Safer Alternatives To Copper Antifouling Paint Project
Stakeholder Work Group Meeting Summary
5/5/08

I. Introduction & General Information

There were 27 participants in attendance and 6 participants contributing via conference call.

Facilitator Kristina Ray welcomed the group and reiterated the process for getting input from the stakeholder work group members, members of the public in attendance and those participating by phone.

II. Test Coatings

As of April 9, 2008, a total of fifty (50) alternative test coatings have been submitted for inclusion in this project. The project will include seventeen (17) zinc coatings, five (5) non-zinc organic biocide coatings, and twenty-eight (28) non-biocide coatings. Over the last few months, the Project Team researched the types of coatings that are common used on pleasure craft. Through discussions with local boatyards, the Project Team identified the coatings that are routinely applied in San Diego Bay. Two copper coatings will be used to provide a means of comparing the effectiveness of test coatings to hull paints that are commonly used. The copper coatings selected were the low copper content coating AF-33 (a 33% copper coating made by Seahawk) and the higher copper content coating Super KL (a 51-75% copper coating made by International Paint). The copper paints will be evaluated in the same manner as the test coatings.

Dr. Katy Wolf has been organizing the schedule of the application of the coatings with the boatyards and coating suppliers. It was requested that any coatings that need to be shipped arrive no later than Friday, May 16, and should be sent to:

San Diego Unified Port District
Material Support & Management Center
1411 West Palm Street
San Diego, CA 92101
Attn: Env Services Hull Paint Project.

Comments

The deadline to submit the required information for a coating to be eligible for the project was April 9, 2008. At the meeting, the Project Team decided to allow a late entry from a coating supplier who expressed interest via teleconference. The Research Authorization (RA) permit required by the Department of Pesticide Regulation (DPR) was submitted and is currently being processed. The permit must be in place prior to the application of the coatings and will be effective May 15, 2008.

A request was again expressed by an audience member participating by phone to evaluate environmental impacts of the test coatings containing active ingredients, such as leaching rates and toxicity issues. A work group member agreed this was very important. The Project Team reiterated this is a valid concern and an important issue to be addressed in future studies, but this topic is beyond the scope and design of the current project. A work group member noted that a coating must undergo American Society for Testing and Materials (ASTM) standard procedures to be registered with EPA and DPR. It was suggested to use the results of the ASTM evaluations, such as leaching rate assessment, to address the environmental concerns raised over the coatings with active ingredients. In order to utilize this information though, permission must be obtained from the individual coating manufacturer as it is considered proprietary information. The Project Team will look into the possibility of using this information. However, the current phase of the project will focus only on fouling and cleaning assessment.

III. Review of Draft Protocol

a. Panel Preparation/Application

The panel preparation and paint application process was described by the Project Team. The panels will be 12″x12″ fiberglass panels and will be prepared in the following manner, which is similar to the process used for new boats. Prior to the application of test coatings, a gel coat base will be applied, and panels will be sanded and cleaned. Half inch holes will be drilled to facilitate attachment to the PVC frames. A sample frame described in the panel testing protocol was assembled prior to the meeting and displayed to demonstrate how the panels will be deployed.

All of the test coatings will be put on with either a roller or spray at boatyards per manufacturer's instructions and will be applied to both sides of the panels. The Project Team emphasized that suppliers are encouraged to be present at the boatyards during their coating applications.

b. Site Location

Frames will be attached to floating docks in Shelter Island Yacht Basin and will be placed in south facing boat slips. Each test coating will have one frame assigned to it. The frame will house three panels, and all three panels will be coated with the same paint. The frames will be submerged so that the top of the fiberglass panels are 12" below the waterline, allowing the panels to remain submerged and be subjected to consistent light exposure.

Comments

There was overall agreement among the attendees on the panel preparation and coating application methodology, as well as the site location. Based on the feedback from the last workgroup meeting, the Project Team decided not to pursue a second site and focus on the placement of the panels in the SIYB.

Some work group members expressed concerns about cross contamination from boats in the slips where the test panels are placed. To avoid cross contamination, suggestions included 1) take into consideration the type of paints applied to the boats within the slips, 2) try to minimize exposure to copper gradient within marinas, and 3) use slips with sailboats only to avoid damage from prop blast from powerboats. A workgroup member was concerned that the copper or zinc coatings, which are designed to leach their metals, may influence other panels in the same vicinity that may be foul release coatings. The member thought this could influence the results of the performance evaluation. Other workgroup members commented that there should be little to no interaction between coatings on different panels, as the concentration of the active ingredients in leaching paints is highly diluted within a very small distance (mm) from the panel surface.

To address this concern, the Project Team will take the following measures to separate the panels containing active ingredients (metals or non-zinc organic biocides) from the non-biocide coatings. Designated slips have been identified within each marina that will be populated with a specific coating category (i.e., metals, biocides, or non-biocides). The designated slips are spaced out on different dock fingers allowing the Project Team to separate the non-biocides from the coatings containing active ingredients.

A member of the audience asked if all the coatings being tested would be the same color. Some colors might show fouling more clearly. Dr. Wolf explained that manufacturers were being asked not to submit white coatings because they are difficult to photograph. However, since some of the coatings are not yet widely available, their color choices are limited. Therefore, it would be difficult to choose one color that everyone must use. It was agreed that coating suppliers should provide the coatings in either blue or black when possible, but other colors may be used if necessary.

c. Cleaning

The cleaning methodology was described for the work group. There will be three cleaning regimes per frame. There will be one panel that will not be cleaned at all during the entire test panel phase, one panel cleaned in the manner and frequency determined by the coating manufacturer, and one panel cleaned with a standard frequency and method. The proposed standard method was presented to be every 3 weeks with a soft cloth or diaper. Only one side of each panel will be cleaned during the duration of this phase. The other side of the panel will not be cleaned at all. The south-facing side of the panel will be the only side of the panel utilized in the fouling assessment and cleaning evaluations.

It was noted that the frequency of the standard cleaning method was changed from 2 to 3 weeks. Dr. Wolf requested suppliers who would like to modify the manufacturer recommendations for cleaning frequency due to the change in the standard frequency to inform her of any changes by May 30.

QA/QC mechanisms were incorporated into the protocol to aid in the interpretation of the results later in the project. Two types of negative controls will be utilized. A frame containing blank panels (3 panels overall) with no gel coat or test coating applied will be used to characterize fouling community in SIYB. One frame, with panels painted with gel coat only (3 panels overall), will be deployed to isolate the effectiveness of the cleaning methods used in this phase. A cleaning control will also be used to evaluate the effectiveness of each paint and how successfully the coating can control fouling without the aid of cleaning. There will be one "no-clean" panel for each test coating. The cleaning control panel can be used to compare the test coating to how the different cleaning regimes may influence the performance of the test coating.

It is important that there is consistency in the Project Team member assigned to perform the cleaning due to the variability in the perception in the level of effort required to remove fouling. Therefore, there will be particular members of the Project Team assigned to either the cleaning or visual assessment responsibilities to increase this consistency, but all members will be cross-trained in case someone is unavailable. This will ensure all cleaning activities will be completed as scheduled with a the maximum level of consistency possible.

Comments

Work group members suggested changing the cleaning tool from a soft cloth/diaper to carpet to relate to more common hull cleaning practices. Carpet was also recommended because it has a hard backing to even out pressure during cleaning, unlike a cloth. Due to several types of carpet grades on the market research will be done to use a standard carpet grade. There was group consensus that the cleaning tool to be used in the standard method will be nylon deep pile, or medium to long soft shag carpet.

After a concern was raised regarding how the Project Team was addressing variability in the results of this phase, the number of QA/QC frames was changed to increase the overall precision of the panel test results. There will be a triplicate set of frames with blank panels (3 frames with 9 blank panels overall) and a triplicate set of frames with gel coated panels (3 frames with 9 gel coated panels overall) instead of only one frame as previously proposed. The triplicates will be used to provide some measure of the inherent variability of surface fouling and cleaning efficacy of a given coating. In addition to the overall variability, the mean of the gel coat triplicates will provide a better estimate of the effectiveness of the cleaning methods on their own. A work group member also suggested to position blank panels within each test coating category location.

There was general consensus within the work group that the panels will be brought out of the water for cleaning instead handling the panels in the water, which was proposed in the draft protocol. An attendee commented that if the assessment is to be done out of water, then the cleaning should also be done out of

the water. Therefore, the PVC frames will be lifted out of the water and placed on the dock for cleaning.

Attendees also suggested using seawater instead of freshwater to rinse over panels while cleaning is being conducted to simulate in-water hull cleaning as closely as possible. It was suggested that the seawater used to rinse the panels be taken from the site where the panels are immersed and to use a hose or pump to transfer seawater to rinse the panels during cleaning. While one member of the Project Team is going to be actively cleaning a panel, another team member will be lightly pouring seawater over the panel.

An attendee suggested cleaning and assessing both sides of the panels. After considering variability in sunlight exposure and other issues that would cause variability in the assessment, the work group agreed that the south facing side of the panel should be the only side assessed and cleaned in this phase.

d. Assessment

The Project Team will be completing a fouling assessment using the ASTM D3623-78a standard method for testing antifouling coatings in shallow submergence. This method will evaluate the percent coverage and categories of fouling organisms. Through this process, the Project Team will do a visual assessment in the field, making observations and taking photographs of every panel whenever an assessment or cleaning is done.

A cleaning assessment will involve a determination of the level of cleaning effort (reported on a scale of 1-5, 1 being low effort and 5 being hard effort) for each cleaning regime. There will be a pre- and post-cleaning fouling assessment using the ASTM standard method completed every time a panel is cleaned. This will enable the Project Team to know what kind of fouling organisms are present, the quantity of fouling removed, and how effective the cleaning method is in removing the fouling. Following cleaning, the condition will also be assessed for any physical deterioration such as flaking, cracks, or other damage to the coating itself.

The goal of this phase is to identify coatings that are effective in repelling or preventing growth and are relatively easy to clean. Test coatings moving on to next phase may include those that meet either of the above criteria and coatings that prove to be effective relative to reference coatings (perform at or better than the copper coatings).

Comments

There was concern raised that the nature of the static immersion testing and criteria used to decided which test coatings would move forward into the next phase of the project would be biased toward those coatings with active ingredients. A work group member expressed apprehension that no non-biocide coatings will be moved forward. It was suggested to assure that at least one test

coating from each of the three coating categories be move onto the boat phase to be able to assess its effectiveness in more realistic conditions.

Due to concerns over the Project Team's inexperience with hull cleaning, an audience member suggested the Project Team employ the aid of local hull cleaners to help in the initial training of Team members who will be doing the cleaning and fouling assessments. The Project Team agreed this was a good idea and will look into it further.

Several comments were related to the potential toxicity of the paints and the effects of on the water quality/environment of the Bay. It was reiterated that while this is an important concept to be studied but is out of the scope of the project. This phase of the project is focused only on fouling and cleaning assessment.

IV. Upcoming Schedule

May 6-16, 2008
Suppliers are requested to provide test coatings

May 19-30
Application of test coatings to panels at boatyards

May 30
Deadline to email supplier recommended cleaning regime for second panel to Dr. Wolf

June 2
Panel testing phase initiated

V. Other Items/Next Meeting

Progress reports about the panel testing will be sent out (as needed or monthly) by e-mail during the summer. There is no work group meeting scheduled until the fall, after the panel testing phase is completed. A tentative timeframe for the next meeting will be November or December 2008. If issues come up during the testing that require discussion by the work group, the Project Team will schedule a work group meeting prior to this time.