

The Alternative

IRTA Newsletter

Volume XXI Number 4

Summer 2011

IRTA Investigates Copper Recycling for Boatyards

As part of a project sponsored by EPA and Cal/EPA's Department of Toxic Substances Control (DTSC), IRTA is evaluating the possibility of copper recycling for boatyards. The project involves examining nonbiocide paints as alternatives to copper antifouling paints.

Part of the EPA/DTSC project is focusing on using alternative stripping methods when the copper paint is stripped from the boats. Many of the alternative paints require a stripped hull before they can be applied. Boatyards commonly hand strip the boats or use chemical strippers. Hand stripping exposes workers and the surrounding community to toxic particulate matter and is very labor intensive. Chemical stripping is often performed using methylene chloride, a carcinogen.

IRTA conducted tests of three alternative stripping methods including dry sodium bicarbonate blasting, wet volcanic rock blasting and dry ice blasting on a boat destined to be demolished. The DTSC lab analyzed the spent media. The media, in all cases, was classified as hazardous waste and it

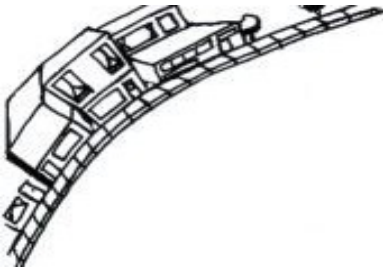
contained up to 60 percent copper depending on the media used in the blasting. Because the media contained high copper concentrations and because copper currently has a very high price, IRTA began investigating the possibility of copper recycling.

As part of the analysis, IRTA considered other boatyard operations. Boatyards have other waste streams that may contain significant concentrations of copper. These include dry sanding waste, clarifier waste and sand blasting waste. As part of the surface preparation prior to painting, boat hulls are sanded. The dry sanding waste contains high concentrations of copper. Some boatyards do wet sanding rather than dry sanding to prepare the boat surface for painting. The wet sanding material is routed to a clarifier at the boatyard. Other streams from the high pressure water spraying of the boat when it is hauled out of the water are also routed to the clarifier. The clarifier waste contains copper. Boatyards that paint large commercial metal boats often use sand blasting to remove the old paint. The spent media from these operations also contains copper.



IRTA is working with a copper recycling company to analyze several different streams from boatyards that perform the operations that result in waste materials containing copper. The recycler sends the copper to a smelter where the copper is reused. IRTA plans to work with a number of boatyards to institute copper recycling which should reduce the cost of disposal of the waste streams. In many cases, the recycler will pay the boatyard for the stream if the copper concentration is high enough.

For boatyards interested in exploring recycling and for more information on the recycling operations, call Katy Wolf at IRTA at (323) 656-1121.



Small Business Corner

SCAQMD Proposes Exemption for TBAC and DMC in Rule 1107

The South Coast Air Quality Management District (SCAQMD) held a workshop for Rule 1107 “Coating of Metal Parts and Products” on June 15. The rule regulates general metal coating operations conducted by metal furniture manufacturers, fabricated metal product manufacturers, appliance manufacturers and metal finishers. The VOC limits have been unchanged for seven years and the VOC limits for the “general” category has not been changed for 13 years. SCAQMD estimates that the proposed reduction in VOC emissions would amount to 1.26 tons per day.

The District staff is proposing amendments to the VOC limits and is defining new categories including primers, high-gloss and extreme high-gloss coatings, lacquers and graphic arts coatings. The District is also proposing to expand the applicability of the rule to include metal stripping operations. The proposal would prohibit the use of Group II Exempt materials in coatings and strippers. This means that methylene chloride, a carcinogen and a Group II Exempt solvent, could not be used in stripping formulations. The rule would also include a prohibition of sales for suppliers.

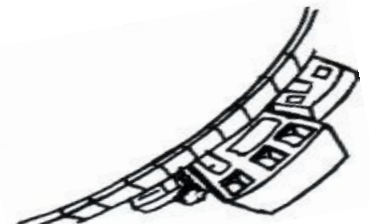
The District is proposing an exemption from VOC regulations for two chemicals that pose toxicity problems. Tert-butyl acetate (TBAC) forms a metabolite, tert-butyl alcohol, which is a carcinogen. Dimethyl carbonate (DMC) is a developmental toxin and it forms methanol as a metabolite. EPA, in a draft report, has recently tagged methanol as a carcinogen. EPA has deemed TBAC and DMC exempt from VOC regulations. For the chemicals to be exempt in California, the local air districts must ex-

empt the solvents in rules that affect stationary sources and the California Air Resources Board (CARB) must exempt the materials for use in consumer products before they can be considered VOC exempt materials.

As part of considering the exemptions, the District modeled the risk to the community and to offsite workers posed by Rule 1107 facilities. In some cases, the risk exceeded the threshold for the risk. As a result, the District is proposing to require facilities that want to use coatings containing the materials to obtain a permit or modify their existing permits. The proposal would also require the paints to be used in a spray booth.

IRTA is opposing the exemption of the two solvents in Rule 1107 for several reasons. First, and most important, when chemicals are exempted by SCAQMD, it promotes their widespread use. It is not good public policy to exempt and thereby promote the use of chemicals that pose toxicity problems when safer alternatives are available. Second, companies will not only use the solvents in the coatings, they will also use them for cleanup and thinning which is most often done outside spray booths. Workers will be exposed to high emissions of the solvents during these activities. Third, numerous companies do not have

(continued on page 3)



(Continued from page 2)

permits and/or spray paints outside spray booths and the District does not even know their identity in many cases. As a result, they cannot ensure that the paints are used in spray booths. Fourth, in their analysis, the District did not evaluate the developmental risk for DMC or the carcinogenic and developmental risks from methanol which is formed from DMC. Fifth, it does not make sense for the District to estimate the risk to offsite workers who may be on the other side of the wall in an industrial strip mall and not for workers applying the paint who may face a higher risk. The District claims they have no re-

sponsibility to consider worker risk but SCAQMD's charter calls on them to protect public health. It does not say they are responsible for protecting public health except for workers.

The District plans to consider the proposed amendments to the rule at the Governing Board meeting on September 9.

For more information on the TBAC and DMC exemptions, call Katy Wolf at IRTA at (323) 656-1121.

IRTA Paints Boat With Nonbiocide Paint Over Copper

IRTA recently worked with a supplier to paint a powerboat with a nonbiocide paint at Shelter Island Boatyard. This was part of a project sponsored by EPA and Cal/EPA's Department of Toxic Substances Control (DTSC) to test and demonstrate new and emerging nonbiocide paints as alternatives to copper antifouling paints. A major aim of the project is to investigate methods of reducing the cost and complexity of applying the nonbiocide paints.

In an earlier project, sponsored by EPA, IRTA partnered with the Port of San Diego in a project that involved panel and boat testing of alternative paints. The findings indicated that the best alternatives were nonbiocide paints. The analysis indicated that the cost of using the alternative soft nonbiocide paints was comparable to the cost of using the copper paints over the life of the paint. Many of the nonbiocide paints have much longer lives than the copper paints. Even so, the cost of the paint job is higher for the nonbiocide paints because they generally must be applied to a stripped boat hull and they must be sprayed on. Copper paints are applied over the old copper paint and they are almost always rolled on. Stripping and spraying are expensive and, in the DTSC/EPA project, IRTA is testing methods of applying nonbiocide paints over copper paints and rolling them on.

In the last edition of *The Alternative*, an article described painting a diver boat, owned by San Diego Diving Services, with an alternative nonbiocide paint. Half the hull was stripped and painted with a paint called BottomSpeed and, on the other half of the hull, the paint was applied over old copper

paint. The paint was rolled on rather than sprayed. According to Alex Halston, owner of San Diego Diving Services, the paint is performing well on both sides of the boat. IRTA and San Diego Diving Services worked to find a boater willing to apply the paint on a larger boat over the old copper paint by roller. The boat that was identified was a 32 foot Bayliner in San Diego.

The paint was applied to the boat under supervision of the supplier. It involved painting with a primer/sealer to seal the old copper paint and then painting with a topcoat which is the soft nonbiocide paint. The boat was launched and San Diego Diving Services is maintaining the boat and will report on the paint condition over the next several months to IRTA and the supplier.

For more information on the paint, call Katy Wolf at IRTA at (323) 656-1121.



IRTA Paints Two Fish and Game Department Boats With Nonbiocide Paints

Over the last few months, IRTA worked with suppliers and boatyards to apply two different paint systems to two California Department of Fish and Game boats. This effort is part of a project which is sponsored by EPA and Cal/EPA's Department of Toxic Substances Control (DTSC). IRTA partnered with the Port of San Diego on a three year project sponsored by EPA which was completed in January. It involved conducting panel testing and boat testing of alternatives to copper antifouling paint for boat hulls. The conclusions were that alternative nonbiocide paints were the best option. The DTSC/EPA project is focusing exclusively on nonbiocide paint alternatives. Its focus is to find methods of reducing the cost of applying the nonbiocide paints and to find methods of making the application procedures easier. Part of the effort involves applying new and emerging nonbiocide paints to boats.

Two of the best alternative nonbiocide paints tested in the IRTA/Port project were Hemplasil X3 made by Hempel and Intersleek 900 made by International Paint. These paints are both soft nonbiocide paints based on silicon compounds. During the DTSC/EPA project, IRTA has continued panel testing and one of the best performing paints is a new paint made by International Paint. Another paint, made by Fuji Hunt, is also performing very well in the panel testing. IRTA wanted to apply the new International Paint, called XZM 480, and the new Fuji Hunt paint, called Sher-Release, to boats. IRTA had already applied the XZM 480 to a Port of San Francisco boat (see last edition of The Alternative) but a new version, containing a hardener was available.



The Department of Fish and Game needed to paint two of their boats, one in Los Alamitos and one in the San Diego area. Both boats are rigid inflatables with metal hulls. IRTA worked with the suppliers, a boatyard in Newport Beach, Basin Marine, and a

boatyard in San Diego, Koehler Kraft, to apply the paints.

The Sher-Release paint system includes a primer, a tiecoat and a topcoat. The coating is sprayed on to provide a smooth surface. This paint has been put on some commercial boats and a few boats in other locations. The paint is new to the pleasure craft market in California. Part of aim of the DTSC/IRTA project is to apply additional new and emerging paints and because this paint performed so well in the panel testing, IRTA wanted to apply it to a boat.

When boatyards apply the copper paints they use routinely, they prepare the surface and apply the new copper paint over the old coat of copper paint. They generally roll the paint on. IRTA and International Paint wanted to experiment with the XZM 480. It was rolled on rather than sprayed and a sealer was used over the old copper paint. The intent was to investi-



gate whether the alternative paints can be applied over copper paints and whether rolling the paint, rather than spraying, is acceptable. In the IRTA/Port project, the two elements of the cost that were highest for paint jobs on boats with nonbiocide paints were the need to strip the boat and the need to spray the paints. Stripping a 30 foot boat can add \$2,500 to the cost of the paint job and spraying can add \$1,000. If the paints can instead be rolled on and applied over copper paint, the cost of the paint job can be reduced substantially.

Both boats were launched recently and they will be followed for several months to judge the performance of the paints.

For more information on the paints, call Katy Wolf at IRTA at (323) 656-1121.

IRTA and Orange County Coastkeeper Paint Newport Beach Boat

IRTA is working on a project, sponsored by EPA and Cal/EPA's Department of Toxic Substances Control (DTSC), to investigate methods of making it less costly and easier to use alternative nonbiocide paints. For many years, copper paints have been applied to boat hulls to prevent fouling growth. Copper is now causing problems and some of the basins in California have concentrations of copper that exceed the water quality standard. Alternatives to copper paints are available including alternative biocide paints based on zinc and organic biocides and alternative nonbiocide paints. The best alternatives, taking into account the environmental damage, are the nonbiocide paints. Part of IRTA's DTSC/EPA project is to conduct panel testing and boat testing of new and emerging nonbiocide paints.

In an earlier project, sponsored by EPA, IRTA partnered with the Port of San Diego to evaluate alternatives to copper antifouling paints. IRTA and the Port conducted panel tests of 46 alternative paints and the best performing paints were applied to boats in San Diego. One of the paints that performed very well in the boat testing was Hempasil X3 made by Hempel. As part of the DTSC/EPA project, IRTA is conducting panel testing of new and emerging paints with the Port. Hempel provided two new paints for the panel testing. Both are performing well and IRTA has been seeking a boater willing to apply one of the paints to a boat.

The Orange County Coastkeeper has a grant to provide some funds to boaters who apply alternative nonbiocide paints to boats in the Balboa Yacht Basin. The City of Newport Beach had a small Boston Whaler that needed a paint job. Basin Marine, a boatyard in Newport Beach, agreed to paint the boat at a much reduced cost.

IRTA and Hempel decided to paint half the boat with Hempasil X3, the coating that performed well in the IRTA/Port of San Diego project on a few boats. This paint has also been applied to commercial ships. The other half of the boat was painted with Hempasil XA278, one of the emerging paints being tested on panels. Although the Hempasil paints have always been spray applied in the past, this boat was painted by rolling both paints on the hull. Rolling the paint on a boat is a less costly option than spraying it.



The boat was painted and launched recently and IRTA and the Coastkeeper plan to follow the paint performance over the next several months.

For more information on the paint, call Katy Wolf at IRTA at (323) 656-1121.

Visit our website: www.irta.us

Read back issues of The Alternative

and recently completed reports.

IRTA Paints Pasha Group Boat

IRTA worked with a supplier to apply a soft nonbiocide paint to the hull of a small inflatable boat used by Pasha in its San Diego operations. The Pasha Group is a transportation and logistics company. In San Diego, the company provides port, distribution and a service facility for the movement of automobiles from locations all over the world.

As part of a project sponsored by EPA and Cal/EPA's Department of Toxic Substances Control (DTSC), IRTA is testing alternative nonbiocide paints on panels and boats. The copper from antifouling paints has built up in basins throughout California and, in many cases, has been found to exceed water quality standards. The aim of the project is to find methods of reducing the cost and complexity of applying the alternative nonbiocide paints.

One of the best alternative nonbiocide paints is a paint called BottomSpeed. IRTA has applied it to a diver boat and to a 32 foot powerboat (see article in this issue of The Alternative) and it is performing well. IRTA worked with the supplier, Pa-

sha and Knight & Carver, a boatyard in San Diego, to apply this paint to the small inflatable boat. The boat was new and had not yet been painted. The procedure involved preparing the surface, applying a primer and then applying a topcoat to the boat hull. A portion of the rubber from the inflatable part of the boat is immersed in the water so Pasha wanted that painted as well. The supplier and IRTA did not think the epoxy primer, which is very hard, would stick to the rubber. When the rubber expands and contracts, it would likely flake off. The topcoat, which is based on silicone, is much more flexible and it would have a better chance of sticking to the surface of the rubber. The decision was made to apply only the topcoat to the rubber inflatable part of the boat.

The boat, which is only 11 feet long, was launched recently and it will serve as a dinghy on another larger boat. It is a good test for the coating.

For more information on the paint and the paint job, call Katy Wolf at IRTA at (323) 656-1121.



SB 623 Passes Senate Appropriations Committee Hurdle

SB 623, which focuses on copper used in anti-fouling boat paint, was introduced by Senator Kehoe on February 18. It has been revised several times since then. It passed through the Senate Appropriations Committee and is now in the Assembly where it recently survived a committee vote.

The bill recognizes that copper containing marine antifouling paints are a source of copper releases in marinas throughout California and that copper can be toxic to several aquatic organisms and plants. Many bays and harbors currently have water quality impairments because of the copper in the paint.

The current version of the bill has two major features. First, it requires the use of low copper leach rate paints on pleasure craft beginning in 2015. The suppliers are required to provide paints with a low leach rate which is to be determined by the California Department of Pesticide Regulation. Second, beginning in 2019, the State Water Resources Control Board must determine, from measurement and modeling methods, whether the use of the low leach rate paints is resulting in the attainment of water quality objectives in California marinas and harbors. If at any point, the use of the low leach rate paints does not demonstrate that the trend line of the measured water quality data will result in attainment, then the use or application of antifouling paint on recreational boats will be banned. Antifouling paint is defined as paint containing registered

active ingredients or zinc.

Some suppliers apparently already have low leach rate paints on the market. IRTA looked at one example of such a paint. The material safety data sheet (MSDS) indicated that it did have a low concentration of copper. It also contained another biocide called Irgarol, however. In addition, it contained zinc oxide. Alternative biocide paints often contain zinc biocides and zinc oxide and zinc is already building up in basins in California. If alternative biocide paints are used in place of copper paints, there will eventually be a water quality problem from zinc.

The leach rate of the copper paint is not the only important factor in the copper loading. The copper enters the water column from the paint leaching out of the matrix. It also enters the water column as a result of divers cleaning the fouling from the boats. Many divers clean copper paints much more often than needed and they clean the paints with inappropriate and aggressive tools. When this happens, the paints need to be replaced much more often. The use of low leach rate paints may not actually reduce the copper loading if divers do not change their current practices.

If the bill passes the Assembly and Senate, it will go to the Governor for signature. For more information on the bill, contact Katy Wolf at IRTA at (323) 656-1121.

**Need help finding an alternative?
IRTA assists firms in converting to suitable alternatives in cleaning, paint stripping, coating, thinning, dry cleaning and other applications.**

Calendar

June 29, 2011

California SB 623 "Vessels: Marine Antifouling Paint." Bill passed the Assembly Environmental Safety and Toxic Materials Committee and has been referred to the Assembly Appropriations Committee.

July 14 and 15, 2011

Cal/EPA's Department of Toxic Substances Control Green Ribbon Science Panel meeting. Sacramento, CA. For information, call Kathy Barwick at (916) 323-338

September 9, 2011

Governing Board Hearing for Proposed Amended South Coast Air Quality Management District Rule 1107 "Coating of Metal Parts and Products." SCAQMD Headquarters, Diamond Bar, CA. For information, call Mike Morris at (909) 396-3282.

March 8, 2012

"Metalworking Fluids & VOC, Today & Tomorrow," a joint symposium by the South Coast Air Quality Management District and the Independent Lubricant Manufacturers Association. Call for papers. For information, call Mike Morris at (909) 396-3282.

IRTA is working together with industry and government towards a common goal, implementing sensible environmental policies which allow businesses to remain competitive while protecting and improving our environment. IRTA depends on grants and donations from individuals, companies, organizations, and foundations to accomplish this goal. We appreciate your comments and contributions!

- Yes! I would like to support the efforts and goals of IRTA. Enclosed is my tax-deductible contribution of: \$ _____
- I would like to receive more information about IRTA.
- Please send me a brochure.

Please note the following name/address change below.

Name/Title _____

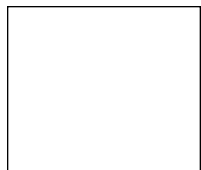
Company _____

Address _____

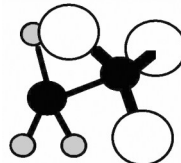
City, State, Zip _____



Printed on recycled paper



IRTA
Institute for Research and
Technical Assistance
 8579 Skyline Drive
 Los Angeles, CA 90046
 website: www.irta.us



In This Issue

IRTA Investigates Copper Recycling for Boatyards.....1

Small Business Corner:

SCAQMD Proposes Exemption for TBAC and DMG in Rule 1107.....2-3

IRTA Paints Boat With Nonbiocide Paint Over Copper.....3

IRTA Paints Two Fish and Game Department Boats With Nonbiocide Paints.....4

IRTA and Orange County Coastkeeper Paint Newport Beach Boat.....5

IRTA Paints Pasha Group Boat.....6

SB 623 Passes Appropriations Committee Hurdle.....7

Calendar.....8