

commentletters

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Public Comment on Draft Report to California Legislature: INVESTIGATION ON THE FEASIBILITY OF DEVELOPING UNIFORM WATER RECYCLING CRITERIA FOR DIRECT POTABLE REUSE

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Ms. Townsend, California Water Resources Control Board and Division of Drinking Water,

Thank you for the opportunity to comment on the draft report to the Legislature: Investigation on the Feasibility of Developing Uniform Water Recycling Criteria for Direct Potable Reuse.

As mentioned in the report, only two direct potable use (DPR) wastewater treatment plants currently operate around the globe, and no comprehensive regulatory framework for DPR exists anywhere. Only site-specific operating requirements presently govern the two existing DPR plants, including one in Texas. Therefore, as a Californian who recognizes that DPR may be fast-tracked for implementation here, it concerns me that the criteria for DPR regulations in California might be developed under time pressure, such as deadlines selected to meet the schedules of water providers, or to meet a legislated deadline. California's DPR regulations should be developed comprehensively, using unbiased expertise, sufficient up-to-date scientific research, and with the primary goal of preserving public health, including the health of sensitive populations. The purpose of DPR is to produce drinking water from municipal sewage, an inherently high-risk operation, and DPR health criteria and operating regulations must be sufficiently comprehensive and fully based in current, peer-reviewed science and facts rather than assumptions or best guesses. The arduous, complex process of developing these important public health regulations should certainly not be cut short or rushed due to arbitrary deadlines.

While it's true that some unplanned wastewater reuse is already occurring as wastewater is discharged into major river systems that are sources of potable water for downstream users, the amounts of this "unplanned wastewater reuse" and the amount of dilution and environmental degradation that occurs prior to reuse varies widely around the nation and also around California. As any wastewater treatment plant operator knows, municipal wastewater differs significantly in quality from conventional drinking water sources. In particular regarding this point I question the statement from the Expert Panel presentation I recently watched (via Water Board webcast) that antibiotic resistance concentration (antibiotic resistant bacteria and antibiotic resistant genes) in wastewater

would likely be lower than in conventional drinking water sources. Municipal wastewater treatment plants generally receive sewage from sources such as hospitals, surgery centers, assisted living facilities, etc., where antibiotic-resistant bacteria are likely to be prevalent. Disinfection procedures in such facilities (as well as in the wastewater treatment processes themselves) cause antibiotic resistance genes to be broken out of the dead bacteria. If these free-floating antibiotic resistance genes are ingested, they have the potential to combine with a person's existing gut flora, causing non-resistant bacteria to become resistant to antibiotics. Given the very dangerous and pressing spread of antibiotic resistance, I urge careful study of antibiotic resistance in DPR.

The statement below, indicating that no additional research is needed in order to establish criteria for DPR, is concerning:

"...the Expert Panel finds that there is no need for additional research to be conducted to establish criteria for DPR, but provides six research recommendations that would enhance the understanding and acceptability of DPR, and further ensure that DPR is protective of public health." (Draft DPR Report to CA Legislature, Sept. 2016, page iv)

Given the information also provided in the report about knowledge gaps and recommended research, I have many questions about the criteria and requirements for operation that might be developed without the needed research, e.g. for permitting of "one-off" DPR treatment plants on a case-by-case basis in the absence of regulations, or in developing criteria and regulations while needed research is still being conducted. Here are a few of my questions.

1. How is monitoring TOC as a surrogate for organic chemical contaminants protective of public health when some organic chemical contaminants are harmful at extremely low concentrations but their individual detection methods (and/or health effects) have not been established?
2. How will spikes (sudden increases in concentration) of specific dissolved toxic metals in the source wastewater be detected in the finished drinking water at the extremely low concentrations at which they can be harmful to health in fetuses, children and other sensitive populations?
3. How will the operating criteria and regulations protect the public, including sensitive populations such as infants, pregnant women and children, against antibiotic resistance genes in wastewater?
4. How will the operating criteria and regulations protect the public against prions such as the one that causes Creutzfeldt-Jakob disease?
5. How will the operating criteria and regulations specifically protect the public against enterovirus D-68? (reference: <http://www.latimes.com/local/california/la-me-polio-paralysis-20160823-snap-story.html>) How will the public be assured that this virus and other pathogens that may cause serious health issues in sensitive populations, including pregnant women and children, are removed from sewer water? How will the "several human viruses" mentioned in recommendation #4 (Draft DPR Report to CA Legislature, Sept. 2016, page 21) be selected?
6. How will the operating criteria and regulations protect the public against a future outbreak of Ebola virus? In this context it bears mentioning that pathogen contamination in biofilms in DPR treatment and distribution systems should be listed as a subject requiring research. I have not yet read through all the reports associated with this document so I don't know the degree to which topics such as biofilms or cross-contamination across treatment segments have been discussed as knowledge gaps/research needs.

7. How will the operating criteria and regulations protect the public, including sensitive populations such as infants, pregnant women and children, against unknown or incompletely understood chemical, pathogenic, or radioactive contaminants that may occur in sewer water?

8. How will the regulatory framework (including permitting process) and associated public health criteria for any "one-off" DPR facility permits be developed in the absence of regulations? Will this process be fully transparent?

9. Please explain the meaning and intent in terms of public health protection of this Expert Panel research recommendation (Draft DPR Report to CA Legislature, Sept. 2016, page 17):

"5. Identify suitable options for final treatment processes that can provide some "averaging" with respect to potential chemical peaks particularly for chemicals that have the potential to persist through advanced water treatment."

The 2012 National Research Council (NRC) report briefly quoted in the draft DPR report that is the subject of this public comment (please see Draft DPR Report to CA Legislature 2016, page 6) contains a chapter entitled Research Needs that is relevant to this report (please see Water Reuse: Expanding the Nation's Water Supply Through Reuse of Municipal Wastewater, 2012 NRC, Chapter 11). All of the research needs enumerated in this chapter are important and should be addressed.

The Blue Ribbon Panel should include one or more independent research endocrinologists who have been studying the impacts of very low dose endocrine-disrupting chemicals and of chemical mixtures on human health, particularly that of fetuses and children. The scrutiny of cutting-edge, independent experts in those areas (such as Linda S. Birnbaum, Philip J. Landrigan, Philippe Grandjean, Ana M. Soto, Andreas Kortenkamp, or Evantia Dimanti-Kandarakis) would help to ensure that DPR proposals are receiving adequate scrutiny before being implemented.

Finally, epidemiology, water quality, and operational studies of existing DPR facilities should be made available to the California public as part of the public process of developing state regulatory criteria for DPR.

Thank you for taking the time to consider my hastily assembled public comments.

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