

## Antifouling pesticides in the coastal waters of southern California

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### ABSTRACT

After the United Nation's International Maritime Organization banned the use of organotins in antifouling products, organic booster biocides were introduced as alternatives to these compounds. The purpose of this study was to measure concentrations of the antifouling agent Irgarol 1051, its major metabolite M1 (aka GS26575), and other antifouling pesticides (diuron, chlorothalonil, dichlofluanid and TCMTB) in San Diego, California, USA region marinas and evaluate the environmental risk posed by these compounds. To our knowledge, this is first study reporting Irgarol concentrations in western areas of the US. Water samples were collected from marina sites in four harbors surrounding greater San Diego, California, including Dana Point, Oceanside, Mission Bay, and San Diego Bay during August 2005. Target compounds were isolated using solid phase extraction C-18 and analyzed utilizing liquid chromatography tandem mass spectrometry coupled with electrospray ionization. Measured antifouling agent concentrations ranged from 1 to 304 ng/L (Irgarol); 1 to 68 ng/L (M1); and <2 ng/L to 12 ng/L (diuron). The highest concentrations of Irgarol and M1 were observed in Dana Point Harbor, which was the largest marina sampled. In general, concentrations of Irgarol reflected the density of boating activity in the area and marina size. Irgarol was detected with 100% frequency; M1 and diuron were observed in 93% of samples, indicating widespread distribution in San Diego region marinas. Dichlofluanid, chlorothalonil and TCMTB were not detected in concentrations exceeding the method detection limits. Some of the higher concentrations of Irgarol found in this study may be sufficient to cause changes in phytoplankton community structure and function at contaminated sites.

### Full Text

[ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2007AnnualReport/AR07\\_093\\_102.pdf](ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2007AnnualReport/AR07_093_102.pdf)