PT125 Distribution and transport of current-use pesticides within the Salton Sea watershed, California. K.M.1, U.S. Geological Survey, Sacramento, CA, USA. 2U.S. Geological Survey, San Diego, CA, USA. Current-use pesticides (e.g., triazines, carbamates, organophosphates, pyrethroids) have been shown to be present in sediments and soils, despite greater environmental reactivity and (except for pyrethroids) lesser hydrophobicity, relative to organochlorine pesticides. The association of current-use pesticides with sediments can provide an important mechanism for transport of pesticides throughout a watershed and can contribute to the dissolved-pesticide load through desorption. A study was initiated in fall 2001 to determine concentrations of pesticides in filtered water and suspended and bed sediments from the Salton Sea watershed in southern California. Rivers in this watershed receive significant amounts of agricultural return water, which is the major source of pesticides. Sampling was done along transects on the New, Alamo, and Whitewater Rivers and into the Sea. Water, suspended-sediment and bed-sediment samples were collected during times of peak pesticide application in fall 2001, spring 2002, and fall 2002. Results showed that concentrations of dissolved pesticides decreased from river stations to offshore stations. Eptam and malathion were detected in the highest concentrations (1100–3800 ng/L); most compounds were between 10–100 ng/L. Concentrations of current-use pesticides in suspended and bed sediments ranged from 1 ng/g (at or near detection limits) to 90 ng/g dry weight, and generally decreased from the river stations to offshore stations. Chlorpyrifos, dacthal, eptam, and trifluralin, among the pesticides of highest use, were detected with the greatest frequency in both water and sediments. The distribution of pesticide concentrations in water and sediments is consistent with runoff of dissolved and soil-associated pesticides into the rivers via agricultural return water and subsequent transport into the Salton Sea.

PT126 Degradation kinetics of selected organophosphate and carbamate insecticides in urban creek sediments. Bondarenko, S.V. and Gan, J. Department of Environmental Sciences, University of California, Riverside, Riverside, CA, USA. Organophosphate and carbamate insecticides have been frequently detected in urban streams. Due to their acute toxicity to many aquatic organisms, compounds such as chlorpyrifos and diazinon have become target toxics in the TMDL program. A number of OPs and carbamates have been detected in the San Diego Creek/Newport Bay watershed. However, there is very little site-specific information about their persistence in the urban creek sediments. We studied the degradation kinetics of chlorpyrifos, diazinon, malathion and carbaryl in San Diego Creek and Bonita Creek sediments under both aerobic and anaerobic conditions. Malathion and carbaryl quickly dissipated under aerobic conditions, with half-lives of only 0.8–4.9 d. Under anaerobic conditions, malathion degraded rapidly, with half-lives of 1.6–2.3 d. However, carbaryl became virtually non-degradable under anaerobic conditions, and its half-life increased to 125 d in San Diego Creek sediment and 746 d in Bonita Creek sediment. Persistence of diazinon was moderate, and its half-life (14-24 d) seemed to be unaffected by the redox conditions. Chlorpyrifos was moderately persistent under aerobic conditions, with half-life (20-24 d) similar to that of diazinon. However, significant increase in persistence also occurred with chlorpyrifos under anaerobic conditions, and its half-life was extended to 58-223 d. This study suggests that the persistence of OPs and carbamates in urban creek sediments varies greatly among compounds, and for the same compound, depends closely on the redox conditions. Prolonged persistence may occur under anaerobic conditions for the otherwise non-persistent compounds.