Appendix 1. Delta RMP Management Questions and Assessment Questions for Pesticides

Delta RMP assessment questions for pesticides. Questions highlighted in yellow are the highest priority for initial studies.

Type	Core Management Questions	Pesticides
Status & Trends	Is there a problem or are there signs of a problem? a. Is water quality currently, or trending towards, adversely affecting beneficial uses of the Delta? b. Which constituents may be impairing beneficial uses in subregions of the Delta? c. Are trends similar or different across different subregions of the Delta?	1. To what extent do pesticides contribute to observed toxicity in the Delta? 1.1. Which pesticides or degradates have the highest potential to be causing toxicity in the Delta and therefore should be the priority for monitoring and management? A. If samples are toxic, do detected pesticides explain the toxicity? B. If samples are not toxic, do detected pesticide concentrations exceed other thresholds of concern (e.g., water quality objectives or Office of Pesticide Programs aquatic toxicity benchmarks)? 1.2. What are the spatial and temporal extents of lethal and sublethal aquatic and sediment toxicity observed in the Delta? A. Do aquatic or sediment toxicity tests at targeted sites indicate a toxic response? B. If answer to A is yes, which other toxicity indicator(s) should guide monitoring and management of pesticides in Years 2+? 2. What are the spatial/temporal distributions of concentrations of currently used pesticides identified as likely causes of observed toxicity? 2.1. Which pesticides have the highest risk potential (based on DPR's risk prioritization model[1]) and should be included in chemical analyses? A. Is the list of pesticides included in USGS pesticide scan sufficient for Delta RMP monitoring design? B. Are methods available to monitor pesticides with high-risk potential not included in USGS pesticide scan? 2.2. How do concentrations of the pesticides with the highest risk potential vary seasonally and spatially?
Sources, Pathways, Loadings & Processes	Which sources and processes are most important to understand and quantify? a. Which sources, pathways, loadings, and processes (e.g., transformations, bioaccumulation) contribute most to identified problems? b. What is the magnitude of each source and/or pathway (e.g., municipal wastewater, atmospheric deposition)?	1. What are the principal sources and pathways responsible for aquatic and sediment toxicity observed in the Delta? 2. What are the fates of prioritized pesticides and degradates in the environment? 2.1. Do physical/chemical properties of priority pesticides, application rates and processes, and ambient conditions influence the degree of toxicity observed? 3. What are the spatial/temporal use patterns of priority pesticides?

[1] http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/prioritization_report_2.pdf

Type	Core Management Questions	Pesticides
	c. What are the magnitudes of internal sources and/or pathways (e.g. benthic flux) and sinks in the Delta?	
Forecasting Scenarios	a. How do ambient water quality conditions respond to different management scenarios b. What constituent loads can the Delta assimilate without impairment of beneficial uses? c. What is the likelihood that the Delta will be water quality-impaired in the future?	1. How do pesticide concentrations respond to different management scenarios? 2. What pesticide loads can the Delta assimilate without exceeding water quality criteria established to protect beneficial uses? 3. How will climate change affect concentrations and/or loadings of pesticides and impacts to aquatic species?
Effectiveness Tracking	a. Are water quality conditions improving as a result of management actions such that beneficial uses will be met? b. Are loadings changing as a result of management actions?	1. Are pesticide-related toxicity impacts decreasing over time?