Surveillance for Previously Unmonitored Organic Contaminants in the San Francisco Estuary

Daniel R. O’Don, San Francisco Estuary Institute, 7710 Parkside Lane, 2nd Floor, O‘oakland, CA 94621

Introduction
Surveillance monitoring in the San Francisco Estuary Regional Monitoring Program for Trace Substances (RMP) was prompted by a need to make the regulatory system more proactive in anticipating potential problem contaminants. This effort focused mainly on identifying previously unmonitored and unknown organic contaminants in the San Francisco Estuary water column.

Methods
Water samples were collected by the RMP during 1999 and 2000. Water samples (100 L) were extracted in situ with XAD resin and glass fiber filters. XAD extracts, filters, and blank samples were each extracted with organic solvents, and then separated by column chromatography into non-polar (F1), polar (F2), and polar (F4) fractions.

Results
The contaminants that were found in the San Francisco Estuary water samples included: tributylphosphate, diethyltoluamide used as an insect repellant; cinnamate used in personal care products; Galaxolide® and Tonalide® used as fragrances in personal care products; thiobencarb used as pesticides; piperonyl butoxide used as an insecticide synergist in pesticide formulations; N,N-diethyltoluamide; acetaminophen; metolachlor, molinate, terbuthylazine, and dichlobenil, used as herbicides; and ABU, a fire retardant.

Discussion
Evidence from the literature suggests that some of these contaminants can partition to the environment, become toxic and accumulate in marine hosts and in higher food chain consumers. The major input pathways of these contaminants into the marine environment are the discharge of municipal and industrial wastewater effluents, urban stormwater, and agricultural runoff. Although the focus of environmental management is often on the mitigation and remediation of legacy contamination problems, surveillance studies such as this one are an important component in monitoring programs for making preliminary assessments of previously unmonitored contaminants in the ecosystem (water, sediment, and biota). It is through such efforts that the potential contamination problems of the future can be identified and addressed before they become the environmentally and economically costly “legacy” pollutants of tomorrow.