

Regional Water Quality Control Board
North Coast Region

Executive Officer's Summary Report
Thursday, January 29, 2015
Regional Water Board Office
Santa Rosa, California

ITEM: 9

SUBJECT: Contaminants of Emerging Concern - Assessing Water Quality in the North Coast Region (Jeremiah Puget and Cathy Goodwin)

BOARD ACTION: This is an informational item. There will be no Board action.

BACKGROUND: This past October, Regional Water Board Executive Officer Matt St. John gave a presentation on contaminants of emerging concern (CECs) at the Safe Medicine Disposal Symposium organized by the Russian River Watershed Association (RRWA) and held in Santa Rosa. The information presented below was gathered for this presentation.

In the past few years, wastewater dischargers and environmental regulators have become challenged with addressing CECs in the face of limited knowledge about their sources, pervasiveness, and effects. The United States Environmental Protection Agency (USEPA), United States Geological Survey (USGS), State and Regional Water Boards, and other agencies are working to improve their understanding of a number of CECs. These include pharmaceuticals and personal care products (PPCPs), which can also include endocrine-disrupting chemicals (EDCs) that can interfere with the endocrine (or hormone) system in mammals.

PPCPs include any product used by individuals for personal health or cosmetic reasons or used by agribusiness to enhance growth or health of livestock. PPCPs comprise a diverse collection of thousands of chemical substances, including prescription and over-the-counter therapeutic drugs, veterinary drugs, fragrances, and cosmetics. Evidence indicates that these products easily migrate into the soil and into aquatic environments via sewage, treated sewage sludge (biosolids), and irrigation with recycled water.¹

¹ Daughton CG "Pharmaceuticals as Environmental Pollutants: the Ramifications for Human Exposure," In: International Encyclopedia of Public Health, Kris Heggenhougen and Stella Quah (Eds.), Vol. 5, San Diego: Academic Press; 2008, pp. 66-102.]

Because environmental concentrations of CECs are typically present at low levels, the main concern is the chronic and/or synergistic effects of CECs. While the specific effects to aquatic life by exposure to CECs are still being studied, effects on reproductive biology (including feminization of male fish) and malformation of amphibians have been documented. It is increasingly clear that continual, multi-generational exposure of aquatic life to CECs has negative consequences. However, more studies are necessary to understand the full effects of these compounds and to determine the human health effects.

DISCUSSION: Many studies over the last decade have detected traces of CECs in treated wastewater effluent, rivers, lakes, and groundwater. Ibuprofen, caffeine, and nicotine by-product, are among the CECs that have been found.

Following the adoption of the Recycled Water Policy in 2009, the State Water Board convened a panel of scientists in affiliation with the Southern California Coastal Water Research Project (SCCWRP) to provide recommendations on how current knowledge of CECs should influence regulatory activities, first to implement monitoring as part of the State's Recycled Water Policy, followed by monitoring of ambient waters receiving treated wastewater and stormwater discharges. The panel identified the need to develop more comprehensive, efficient, and relevant monitoring and assessment methods (called bioanalytical screening tools) for CECs. The panel's reports and recommendations can be found on SCCWRP's website located at:

<http://www.sccwrp.org/ResearchAreas/Contaminants.aspx>

To implement the initial panel's recommendations for aquatic ecosystems, a pilot study monitoring plan has been developed with a grant managed by staff in the State Water Board's Surface Water Ambient Monitoring Program (SWAMP). This project aims to fill the occurrence and toxicological data gaps needed to prioritize CECs for statewide monitoring using a risk-based framework. The main tasks include creating monitoring and quality assurance plans and special studies (bioassay and passive sampler) for statewide assessment of CECs, these tasks are nearly complete. These reports were distributed to the stakeholder advisory committee and science panel; the final products are scheduled to be completed in February 2015. The stakeholder committee includes dischargers, as well as State and Regional Water Board representatives. The target waterbodies are effluent dominated waterways, the Sacramento-San Joaquin River Delta System, bays and estuaries and ocean discharges.

The first regional pilot evaluation of the statewide monitoring framework for CECs will take place in the North Coast Region in late 2015 and 2016 in the Russian River Watershed as part of the SWAMP monitoring effort. This Russian River project proposes to answer several management and monitoring questions, such as:

- Are CECs in WWTP effluent and stormwater runoff impacting beneficial uses in the Russian River Watershed?
- What is the relative contribution of treated wastewater effluent and stormwater runoff to CEC loading into the Russian River Watershed?
- Do bioanalytical tools effectively screen for the occurrence of CECs and other bioactive contaminants?

Regional Water Board staff are working to develop partnerships with other agencies and organizations to continue to research and assess this topic closely.

SUPPORTING
DOCUMENTS: N/A

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