



Stream Pollution Trends Program

What is it?

The Stream Pollution Trends (SPoT) Monitoring Program is part of the long-term statewide monitoring being conducted to assess the health of California streams. This program analyzes 100 watersheds for sediment contaminants and toxicity, and relates these measurements to land use. The three primary goals of this program are to

1. Determine the long-term trends in stream contaminant concentrations and their effects statewide
2. Relate water quality indicators to land-use characteristics and management efforts
3. Establish a network of sites throughout the state to serve as a backbone for collaboration with other monitoring programs

To monitor long-term water quality trends, sediment samples are collected annually at 100 established sites in a state divided into approximately 200 major hydrologic units. Because most water-borne pollutants tend to bind to sediment particles and remain with the sediments when they are deposited downstream, monitoring at these sites provides an estimate of the cumulative contribution of contaminants. The sediments are analyzed for a suite of contaminants and for toxicity to aquatic organisms.

The annual surveys are designed to link water quality with both land use and the management activities of watersheds. By comparing changes in contaminant levels and changes in land use over time, water quality managers will have tools to assess linkages between management practices and water quality.

Why is it important?

SPoT provides both annual snapshots and a long-term assessment of the mobilization of contaminants within California's watersheds. Toxicity testing informs water quality managers of

the potential for adverse biological impacts in the State's streams, while land use analyses provide information about beneficial uses and potential sources or reductions of contaminants over time. Because human activities in our watersheds are constantly changing, long-term trend monitoring is a critical component for managing the health of California's waters.

How will this information be used?

SPoT provides data to inform decisions related to water quality protection, such as 303(d) (Impaired Water Bodies) and Total Maximum Daily Load (TMDL) listings. SPoT toxicity and chemistry data can also complement bioassessment programs by developing a more comprehensive watershed overview. The emphasis on statewide trends makes SPoT uniquely poised to detect changes in contaminant loading related to new chemical regulations or implementation of best management practices.

In 2014, a SPoT report summarized the initial five years of data and emerging trends. The results indicate that, on a statewide basis:

- Toxicity and concentrations of most measured pollutants were higher in streams that drain watersheds with higher proportions of urban land cover.
- Of the general classes of organic chemicals measured, pyrethroid pesticides continue to demonstrate an increasing trend in detections and concentrations in sediments. Both the average and range of total pyrethroid concentrations increased between 2008 and 2012.
- There was a significant relationship between pyrethroid pesticides and urban land use, and sediment toxicity was significantly associated with these parameters. Pyrethroid toxicity thresholds were exceeded annually in an average of 17% of the samples. Two-thirds of these samples were significantly toxic, and pyrethroid toxicity thresholds were exceeded in 83% of the samples where high toxicity was observed.

In 2013, SPoT began collaborating with the California Department of Pesticide Regulation (CDPR) to evaluate the effectiveness of new restrictions on the use of pyrethroid pesticides in urban applications. Four "intensive" monitoring sites were jointly sampled by SPoT and CDPR to determine whether new regulations result in reduced pyrethroid concentrations and associated effects.

For more information:

- [SPoT website](#)
- Download the latest [SPoT Report](#).