Fact Sheet, February 2012

IRTA

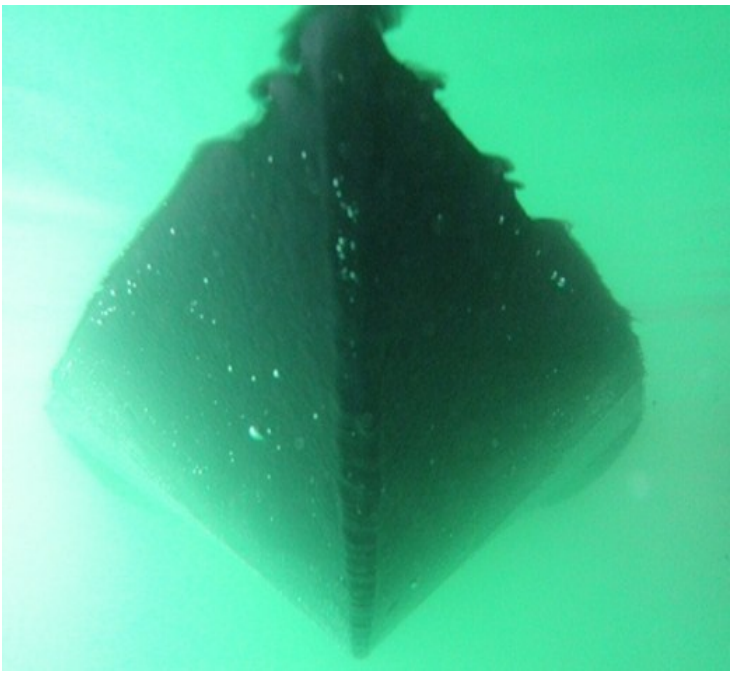
Institute for Research and Technical Assistance

Diver Maintenance Practices For Nonbiocide Alternative Boat Hull Paints

Copper antifouling paints are routinely used on boat hulls to prevent excess fouling from building up. The paints leach copper biocide to the surface of the hull which repels the marine organisms. Copper concentrations in some basins and marinas in California now exceed the water quality standard and methods of reducing the copper loading may be required in the future. Alternatives to copper antifouling paints are being investigated. They include alternative biocide paints based on zinc or organic biocides, zinc oxide only paints and nonbiocide paints. From an overall health and environmental perspective, the best alternative options are the nonbiocide paints.

What Are the Types of Alternative Nonbiocide Paints?

Two major types of nonbiocide alternatives to copper antifouling paints have emerged and are being tested. To some extent, these paints are also being used by pleasure craft boaters and owners of work boats. The first type is soft nonbiocide paints which are generally based on silicon and/or fluoropolymers. These paints are called foul release paints because they present a smooth surface to which fouling organisms have difficulty attaching. These paints feel rubbery and flexible to the touch. The second type is hard nonbiocide paints which are most often based on epoxy and/or ceramic. These paints feel smooth to the touch and are very hard and durable.



What Are the Maintenance Practices For Copper Hull Paints in Southern California?

In Southern California, boat owners commonly use diving companies to maintain their hull paint. By convention, copper hull paints are cleaned by divers an average of 15 times per year. The boats are cleaned every three weeks in summer and every four weeks in winter. There is strong evidence that the high copper concentrations in various water bodies are partly a result of the paint leaching copper and partly a result of the divers' cleaning practices. The boat hulls may not need to be cleaned as frequently as they are currently and many divers use tools that are too aggressive and remove the paint from the hull during cleaning.

Have Maintenance Practices Been Investigated for Nonbiocide Paints in Southern California?

In two projects sponsored by EPA, alternative nonbiocide paints were applied to panels and boats and the optimal cleaning methods were investigated. In one project, conducted by the Port of San Diego and the Institute for Research and Technical Assistance (IRTA), a technical environmental nonprofit organization, IRTA and the Port cleaned panels and a project diver cleaned several boats with both biocide and nonbiocide alternative paints for up to 20 months. The diving company, San Diego Diving Service, gained substantial experience in maintaining nonbiocide alternative paints through this project. In the other project, conducted by Cal/EPA's Department of Toxic Substances Control (DTSC) and IRTA, the focus was on painting panels and boats exclusively with nonbiocide paints. IRTA staff cleaned the panels and, in some cases, the boats were maintained by San Diego Diving Service. The final project reports for the two projects are provided on IRTA's website at www.irta.us.

What Are the Optimal Maintenance Practices for Nonbiocide Paints?

This fact sheet was developed by IRTA and San Diego Diving Service based on IRTA's panel cleaning experience and San Diego Diving Service's boat cleaning experience. Soft nonbiocide paints should be cleaned with nonaggressive cleaning tools like the soft side of a sponge, terry towel or carpet. The surface of the best performing soft nonbiocide paints may have soft fouling, like silt and algae but very little hard fouling, like tube worms or bryozoans. If there is substantial hard fouling, a thin white pad or a thin fine gray pad can be used for cleaning. These paints can be cleaned on the same schedule as copper paints, every month or so. Some of the best performing paints of this type may not require cleaning any more often than once each six month period for boats that are used infrequently. IRTA and San Diego Diving Service investigated a longer cleaning frequency for two soft nonbiocide paints; they cleaned readily after five and six months of accumulating substantial soft and hard growth fouling.

Hard nonbiocide paints should be cleaned with aggressive cleaning tools like a green pad and a scraper and must be cleaned periodically with a power tool. These paints should be cleaned every three weeks in the winter and every two weeks in the summer. In a short period of time, they generally become very fouled with hard fouling, like tube worms and bryozoans.

What Are the Pitfalls in Cleaning Nonbiocide Paints?

Soft nonbiocide paints can be removed, because they are soft, if aggressive tools are used to clean them. If hard fouling attaches to these paints, however, it is often better to use a more aggressive tool for a very short period of time than a less aggressive tool for a long sustained period of time. The coating can be damaged more if it is cleaned with a gentle tool for a long period. Hard nonbiocide paints should not be cleaned with gentle tools for a sustained period. This type of cleaning activity simply grinds the fouling into the paint and it becomes very stained. Gentle tools used to clean a hard nonbiocide paint for a sustained period may also remove or damage the paint. Periodic cleaning with a power tool will help keep the fouling under control and may allow the paint to be cleaned less frequently.

Where Can I Find Out More About How Nonbiocide Paints Should Be Cleaned?

Interested boaters and divers can contact Katy Wolf at IRTA at (323) 656-1121 or Alex Halston at San Diego Diving Service at (619) 226-1900 for more information on cleaning practices.