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

Dear Mr. Maruya:

COMMENT LETTER – MONITORING STRATEGIES FOR CONSTITUENTS OF EMERGING CONCERN (CEC) IN RECYCLED WATER: RECOMMENDATIONS OF A SCIENCE ADVISORY PANEL

City of Los Angeles (City) Sanitation (LASAN) appreciates the opportunity to comment on the Draft Final Report “*Monitoring Strategies for Constituents of Emerging Concern (CECs) in Recycled Water: Recommendations of a Science Advisory Panel* (Draft Final Report)” prepared for the State Water Resources Control Board (State Water Board).

The City continues to expand its recycled water program and as of FY 2016/17 has successfully installed over 63 miles of recycled water pipeline (purple pipe) supporting infrastructure to deliver over 10,000 acre-feet per year (AFY) of recycled water to its customers - with another 25 miles of purple pipe and 21,000 AFY of deliveries planned through 2025. As such, the City has a vested interest in assuring that any promulgated regulations or policies are based on the best available science.

Limited scientific knowledge about the sources, fates, and effects of CECs combined with emerging threats that continually need to be evaluated as new products are developed makes it imperative that the State Water Board incorporate the most current scientific knowledge on CECs into regulatory policies. The recommendations of the Science Advisory Panel (Panel) represent the best available science.

LASAN recommends that the State Water Board adhere as closely as possible to the recommendations of the Panel. Relying on the Panel’s expertise is the best way to ensure a safe and reliable supply of recycled water that complies with all recycled water use requirements allowed under Title 22 (landscape irrigation, crop irrigation, dust control, indirect potable reuse via groundwater recharge, and surface water reservoir augmentation). LASAN supports the risk-based

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CEC selection framework and the Panel's recommendation that Title 22 exposures for non-potable reuses do not warrant additional CEC monitoring.

LASAN encourages the State Water Board to adopt the recommendations of the Science Advisory Panel's Draft Final Report, *Monitoring Strategies for Constituents of Emerging Concern (CECs) in Recycled Water: Recommendations of a Science Advisory Panel.*" LASAN only offers the following suggestions as described in Attachment A to help strengthen the report.

If you have any questions, please contact Mr. Hassan Rad, Regulatory Affairs Division Manager, at Hassan.Rad@lacity.org or at (213)847-5186.

Sincerely,



ENRIQUE C. ZALDIVAR, Director
LA Sanitation

ECZ:HR:mtb:es

Attachment

c: Traci Minamide, LASAN
Mas Dojiri, LASAN
Roshan Aflaki, LASAN
Mark Starr, LASAN
Timeyin Dafeta, LASAN

ATTACHMENT A

1. Recycled Water Policy, Salt and Nutrient Management Plans, and the Groundwater Sustainability Management Act (Section 2.1, Paragraph 4, Page 5)

The Draft Final Report clarifies that the Recycled Water Policy (RWP) was adopted to promote the use of recycled water in a manner that is protective of public health and water quality by providing streamlined permitting criteria for recycled water projects and through the collaborative development of Salt and Nutrient Management Plans (SNMPs) for groundwater basins or sub-basins in California. The Draft Final Report goes on to list several State and Federal regulations that have a bearing on planned potable water reuse projects (e.g., CWA, SDWA, etc.).

LASAN recommends that the Draft Final Report should include language discussing the Sustainable Groundwater Management Act (SGMA) and its relation to the RWP and SNMPs and any overlap between SNMPs and local Groundwater Sustainability Plans (GSPs) required by the SGMA so that both plans are fully consistent, compatible, and integrated.

2. Role of Bioanalytical Methods to Assess the Relevance of Unknown CECs (Section 7.1, Paragraph 4, Page 65)

LASAN agrees with the Draft Final Report and recognizes that identifying non-targeted CECs potentially present in recycled water for which pertinent data is unavailable (i.e., CECs transformational products and/or new chemicals that maybe entering the market) cannot adequately be captured using the risk-based framework proposed and, therefore, requires an effective screening analysis.

However, LASAN is concerned with the application of the recommended Estrogen Receptor alpha (ER- α) bioassay to assess estrogenic biological activities in recycled water and Aryl hydrocarbon Receptor (AhR) bioassay to assess dioxin like biological activities in recycled water. While such *in vitro* bioassays allow specific molecular responses to enable adequate standardization, the assays are generally specific to the target compounds and appropriate only to chemicals (compounds) alleged to possess estrogenic activities¹ and dioxin-like compounds² limiting the bioassays application and interpretation when used for samples with complex mixtures of unknown composition. In essence, the bioassays are generally limited to receptor-dependent effects and adverse outcome pathways (AOP). Meaning that there are several competing activities and non-receptor mediated pathways that could, likely, be involved in the AOP and, as a result, affect the target compound's alleged AOP. Moreover, the bioassays often use acute chemical exposures and could miss active metabolites since they lack metabolic capabilities that are associated with many cell lines. The bioassays have not also been adequately vetted and standardized as screening tools.

¹ Zacharewski, *In vitro Bioassays for Assessing Estrogenic Substances*. Environmental Science & Technology, 1997. 31(3): 613-623.

² State Water Resource Control Board, *Investigation on the Feasibility of Developing Uniform Water Recycling Criteria for Direct Potable Reuse. Report to the Legislature (December 2016)*. Water Code Section 13563.

LASAN is also concerned with the robustness of the bioassay techniques to provide links between compounds concentration and meaningful human effects that is often characterized by current standardized analytical tools. Furthermore, the Draft Final Report inadequately articulates the use of the bioassays as either a threshold for additional monitoring or management decision.

LASAN suggests that the bioanalytical screening tools be used only as guide for chemicals (compounds) identification of the “unknowns – unknowns” and not as a routine monitoring tool until adequate science is developed and vetted to enable robust standardization of the assays. LASAN also recommends an inter-laboratory comparison approach when standardizing the bioassays.