Copper Antifouling Paint Sub-Workgroup 11/09/06 Meeting Notes

In-Person Participants:
Emanuel, Melenee – SWRCB
Fagundes, Steve - SWRCB
Johnson, David - DBW
Kubiak, Rachel – DPR (Registration Branch)
Ludwig, Robert - DTSC
Moran, Kelly – TDC Environmental
Pyatt, Ellen - DPR
Singhasemanon, Nan – DPR
Sniderman, Lisa - CCC

Phone Participants:
Brown, Paul – Port of San Diego
Candelaria, Linda - RWQCB 8
Early, Pat – U.S. Navy SPAWAR
Gonzalez, Jamie – UC Sea Grant Extension Program
Johnson, Leigh – UC Sea Grant Extension Program
Jordan, Dan – Contra Costa County
Looker, Richard - RWQCB 2
Opper, Richard, Kona Kai Marina
Rappoli, Brian – U.S. EPA
Shropshire, Bill – American Chemet
Wolf, Katy - Institute for Research and Technical Assistance (IRTA)

These meeting notes contain highlights of announcements, discussion topics, and pending action items. Pending action items are tasks that require some type of follow up. These are denoted as "Action Item". A contact information list that contains participants' agency names, email addresses, and telephone numbers is sent along with these meeting notes in a separate Adobe file.

Introductions/Agenda Review:

- Twenty individuals (9 in person and 11 by phone) participated in the tenth meeting of the Copper Sub-Group. Nan welcomed the participants and recognized that it has been six months since the last time that the group met. Thus, there was much to talk about that was relevant to the AFP discussion. This was reflected by the full agenda. Nan noted that the July and September meetings were cancelled due to Nan's continuous field commitments during the summer and fall months on the statewide monitoring study.

News, Activities, and Developments:

- **DPR's Antifouling Paint Monitoring Study Update (Nan Singhasemanon, DPR) –** Nan briefed the sub-group on the antifouling paint (AFP) monitoring study that DPR conducted with co-funding from the State Water Resource Control Board (SWRCB). The quality assurance project plan and monitoring plan were distributed to the group for input and comments prior to the start of the study.

  DPR field crew took water samples at 23 marinas across California from July 17 through October 19, 2006. At almost all of the sites, the resident harbormaster or marina manager operated the vessel from which field crew sampled from. All but one marina (Tahoe Keys Marina in Lake Tahoe) were sampled three times over this period to get a good representation during the dry period. Sampling occurred in the dry periods as to avoid confounding factors that would be introduced by rain events.

  Field crew sampled eight sites at each marina: four inside the marina and four outside the marina. At one of the 23 locations (Marina Yacht Harbor in Richmond), only three of the four sites outside of the marina were accessible. Turbulent waters near the marina entrance prevented field crews from being able to establish all eight sites at this location.

More than 500 water samples were taken and analyzed for dissolved and total copper/zinc, U.S. EPA's Biotic Ligand Model parameters (i.e. salts, salinity, sulfate, alkalinity, dissolved organic carbon, total suspended solids). Moreover, a subset of the samples was analyzed for Irgarol 1051 (AFP active ingredient), toxicity (on mussel larvae development), and toxicity identification evaluation (TIE). Three laboratories analyzed samples for this study: UC Davis Agricultural and Natural Resources (ANR), Southern California Coastal Water Research Project (SCCWRP), and National Oceanic and Atmospheric Administration (NOAA). NOAA analyzed Irgarol samples. SCCWRP performed toxicity and TIE analyses. ANR analyzed all other samples for a variety of constituents including metals.

Total suspended solids, salinity, alkalinity, and sulfate analyses were done first due their shorter holding times. Salts and metal results have just recently become available. Thorough quality control (QC) check has not yet been done on the data although continuous control limit checks of the laboratory and field QC samples have shown that general data quality is very high.

The only metal results available so far were for the study's four freshwater marinas. Results indicated that dissolved copper levels were higher at the lotic sites (Sacramento Marina and Village West Marina) than compared to those at the lentic sites (Folsom Lake Marina and Tahoe Keys Marina). However, since the current California Toxics Rule standards for dissolved copper standards in freshwater have to be calculated on a site-specific hardness-based scale, it is not yet clear whether levels at these sites exceed water quality objectives or whether these levels are of any biological concern (e.g., beneficial use impairments, exceedance of LC_{50} or EC_{50}).

Nan added that Irgarol was detected in all of the samples submitted to NOAA. The method detection limit for this Irgarol analytical method is 1 ng/l or parts per trillion (quite low). Some of the concentrations observed appeared to be above some biologically sensitive levels (LC_{50} and $EC_{50)}$ for algae.

Nan said that it was too early to draw any conclusions. When all of the data becomes available, thorough evaluation and statistical analysis can be done to determine findings and develop conclusions. A study report will be available in the summer of 2007.

Nan added that sediment sampling could not be completed as originally planned in the monitoring plan due to logistics and liability issues. As such, sediment sampling had to be postponed until 2007.

- **Clean Water Act Anti-Degradation Policy & Its Relevance to California Toxics Rule Copper Standards (Kelly Moran, TDC Environmental & Nan S., DPR) –**The primary purpose of this discussion was to stimulate some thoughts on if and how U.S. EPA's draft update of the ambient water quality criteria for copper will have an effect on future "California Toxics Rule" (CTR) standards for California. Kelly and Nan provided some background on the existing criteria and the federal criteria development process. Kelly explained that U.S. EPA water quality "criteria," which are based on U.S. EPA's scientific review of a pollutant, are the values that U.S. EPA recommends be used to develop water quality standards, which are usually set by states. In California's case (due to some unusual elements of California state water quality law), it is difficult for the state to set its own water quality standards (except for water body specific standards). Because the Clean Water Act requires every state to have water quality standards, U.S. EPA stepped in and set California's standards by adopting the CTR. Current CTR standards involved a hardness-based calculation for fresh water and a fixed salt water acute standard of 4.8 µg/L and chronic standard of 3.1 µg/L. These values were adopted since they were the existing

ambient water quality copper criteria for the protection of aquatic life when U.S. EPA Region IX adopted CTR standards for California in May 2000.

In December 2003, U.S. EPA released updated draft aquatic life copper criteria for scientific review that were lower than the previous criteria and existing CTR standards for salt water. Moreover, U.S. EPA proposed a new procedure to determine the freshwater criteria using the Biotic Ligand Model (BLM). The BLM readily accounts for bioavailability and is a fish-gill (the ligand) based model. Therefore, it is possible that the use of this model will generate potential standard values that are higher than for those generated in the current hardness-based approach of the CTR for fresh water sites. Although these updated criteria have not been finalized, they do reflect the current scientific perspectives and approaches of U.S. EPA and may offer a glimpse as to what future standards will be.

The central question to this discussion is will changes to California's existing CTR standards occur in the future if there are changes in the national water quality criteria for copper. A lower standard may result in more marina areas to be considered impaired water bodies and resulting in comprehensive and significant federal and state regulations of AFPs. A higher standard may result in fewer marina areas considered to be impaired and may make additional regulations of copper AFPs unnecessary.

Kelly and Richard Looker (Region 2) explained that changes in U.S. EPA's recommended criteria don't necessarily translate into changes in standards. For California's standards to change, either U.S. EPA would have to pursue a formal rulemaking to modify the CTR, or the state would need to set its own standard. U.S. EPA representatives have told Kelly that they have no plan to update the CTR.

Kelly explained that the Federal Clean Water Act (CWA) antigradation policy would complicate any move by the state to make future CTR standards less stringent than the current ones. Richard added that the CWA requires that U.S. EPA cannot allow further degradation of water bodies, which means that in general, U.S. EPA cannot approve a state water quality standard that allows a water body to become more polluted than it already is. Exemptions to this exist, but conditions that are narrowly defined must be met before the allowance of degradation can take place. Therefore, the BLM-based fresh water criteria, which would likely generate higher values than the current hardness-based fresh water standard, would not comply with the requirements of the anti-degradation policy if attempted generically (i.e. for the whole state). Proposed lowering of the standard such as the updated salt water criteria, however, is allowable.

Site-specific water quality objectives can still be established to address more unique situations. An example of this is the copper water quality objective established by Region 2 for the San Francisco Bay south of Dumbarton Bridge. Factors that determine copper toxicity are, however, numerous and different for each site. Thus, such undertakings are quite costly and could require several millions of dollars to complete per site.

Kelly or Richard also added that the BLM may not be fully protective of salmonids since recent research has shown that their olfactory senses can be impaired resulting in a weakened and confused state that would make them vulnerable to predation. Research by NOAA Fisheries scientists has shown that this effect, which occurs in fresh water at relatively low copper concentrations (parts per billion) is not consistent with the BLM. Because U.S. EPA must formally consult with NOAA Fisheries before adopting a water quality standard or approving a state standard, these research findings could be used to block U.S. EPA adoption or approval of a

fresh water standard for any salmon habitat water body (most fresh water in Northern California) that is higher than the current standard.

Nan added that it would be very helpful if there were more explicit guidance on both the state and federal anti-degradation policy from SWRCB and U.S. EPA, respectively. Future regulatory or mitigation activities could be strongly influenced by future directions of CTR. So, it would be a good idea if representatives from these two agencies can be come to a Copper Sub-Group meeting to provide clarification on this very important topic. (Action Item)

- **Uniform National Discharge Standards (Brian Rappoli, U.S. EPA)** - Brian Rappoli of U.S. EPA's Office of Water in Washington, D.C. provided background on the Uniform National Discharge Standard (UNDS), which is a federal regulation designed to help control discharges incidental to the normal operations of Armed Forces vessels. These include vessels used by the Navy, Marine Corps, Army, Air Force, Military Sealift Command, and Coast Guard.

  Historically, this type of discharges has been exempted from CWA; however, Congress, U.S. EPA, and the Department of Defense agreed that it was necessary to begin identifying and assessing discharges from vessels and to establish discharge standards. This led to the rulemaking that resulted in federal regulations in 1999. Among other things, this regulation also established procedures by which States can petition U.S. EPA and DOD to establish no-discharge zones and review performance standards established under UNDS once they were established. Brian noted that he has been out the California before to talk to a number of potentially affected agencies about UNDS.

  UNDS also established that AFP discharges (referred to in UNDS as "hull coating leachate") needed to be addressed with some type of marine pollution control device (MPCD) to conform to performance standards. MPCD is defined as any equipment or management practice installed or used onboard a vessel to control a discharge. Performance standards will be established through rulemaking for 25 types of discharges that require MPCDs. Brian noted that AFPs would be 1 of 7 discharge types included in the first of these rulemaking packages for performance standards in 2007.

  A workgroup participant asked how these standards would be established. Brian said that U.S. EPA would have to analyze factors such as the environmental affects, cumulative impacts, and pollutant-specific nature of the discharges. There is also interest in looking at releases from hull cleaning versus passive leaching. Since this involves a rulemaking process, there will be opportunity for public review and comments. Brian noted that some data that U.S. EPA gathers during its rulemaking could be released, which would benefit the workgroup and California agencies.

  Richard Looker asked about how discharges under UNDS would be allocated for TMDLs. Brian noted that CWA preempts States from regulating these discharges once the UNDS regulations become effective. This would include developing a waste load allocation for these discharges.

- **Copper AFP Registrant Reregistration Task Force (Bill Shropshire, American Chemet) –** Bill Shropshire is the Chairman of the American Chemistry Council Copper Reregistration Task Force and also the President of American Chemet, a registrant of copper oxide. Bill joined the workgroup via phone to give some background on the activities that two-industry copper task forces have been involved in. One task force has been active in Europe working with the European Union (EU) to ensure that copper products (e.g., copper oxide, copper thiocyanate, and copper powder) are in compliance with the EU's Biocidal Directive. This would allow uses of

these products to continue in Europe. This task force conducted a number of aquatic toxicity and bioavailability related studies for the EU. Bill individually identified each of these studies to the sub-workgroup. Nan forwarded these studies to the sub-workgroup via email in mid-November 2006.

The other task force has been interacting with U.S. EPA primary through the federal reregistration process. This reregistration task force is focused on trying to provide U.S. EPA with the appropriate scientific information and data to complete the reregistration of copper pesticide products in the U.S. (case 4025). This group initially met with U.S. EPA regarding reregistration in a series of "SMART" meetings in 2005 and has been working with the agency since to fulfill any data need. U.S. EPA expects to complete its evaluation of the environmental effects (risk assessment) of copper AFP use in January/February 2007 with a public review/comment period beginning soon after that. It expects to issue the registration eligibility decision (RED) in April 2007.

Bill also mentioned that a marine environmental fate and effects review for copper is being prepared and will soon be available. Nan will forward this document to the sub-workgroup once it becomes available. Action Item Nan added that the copper industry group would be much more involved with California issues from here fourth and expressed his appreciation to the copper industry for their willingness to work with DPR and the sub-workgroup. Nan pointed out that Neal Blossom from American Chemet has been acting as the main industry contact for some time now and has been particularly helpful.

Nan noted that DPR and the Copper Sub-Group needs to re-establish some synchronicity with U.S. EPA on reregistration considering the that much more environmental assessments in marina areas have been done in the last couple of years. Moreover, the risk assessment may be significantly influenced by the data that have been recently generated.

- **Feasibility Study on Alternative AFPs (Paul Brown, Port of San Diego)** – Paul Brown gave a brief history of the SIYB TMDL in San Diego Bay. Paul noted that although the mandated copper load reduction is over a 17-year compliance schedule period, the 2-year "orientation" period, which no copper load reduction will come to a close in 2007. This explains the strong interest that the Port of San Diego has in seeing more less-toxic alternatives used by boaters.

  Thus, the Port of San Diego has been active in trying to coordinate and identify funding for an updated and more complete feasibility study for alternatives to copper AFPs. The Port would like to see a two-phase study where the first part would focus on identifying then comparing the efficacy, availability, and cost while the second part would focus on how viable the products are in the real world tests by applicators (boatyards) and users (boaters).

  Paul mentioned that he has been in talking with Bill Ryan from the Department of Toxic Substance Control's Pollution Prevention Program and Nan Singhasemanon from DPR regarding the potential scope of work, process of contractor selection, and mechanisms of funding.

  Nan asked whether the Department of Boating and Waterways or other agencies would be interested in joining this partnership. David Johnson expressed interest on behalf of DBW; however, he wanted to consult with some of DBW's scientists and staff first. Nan noted that he already contacted the State Water Resources Control Board (SWRCB) and the State Land Commission (SLC) regarding their interest and both agencies did not immediately indicate a strong interest.

Nan stated that identifying and evaluating copper AFP alternatives is one of the elements of DPR's AFP Strategy. Thus, DPR is very much interested of a feasibility study. Nan said that DPR would like to go through a request-for-proposal (RFP) process to more fairly evaluate proposals before funds are eventually awarded.

Lisa Sniderman (CCC) asked whether UC Sea Grant will be consulted or involved since they have been involved in alternatives identification, evaluation, and public demonstration. Nan said that he would like to see UC Sea Grant involved based on their previous work in the San Diego region; however, he was not certain how involved they would be up front since this will likely be an RFP process.

Nan and Paul will update the sub-workgroup on the status of this potential feasibility study at the next meeting. Action Item

- **State and Regional Board AFP Updates (Water Boards staff)**

Region 2: Richard Looker announced that on December 7, 2006, Region 2 would hold a CEQA scoping meeting for the development of a site-specific copper water quality objective for the San Francisco Bay north of Dumbarton Bridge. For those who are interested, more information can be obtained online from the Region 2 webpage. Richard is interested in seeing the results of DPR's statewide AFP monitoring study since they will help fill in some data gaps on local Bay Area marinas as sources of copper.

Region 8: Linda Candelaria provided some background (provided in more detail in previous meeting notes) and status update on the Lower Newport Bay monitoring study. Results are beginning to come in from the analytical laboratories including those for water column and sediment toxicity. Linda was somewhat concerned that the amphipod species used in the sediment toxicity test (*Eohaustorius estuarius*) might not have been sensitive enough to metals. Linda did not want to go into too much detail considering the "preliminary status" of the study data. Linda anticipated that the study report should be available in February/March 2007.

Other Items/Next Meeting/Adjourn:

- The next two scheduled Copper Sub-Group meetings are Thursday, January 11, 2007 and Thursday, March 8, 2007. Nan will send an email and an agenda out once the meeting is confirmed.

Meeting Notes Prepared by: Nan Singhasemanon (DPR) with notetaking assistance from Ellen Pyatt (DPR). Thank you, Ellen!