Copper Based Antifouling Coatings are the Best Option Today

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In my 38 years experience as an R&D chemist in the marine coatings industry, with my specialty being antifouling coatings, I have not seen an acceptable organic biocide replacement for cuprous oxide in antifouling paints that successfully minimizes **calcareous (hard) fouling growth,** except for the Tri-Butyl Tin compounds, which are presently banned**.**

I'm not stating that there never will be environmental friendly solutions, "which would be solutions such as short half-life organic biocides" minimizing non-biodegradable toxic chemicals in the ocean waters.

If there is, then, I believe that this TMDL can be implemented, provided that it does not prohibit the use of environmental friendly biocides in antifouling coatings.

At the present, reducing the copper concentration to less than 25% by weight in combination with short half-life organic biocides, could be a **feasible** approach in the development of next generation of copper based antifouling coatings. This approach would be useful in preventing **soft** and **hard** fouling attachment on recreational underwater hull vessels. This should be reviewed and evaluated before implementing the TMDL.

The use of this technology would reduce the release of "dissolved copper" in recreational mooring basins, by at least a factor of three, compared to the 60-70% (12-15 lbs/gallon) of copper in the current antifouling paints presently available on the market.

Mandatory reduction and conservative underwater hull cleaning is also a priority. Education is essential; specifically concerning what type of antifouling coating is being used on these recreational vessels. When underwater hull cleaning occurs, the type of antifouling paint on the vessel (hard, ablative or soft) is a significant factor on the amount of copper released to the environment.

Implementing this TMDL at the present is not advisable before more technical (R&D) and economical (Social/Monetary) data is available and/or established. **Different approaches should first be considered.** At the present there are no convincing evidence that this TMDL is going to provide a solution in the future which is, to economically, prevent and/or control existing fouling organisms, including the growth of Aquatic Invasive Species (AIS), on the underwater hulls of recreational vessels.

Based upon my experience, I am suggesting that implementation of this TMDL be held in abeyance until additional **scientific, technical** and **economical data** become available.

Thank you.
Ernie Soeterik.