

## Region 3 Cyanotoxin SWAMP Fact Sheet

### What is it?

This study was designed to screen for cyanotoxins in the Central Coast Region's largest coastal streams. For this study, the Central Coast Water Board used Solid Phase Adsorption Toxin Tracking (SPATT) samplers. The SPATT samplers were deployed at each station for approximately 30 days each over a three month period. The samplers contain resin beads that absorb toxins and accumulate them over the time of their deployment. They do not measure water column concentration of the toxin directly but are used to determine the presence or absence of toxins.



**Photograph of a SPATT sampler next to a 4oz sample bottle**

### Why is it important?

Cyanobacteria blooms, often caused by anthropogenic eutrophication of surface waters (i.e. nutrient enrichment causing algal blooms), represent a major ecological and human health problem. When cyanobacteria decay, they can release toxins into the water. In California, fatality of livestock, pets (Briand et al. 2003 and Stewart et al. 2008), and sea otters (Miller et al., 2010) have been linked to cyanotoxins.

In this study, at least one cyanotoxin was detected at 20 of the 31 stations monitored, four of which are considered to have very good water quality. This indicates that cyanotoxins are ubiquitous in Central Coast watersheds. However, it is not known if they are reaching harmful levels at the sampled locations.

### How will this information be used?

These data were used to screen coastal streams in the Central Coast Region for the presence and frequency of occurrence of cyanotoxins. Staff is planning to do follow-up monitoring using

methods that allow the measurement of concentrations of cyanotoxins in the water column. Those data will be used to assess the frequency and magnitude of beneficial use impairment due to cyanotoxins.

**References:**

Briand, J.F., et al., *Health hazards for terrestrial vertebrates from toxic cyanobacteria in surface water ecosystems*. Vet Res, 2003. 34(4): p. 361-77.

Miller, M.A., R.P. Kudela, A. Mekebri, D. Crane, S.C. Oates, M.T. Tinker, M. Staedler, W.A. Miller, S. Toy-Choutka, C. Dominik, D. Hardin, G. Langlois, M. Murray, K. Ward, and D.A. Jessup. 2010. Evidence for a novel marine harmful algal bloom: Cyanotoxin (Microcystin) transfer from land to sea otters. PLoS ONE 5(9): e12576.

Stewart, I., A.A. Seawright, and G.R. Shaw, *Cyanobacterial poisoning in livestock, wild mammals and birds – an overview*, in *Cyanobacterial Harmful Algal Blooms State of the Science and Research Needs*, H.K. Hudnell, Editor. 2008, Springer.