

# Copper Pollution in California Marinas

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MAA Workshop

November 10, 2015

# Why Copper?

- 🚢 Copper is a common active ingredient in many pesticide products including: algaecides, fungicides, antimicrobials and antifouling paints (AFPs)
- 🚢 DPR's mission is to protect human health & the environment by regulating sales & use of pesticides



# How did Copper become an Issue?




-  AFPs once contained Tributyltin (TBT) – restricted use in 1980's
-  AFPs shifted to Copper as a biocide – early 1990's
  - \* Washington has a Copper AFP regulation – begins 2018
-  In CA, Total Maximum Daily Loads (TMDLs) were established – early 2000's
  - \* Newport Bay
  - \* Shelter Island Yacht Basin – San Diego
  - \* Marina Del Rey – Los Angeles
-  Statewide monitoring began in 2006

# DPR's Study

MONITORING FOR INDICATORS OF ANTIFOULING PAINT POLLUTION IN CALIFORNIA MARINAS

Nan Singhasemanon, Ellen Pyatt, and Juanita Bacey

June 2009




-  Assessed AFP biocide indicators such as Copper, Zinc and Irgarol
  - \* Sampled July to October to avoid increased flushing, dilution, mixing or sediment resuspension from rain/storm events
  - \* 517 samples from 15 saltwater, 4 brackish water and 4 freshwater marinas
  
-  Determined if concentrations exceeded water quality standards
  - \* Copper has an ambient water quality standard, the CA Toxics Rule (CTR), which is enforced by the State Water Resources Control Board and nine Regional Water Quality Control Boards
  - \* 51% of salt and brackish water marina samples exceeded 3.1 ppb chronic criterion of the CTR
  
-  Determined which water types were more highly impacted
  - \* Salt and brackish water had greater dissolved copper concentrations than freshwater

# What's contributing to the increased copper?

- 🚤 Use of copper AFPs is a significant source of copper in marinas
- 🚤 High density of boats within marinas
- 🚤 Frequency of in-water hull cleaning
- 🚤 In-water hull cleaning using abrasive and aggressive practices
  - \* Creates spike in leaching, increases dissolved copper and releases paint particulates
- 🚤 Poor flushing and circulation of water in marinas



# Antifouling Paint Mitigation

-  Reevaluation of Copper AFPs – began 2010
  - \* Data requirements include: copper leach rates, coating classification and mitigation recommendations
  
-  Assembly Bill (AB) 425 – Bill signed in October 2013
  - \* Required DPR to determine leach rate and mitigation measures by February 2014
  - \* DPR established two maximum allowable copper leach rates dependent on in-water hull cleaning frequencies:
    - \* 9.5 µg/cm<sup>2</sup>/day – in-water hull cleaning no more frequently than once per month and with soft-pile carpet
    - \* 13.4 µg/cm<sup>2</sup>/day – prohibits in-water hull cleaning
  
-  *Challenges:* Reconciling mandates of water quality laws (i.e., Porter-Cologne Water Quality Control Act) and pesticide use laws (i.e., Food and Agricultural Code)


# Antifouling Paint Mitigation cont.

- 🚤 Registrants may choose to reformulate
- 🚤 Continue Outreach to boaters via marinas, retailer outlets and boatyards
  - \* Non-copper and biocide-free alternatives
  - \* Advise limiting the frequency of in-water hull cleaning
  - \* Develop hull maintenance brochures



# Current Workgroups

## Marina Interagency Coordinating Committee (Marina IACC)

 State Water Board, Regional Water Boards, CA Coastal Commission DPR, State Lands Commission, and many more participating agencies and stakeholders (marina managers, boatyards, and recreational boating groups)

### Goals:



1. Develop partnerships among state, federal and local agencies responsible for addressing nonpoint source pollution related to boating and marinas
2. Address Copper pollution by sharing information
3. Promote improvements to marina water quality through implementation of management practices

## Antifouling Strategies Workgroup (AFS Workgroup)

### Goal:

1. Assess the extent and geographical distribution of water pollution resulting from copper AFPs

## Copper Education & Outreach Workgroup

-  Develop materials for boatyards and the boating community about copper pollution, available paint options, alternatives, cleaning BMPS, and much more
-  Currently have a brochure drafted for release 2016



# What's Next?

- 🚤 DPR rulemaking to set leach rates
  - \* Remove high leaching paints off the market via product cancellation
- 🚤 Work with Registrants on reformulation, if necessary
- 🚤 Outreach and education of low leaching and alternative AFPs – *already began*
- 🚤 Monitor the effectiveness of the leach rate setting and mitigation recommendations
- 🚤 Continue boater awareness following implementation of regulation

