



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

March 2, 2018

Dr. Keith Maruya
Principal Scientist
Southern California Coastal Water Research Project Authority
3535 Harbor Blvd. Suite 110
Costa Mesa, CA 92626

Dear Dr. Maruya:

Comments – Monitoring Strategies for Constituents of Emerging Concern in Recycled Water:
Recommendations of a Science Advisory Panel

The Metropolitan Water District of Southern California (Metropolitan) appreciates the opportunity to comment on the Science Advisory's Panel (Panel) 2018 draft final report, "Monitoring Strategies for Constituents of Emerging Concern (CECs) in Recycled Water: Recommendations of a Science Advisory Panel" (2018 Monitoring Report). Metropolitan commends the State Water Resources Control Board (State Water Board) and the Southern California Coastal Water Research Project (SCCWRP) for reconvening the Panel to review research and monitoring data published since 2009 and update the Panel's previous recommendations.

Metropolitan, in collaboration with 26 member agencies, supplies safe and reliable water to nearly 19 million residents in more than 300 cities and incorporated areas throughout Southern California. Metropolitan owns and operates an extensive water system including the Colorado River Aqueduct, 16 hydroelectric facilities, nine reservoirs, 830 miles of large-diameter pipes and five water treatment plants. Since 1990, Metropolitan has provided over \$448 million to produce 2.6 million acre-feet of recycled water for non-potable uses and indirect potable reuse. Currently, Metropolitan in partnership with the Sanitation Districts of Los Angeles County is embarking on a Regional Recycled Water Program. The first step of the program is to build a recycled water demonstration plant that may lead to a full-scale advanced treatment facility.

Metropolitan agrees with the Panel that water recycling practices require appropriate treatment barriers and monitoring strategies to understand and minimize exposure to a wide range of CECs in recycled water that may adversely affect public health. Metropolitan recognizes the Panel's efforts to improve monitoring strategies, particularly for potable reuse applications, by continuing to review relevant research findings and monitoring data. Metropolitan supports the Panel's finding that CEC monitoring is not necessary for non-potable reuse projects due to the low risk of exposure. In order to further strengthen the 2018 Monitoring Report, Metropolitan offers the following comments.

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General Comments

1. Recommendations outside the scope of the Panel's charge should be omitted from the 2018 Monitoring Report

The 2018 Monitoring Report includes helpful recommendations on the continued use of a risk-based screening framework to identify known CECs for monitoring, and the use of analytical methods to monitor unknown CECs. However, the panel also offered recommendations outside of their charge issued by the State Water Board. As two examples, the Panel recommended a specific permitting authority for recycled water projects (p. 10) and recommended removing a recycled water supply from service if bioanalytical measurements exceeded a threshold (p. 76). While careful consideration of these issues is needed, the 2018 Monitoring Report is not the appropriate venue. Metropolitan encourages the Panel to focus on their specific charge, and omit any recommendations that are not directly related to CEC monitoring strategies.

2. Allow voluntary monitoring for both non-targeted analyses and bioanalytical methods to identify CECs in recycled water.

Metropolitan agrees with the Panel's recommendation to implement voluntary monitoring for CECs using non-targeted chemical analyses (NTA) for non-potable reuse projects. Metropolitan recommends that the Panel consider only voluntary monitoring for bioanalytical methods as well. For routine monitoring, laboratories must have a quality assurance/quality control program and operating procedures for sample collection and analysis. Currently, the State Water Board has not published any guidance document to laboratories in conducting these analyses. Metropolitan recommends that the State Water Board pursue development of standardized sample collection and analysis procedures before requiring mandatory CEC monitoring and analysis with NTA and/or bioanalytical methods. In addition, as currently proposed, the two *in-vitro* assays (estrogen receptor (ER) and the aryl hydrocarbon receptor (AhR)) recommended by the Panel are not ready to be used for routine monitoring (2016 Direct Potable Reuse (DPR) Feasibility Report). Since 2016, only one additional study (Leusch 2017) has been cited that has used *in-vitro* assays in round-robin laboratory testing. Multiple studies are required to ensure consistency in performance before using assays for routine monitoring.

3. Antibiotic resistant bacteria and genes do not pose a serious threat to water reuse applications and should be explored outside of the water reuse framework.

Metropolitan supports the Panel's recommendation that additional research is required to understand the impact of antibiotic resistance but recommends pursuing it outside

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the water reuse framework. Transmission of antibiotic resistance is primarily through direct acquisition of bacteria in the community and health-care facilities. Bacteria in the wider environment play a role as well, but they cannot thrive in highly treated wastewater. The 2016 DPR Feasibility Report (p. 79) concluded that combining secondary wastewater treatment with advanced water treatment processes is likely to reduce concentrations of antibiotic resistant bacteria and genes in recycled water to levels that are much lower than those found in conventionally treated drinking water. The 2016 DPR Feasibility Report further concluded that compared to other known and potential sources, recycled water is not a significant disseminator of antibiotic resistance. In addition, treatment processes are designed to remove and/or inactivate bacteria. Antibiotic resistant bacteria do not possess any physical properties that make them more adept to survive water treatment processes than their non-resistant counterparts. Although naked DNA encoded antibiotic-resistant genes can be taken up by suitable recipient bacteria through DNA transformation in the environment, it is probably not a significant source of resistance transmission. Hence, emphasis on the relevance of antibiotic resistance in the context of CEC monitoring in recycled water is not required. The focus on the efficacy of antibiotic resistance may dilute efforts that should be more directly targeted at ensuring the safety of other water reuse applications.

4. An Implementation Plan with clear milestones should be added to the 2018 Monitoring Report.

As currently written, the 2018 Monitoring Report does not include an implementation plan with clear milestones. Metropolitan recommends that the Panel include an Implementation Plan with at least general time frames such that the reader has a clear understanding of the process moving forward. The Implementation Plan must clearly lay out the proposed path forward for filling the necessary research and knowledge gaps that would allow for establishing monitoring strategies for CECs in recycled water. Metropolitan agrees with the Panel's recommendation for the State Water Board to develop processes for reviewing and communicating CEC data.

Metropolitan recommends expanding the communication protocol further to include guidance for utilities to inform the public, policymakers, and media regarding public notification and interpretation of voluntary CEC monitoring data that do not exceed safety thresholds.

Metropolitan thanks the SCCWRP for the opportunity to comment on the 2018 Monitoring Report. We believe the additions and clarifications noted in this letter will strengthen CEC monitoring strategies, aimed to further expand California's potable reuse development.

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If you have any questions regarding this comment letter, please contact me at 213-217-5696 or mstewart@mwdh2o.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Mic Stewart", with a large, sweeping flourish extending to the right.

Mic Stewart, PhD
Director of Water Quality

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