



August 5, 2016

Kevin Day  
Staff Services Manager I (Specialist)  
California Building Standards Commission  
2525 Natomas Park Drive, Suite 130  
Sacramento, CA 95833

**RE: CA AB 2282 (Recycled Water Stakeholder Group) – HCD and BSC Draft Express Terms**

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Dear Kevin:

On behalf of Plumbing Manufacturers International (PMI), we appreciate the opportunity to provide comments to the California Department of Housing and Community Development (HCD) and California Building Standards Commission (BSC) as the departments consider mandatory building standards for recycled water systems in newly constructed residential, commercial, and public buildings and building site landscaped areas.

PMI is a partner and advocate in California's efforts to accomplish significant water savings and is enthused to participate in and contribute to this recycled water initiative. PMI has long advocated that significant water savings can be achieved by replacing older toilets, faucets and showerheads with water-efficient products that use less water and that meet the appliance efficiency standards adopted by the California Energy Commission (CEC) in response to the Governor's Executive Order on the Drought. These products are on the shelves and available today.

In fact, based on a recent study conducted by GMP Research, and commissioned by PMI<sup>1</sup>, only 5.5 percent of California's 33.5 million installed residential and commercial toilets are water-efficient toilets using 1.28 gallons per flush or less – the Environmental Protection Agency's (EPA) WaterSense® standard for toilets evaluated to be 20 percent more water efficient than other toilets meeting federal standards. In addition, only 21.1 percent of bathroom faucets in California meet the EPA WaterSense® standard of 1.5 gallons per minute (gpm) or less and 23.9 percent of showerheads meet the EPA WaterSense® standard of 2.0 gpm or less.

In regards to CA AB 2282, PMI has the following comments and concerns in regards to what is being considered in the draft express terms:

- Anecdotal and expert opinions attesting to the safety of indoor recycled water systems have been presented, but these opinions should be tested by a formal study conducted by scientists

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<sup>1</sup> "US Market Penetration of WaterSense Shower Heads, Lavatory Faucets and Toilets," July 2015:

[https://www.safeplumbing.org/files/safeplumbing.org/documents/press\\_release\\_downloads/9-15-15-WaterSense-market-penetration-study.pdf](https://www.safeplumbing.org/files/safeplumbing.org/documents/press_release_downloads/9-15-15-WaterSense-market-penetration-study.pdf)

knowledgeable about opportunistic premise plumbing pathogens (OPPPs) such as Legionella, Mycobacteria, P. Aeruginosa, and Naegleria fowleri<sup>2</sup>.

- Recycled water may contain pathogens that can compromise public health and safety. The use and maintenance of recycled water in toilets and urinals risks public health and safety, particularly among users who are immuno-compromised, have skin lacerations or wounds, or who require a traditional bidet or personal hygiene device (bidet seat).
- California citizens repairing toilets or urinals will come into contact with recycled water and may not change their hand hygiene habits to account for the change in water quality, thereby increasing the risk of personal infection or the spread of pathogens to others.
- Water-related public health concerns occurring now in Flint, Michigan; Fresno, California; and thousands of other water districts throughout America demonstrate what can happen when the safe management of water systems is neglected or when changes to public water supplies are implemented without careful consideration of all possible consequences.
- Toilets, urinals and other plumbing products are designed and tested to industry standards to be safely used with potable water, not recycled water. Suspended or dissolved fats, oils and other hydrocarbons in recycled water may be detrimental to rubber components such as elastomeric toilet flappers and valves seals. To successfully design tank trim and other components for use with recycled water, allowable water chemistry must be defined. Identification of acceptable contaminants and their ranges must be determined. This includes, but is not limited to, pH, hardness, alkalinity, and the residual level of water treatment chemicals and their byproducts. It is recommended that the NSF 350 standard be used to provide the water quality criteria for recycled water. NSF/ANSI 350 promotes sanitation and protection of the public health, and although it establishes material, design, construction and performance requirements for onsite residential and commercial water reuse treatment systems, it provides explicit values and/or ranges for water quality that can be applied to secondary tertiary recycled water supplied by any source.
- Recycled water infrastructure must be demonstrated to provide water at required pressures, as well as at consistent and adequate supplies to assure that plumbing products and fixtures operate properly.
- The use of recycled water in dual plumbing systems, including cross-connections and supplemental supplies of potable water, as well as non-potable water treated onsite, must be carefully examined to assure safety.
- California Title 22 Regulations Related to Recycled Water (July 16, 2015) clause 60301.230 outlines options for the disinfection process including total coliform counts. It is our understanding that the coliform count is not a full indication as to the presence of pathogens, whereas the requirements for drinking water may have stricter criteria.
- Clause 60310 (e)(2) concerning area use requirements, calls for prohibiting spray, mist, or runoff of recycled water into dwellings. When toilets are flushed, a water plume may be created which increases concerns of aerosols being aspirated<sup>3</sup>. It appears this would present an issue in contradiction with the aforementioned clause. Similarly, bidet seats rely on a water

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<sup>2</sup> Legionella was discovered in the 1970s and causes Legionnaires' Disease (a severe and deadly pneumonia) or Pontiac fever (a less dangerous flu-like illness) in its victims. Legionella is now the primary source of potable waterborne disease outbreaks and deaths in the U.S., according to tracking by the U.S. Centers for Disease Control. Other high profile OPPPs associated with plumbing systems include Mycobacteria, which causes severe lung disease; P. Aeruginosa, which causes skin infections that can sometimes be fatal; and Naegleria fowleri, which is a brain-eating amoeba recently tied to a few deaths via tap water exposures. "Green Water Systems and Opportunistic Premise Plumbing Pathogens," *PHC News*, December 2015

<sup>3</sup> "Lifting the lid on toilet plume aerosol: a literature review with suggestions for future research," March 2013: <http://www.ncbi.nlm.nih.gov/pubmed/23040490>

spray mode for use in cleaning while coming into direct contact with one's body. Furthermore, some toilets may emit a mist of ionized water to allow for enhanced cleanability of the toilet bowl. The use of recycled water in each of these cases (spray, mist and direct contact) appears to be in contrast to clause 60310.

- Per clause 60313 of the Title 22 Regulations to Recycled Water, item (b) states that recycled water shall not be delivered for any internal use to any individually owned residential units...etc. This statement appears in direct contradiction to 60307 indicating that use of recycled water for other purposes may include flushing toilets and urinals.
- Sampling plans on recycled water must be established with extraction points at point-of-use in toilets, urinals and other plumbing products, and not just the recycled water incoming into a structure.

In closing, PMI believes that regulatory requirements should not be adopted before scientific evidence attests to the safety of indoor recycled water systems and the water quality used in these systems in homes and commercial buildings.

PMI would like to thank HCD and BSC for the opportunity to provide comments and share our concerns in regards to the draft express terms. Our partnership with the regulatory and stakeholder communities in the State of California will continue to promote water efficiency that will produce safe, sanitary, efficient and reliable products.

Sincerely,

A handwritten signature in black ink, appearing to read 'msigler', with a stylized flourish at the end.

Matt Sigler  
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cc: PMI Board of Directors