would



Sailboat with Nontoxic Coating

likely be banned ten years later. These boaters were 33% more likely to choose nontoxic coatings than those who were not told that a ban was likely.

The boaters' paint choices also suggested that they:

- Were willing to pay about \$700 to wait a year to paint their boat. (Pay more for longer lasting paint).
- Did not care whether a particular paint had a high or a low copper content.
- Were willing to pay about \$500 more for a nontoxic coating than for a copper-based paint.
- Distinguished one-time conversion costs versus paint application costs.

Boat owners were asked their opinions about the importance of different factors in deciding whether to switch to a nontoxic bottom coating. The top three factors that were rated extremely or very important were:

- The greater longevity of nontoxic coatings (77%)
- A law requiring nontoxic coatings (76%)
- San Diego Bay would be cleaner if boaters used nontoxic boat bottom coatings (71%)

Managing Costs of Switching to a Nontoxic Epoxy Coating

The greater longevity of nontoxic, epoxy boat bottom coatings may create cost savings to balance the extra stripping, application and hull cleaning costs. Overall, in the short term copper-based bottom paints have a cost advantage but nontoxic epoxy bottom coatings may be the lower cost alternative over the entire lifespan of a boat. Therefore, based on typical prices in the San Diego region, it would be most reasonable, economically, for boat owners to switch to a nontoxic, epoxy bottom coating if:



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- The boat is ready to be stripped (Nontoxic coatings do not adhere to copper-based bottom coatings);
- They are ready to purchase a new boat;
- They expect to keep the boat long enough to amortize the stripping cost; and/or
- A ban on copper-based bottom paints is expected.

The study focused on nontoxic epoxy coatings that local boat repair yards and hull cleaners had found to be effective. Other, new coatings are becoming available and need to be evaluated for performance and cost effectiveness in various geographic areas and under different operating conditions.

Conclusions of the Study on Economic Incentives for Boat Owners Include:

- The most effective candidates for nontoxic paint are new boats and boats that need to be stripped of old copper paint.
- Durable, nontoxic epoxy coatings may last enough years to make up for their higher hull



Blister Repair Job

preparation and application costs and the twice-as-frequent hull cleaning that is needed to control fouling growth. (San Diego boat owners reapply copper based paints after 2 or 3 years and clean their



Underwater Hull Cleaning Tools

boat's hull every 4 weeks)

- Independent, long-term testing in a variety of geographic regions and under different operating conditions is needed to verify durability and longevity of various nontoxic coatings.
- Due to boatyard capacity in San Diego Bay, the quickest time to phase out copper paint is 7 years at a cost of \$20 million.
- Due to the median paint stripping schedule of 15 years reported by 10 San Diego and Orange County boat repair yards, the least-cost policy to phase out copper paint is 15 years at a cost of \$1 million
- Announcing a future ban on copper-based bottom paints would increase the value of boats with nontoxic bottom coatings.
- Prohibiting the application of copper-based bottom paints on new boats would save boat owners money in the long run and begin the reduction of copper releases to marina waters.

Available at <http://seagrants.ucdavis.edu>:

“What You Need to Know About Nontoxic Antifouling Strategies For Boats” provides technical information on nontoxic antifouling strategies for recreational boats and environmental effects of copper

Request the following from ltjohnson@ucdavis.edu: “Making Dollars and Sense of Nontoxic Antifouling Strategies for Boats” provides information on economics of switching to nontoxic bottom paints.

“Staying Afloat with Nontoxic Antifouling Strategies for Boats” summarizes results of the field demonstration on nontoxic bottom paints (late 2004).

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