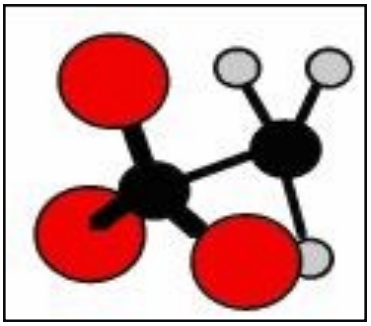

Fact Sheet, February 2012

IRTA

Institute for Research and Technical Assistance

Alternative Boat Hull Paint Stripping Methods

There are a number of boatyards in California engaged in painting pleasure craft and work boats that are smaller than about 60 feet. Most of these sailboats and powerboats have fiberglass hulls but some of them also have aluminum hulls. The boat hulls are generally painted with copper antifouling paints to keep marine growth from attaching to them. Excess marine growth attachment can lead to loss of maneuverability, higher fuel use and, in extreme cases, damage to the hull itself.

Smaller boats are generally painted by boatyards every two or three years. Most often, the new copper paint is applied over the old coat of copper paint after surface preparation has removed some of the spots with peeling aged antifouling paint. After several paint jobs, the paint thickness builds up and the boats must be stripped of the old coats of paint before the new paint can be applied. Stripping the boat hull is an expensive step so boaters generally delay the decision to strip as long as possible.

How Do Boatyards Strip Hull Paint Today?

The two methods used to strip boat hulls today are abrasive hand sanding and chemical stripping. Abrasive hand sanding creates airborne particulate matter emissions that can affect other ongoing paint jobs at the yard. The toxic particulates expose workers and can be deposited on structures or cars adjacent to the yard. Chemical stripping is generally performed with strippers based on methylene chloride. This chemical is a carcinogen, it is listed on California's Toxic Air Contaminant (TAC) list and Proposition 65 and is also on U.S. EPA's Hazardous Air Pollutant (HAP) list. Furthermore, it is a listed waste under the federal Resource Conservation and Recovery Act (RCRA). The residues from both of these stripping activities are classified as hazardous waste in California and they must be disposed of by a licensed hazardous waste hauler.

Are There Alternative Stripping Methods?

As part of a project to investigate and test alternatives to copper antifouling paints, EPA sponsored a project which was conducted by Cal/EPA's Department of Toxic Substances Control (DTSC) and the Institute for Research and Technical Assistance (IRTA), a nonprofit technical environmental organization. One of the project tasks was to evaluate and analyze alternative methods of stripping boats. Three alternative methods were investigated. All three methods, sodium bicarbonate blasting, volcanic rock blasting and dry ice blasting, rely on various types of media to abrade the paint from the boat hull surface. From an overall health and environmental standpoint, these alternative methods are better than the methods used today.

To test the alternatives, IRTA arranged for three technology vendors to demonstrate their technology for stripping small sections of a boat that was destined to be demolished at Marine Group, a boatyard in Chula Vista, California. One of the vendors, Advanced Restoration, offers a boat stripping service using dry sodium bicarbonate blasting media to boatyards in Southern California. The company also offers systems for sale to boatyards. This method is called soda blasting. When the company strips a boat, the boat is shrouded with plastic sheeting, the hull paint is stripped inside the shrouded area and Advanced Restoration collects the media for disposal by the boatyard. Several boatyards in Southern California have used Advanced Restoration's services.

The second method relies on wet volcanic rock as the blasting media. A company in San Diego called Hawthorne represents a manufacturer of these systems and provides them for rent or sale. The Farrow system is a self-contained trailer mounted unit with its own air compressor and a 110 gallon water supply. The technology uses low pressure air, heat, water and the media for stripping. The company claims that containment is not necessary because the technology is wet. One of these systems has been sold to a boatyard in Southern California but there is little, if any, experience in this industry in using the technology.

The third alternative stripping method is dry ice blasting that uses solid carbon dioxide accelerated at supersonic speed for blasting the paint from the boat. It is based on a Cold Jet System marketed by Red-D-Arc in the San Diego area. The advantage of this method is that the carbon dioxide sublimes or forms a gas and the only waste generated from the process is the paint residue. Red-D-Arc offers these systems for rental or purchase. Like the volcanic rock technology, there is limited, if any, experience in this industry in using this technology.

The demonstration involved stripping patches of a boat with old copper paint rather than an entire boat so the results are only qualitatively useful. All three technologies successfully stripped paint from the boat. DTSC collected samples of the spent stripping media for analysis and all contained copper concentrations that indicated the residue would have to be handled as hazardous waste.

What is the Cost of the Alternative Stripping Methods?

IRTA conducted a detailed cost analysis and comparison of all three of the technologies. The analysis is available in a report entitled "Safer Alternatives to Copper Antifouling Paints: Non-biocide Paint Options." The report can be accessed on the IRTA website at www.irta.us. The results of the demonstration and analysis indicate that all three technologies could be used as alternative stripping methods and that the use of the three technologies is likely to be slightly less costly than the use of the methods used by boatyards to strip hull paint today. Their main advantage, however, is that they are better from a health and environmental perspective.

Where Can I Find Out More About Alternative Stripping Methods?

For more information, boatyards and boaters can contact Katy Wolf at IRTA at (323) 656-1121.