



....a dialogue for California's water conservation community

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Executive Director: Mary Ann Dickinson

Newsletter Editor: John Koeller

This issue.....

- **Consumer Reports® on Toilets**

Consumer Reports magazine reports on its test of 28 different toilets, its first toilet fixture testing since 1998. But, of course, how they test them remains a secret!

- **Dual-Flush Toilet Fixtures**

They save water....three studies tell you how much!

- **The NAHBRC Study is Complete**

The testing program at the National Association of Home Builders Research Center was completed in August. Nearly 100 toilet fixtures were performance tested, 50 different models.

- **U. S. Plumbing Standards**

A summary of the ongoing work on plumbing standards, particularly that related to toilet fixtures.

- **Pre-Rinse Spray Valve Specification Completed**

A purchase specification has been completed for the pre-rinse spray valve to be used in the California Public Utilities Commission program. Only the very best valves will be certified for the program.

- **Fluidmaster, Inc. Releases Three New Products**

Fluidmaster addresses the problem with bowl cleaners and flapper failure with a pair of new consumer products.

- [Links to other articles related to water conservation](#)
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1. Consumer Reports® on Toilets

The October 2002 issue of Consumer Reports® magazine (p. 52) again provides us with its findings on the performance of current vintage ultra-low-flush toilets. This report is the first since May 1998.

CR tested, rated, and ranked 28 different toilet models from eight different manufacturers. Unfortunately, CR never discloses its test methodology nor does it provide precise details on the test media that it flushes through each fixture. Therefore, neither the consumer, the manufacturer, nor the water conservation professional can make a judgement on the efficacy of their tests.

The top-rated fixtures

In this current round of testing, CR ranked the Briggs Vacuity 4200 (a vacuum-assist unit) as its top rated fixture, and gave it a “CR Best Buy” designation at a price of \$190. Coming in at 2nd and 3rd places were two pressure-assist fixtures, the American Standard Cadet pressure-assist and the Gerber Ultra-Flush pressure-assist. In 4th place was another vacuum-assist unit, Crane’s VIP fixture (see the WaterLogue, Vol. 1, No. 6 for information on this new product). Again, the pressure-assist fixtures took 5th through 8th place in the CR rankings. The top-ranked gravity-fed fixture was the Toto Carlyle, coming in at 9th place.

Not a single toilet fixture out of the 28 tested was priced at less than \$100! (Guess they don’t have a Home Depot in Yonkers NY!) Skewing the inventory were seven pressure-assist models, not the kind of toilet most people are likely to install in their home (due to noise and cost). Therefore, the remainder of 21 represents today’s residential reality.

And the article also says.....

Here are a few quotes of interest from the October article:

“...people have learned that two flushes or even three may be needed with a poorly designed toilet—negating any water savings.”

This statement perpetuates the widely held myth that double flushing never occurred before the advent of the 1.6-gpf fixture. It also perpetuates the even greater myth that double-flushing “negates any water savings.” This is absolutely not true!! (Although it was a favorite mantra of the Knollenberg crowd!) In fact, water savings studies and estimates take into account the double flushing before and after the replacement of a fixture, and these studies point to clear water conservation savings.

“The Briggs Vacuity 4200 is one of two we tested that use vacuum chambers inside the tank...”

Actually, the vacuum-assist Briggs and Crane fixtures do not really use “vacuum chambers.” Instead, they rely upon water falling through the flush valve to create a temporary vacuum that is transmitted directly to the trapway to assist the flushing action.

“Toilets generally last forever.....so you may want to keep your old toilet....”

Well, this statement certainly doesn't encourage an investment in water conservation! Furthermore, I would guess that our friends in the plumbing industry won't appreciate it either!

Let's compare test results...

Finally, with the proliferation of test results from various studies and organizations over the past two years, one would conclude that we would have finally determined how toilet fixtures rank against one another. Unfortunately not! It is time to view the results side-by-side and determine if these findings are conclusive. Therefore, we will be comparing the CR results with those from the NAHB Research Center (see item 3 below), an earlier study by the Stevens Institute, and a recent Canadian study.

2. Dual-Flush Toilets – How much do they save?

Do dual-flush toilet fixtures save more water than standard 1.6-gallons per flush (gpf) fixtures? To date, three independent studies have been completed and published, each of which deals to some degree with this topic. The results of these studies indicate that “effective” flush volumes can be reduced from the nominal 1.6-gpf of a conventional fixture down to 1.1- to 1.3-gpf or less by substituting a dual-flush fixture for the conventional. This represents about a 20 to 30 percent reduction in flush volume and has led the Metropolitan Water District of Southern California and the East Bay Municipal Utility District to increase their financial incentives for dual-flush fixtures.

A more detailed summary of the three study results may be found in this report on the CUWCC website:

http://www.cuwcc.org/Uploads/product/Dual_Flush_Fixture_Studies.pdf

Copies of the final reports for each of the three studies may be obtained from the sponsoring organization and/or the authors. Contacts are as follows:

Canada Mortgage and Housing Corporation
Catherine Soroczan
(613) 748-2284
csorocza@cmhc-schl.gc.ca

Veritec Consulting
Bill Gauley, P.E.
(905) 696-9391, ext. 102

bgauley@t5flushmeter.com

Aquacraft, Inc.
Peter Mayer
(303) 786-9691
mayer@aquacraft.com

Seattle Public Utilities
Al Dietemann
(206) 684-5881
al.dietemann@ci.seattle.wa.us

Pacific Northwest National Laboratory
Download SWEEP report at: http://www.pnl.gov/buildings/download_reports.html

Another excellent study of dual-flush fixture savings....check this from the U.K. :

<http://watersave.uk.net/Links/Dualflushreport.pdf>

READ ABOUT THE CURRENT THREAT TO THE SALE AND INSTALLATION OF DUAL-FLUSH FIXTURES IN THE U.S.see "U.S. Plumbing Standards" below.

3. NAHB Research Study Completed

In the last issue of the WaterLogue, we provided you with some details about a comprehensive toilet fixture testing program underway at the National Association of Home Builders Research Center (NAHBRC) in Maryland. Seattle Public Utilities and East Bay Municipal Utility District commissioned this series of laboratory tests. The work is now complete and a final report will soon be available. About 100 fixtures were tested (50 different toilet models), most of which were purchased at retail at Home Depot, Lowe's, and various plumbing supply houses. Included were dual-flush fixtures from Caroma and American Standard, as well as some fixtures rated to flush at 1.0-gpf or less.

Stay tuned for further information...

4. U.S. Plumbing Standards

Progress is being made in some of the plumbing standards of interest to the water conservation community. For a complete account of that progress (and, in some cases, the lack of progress!), download this report:

http://www.cuwcc.org/Uploads/product/Standards_Status_9_02.pdf

Here is a summary of the more important developments –

Toilet Fixtures (ASME/ANSI A112.19.2 & 19.6)

An updated standard, largely focused on more rigorous performance requirements for toilet fixtures, has proceeded through the American Society of Mechanical Engineers (ASME) balloting process. According to Dave Viola, Chair of ASME's A112 Plumbing Standards Committee, the draft standard will move forward to the ASME Board of Standardization for final approval (which is not yet assured) and, if approved, then to the American National Standards Institute (ANSI) as the new national standard.

Although the proposed performance requirements are probably not as rigorous as some of us would prefer, the standard will provide some other benefits. It incorporates the substance of the Los Angeles Supplementary Purchase Specification (SPS) as an optional Appendix to the standard. This will enable municipalities and other jurisdictions to more easily adopt the requirements of the Appendix into their plumbing codes, purchasing practices, and water conservation program guidelines.

For a view of the "old" and "new" performance requirements contained within the toilet fixture standard, download this one-page comparison from the CUWCC website:

http://www.cuwcc.org/Uploads/product/ULFT_Fixt_Perf_Tests.pdf

For more information on the Los Angeles SPS, consult Vol. 1, No. 6 of the WaterLogue at:

http://www.cuwcc.org/Uploads/product/Water_Logue_Volume_1_No_6.pdf

Toilet Flappers (ASME/ANSI A112.19.5)

This standard covers another of the areas of strong interest to water conservation professionals, that of flappers and flush valves. Two specific areas are of immediate concern: (1) the physical durability of flappers and (2) the chaos that exists in the after-market with replacement flappers. Both of these areas have been studied extensively and a brief history of their evolution is contained within:

http://www.cuwcc.org/Uploads/product/Flappers_Weak_Link.pdf

ASME established a Chemicals/Materials Durability Committee in August 2000 under the auspices of the A112.19.5 standards team. That Subcommittee was assigned the task of investigating and developing a durability standard for flappers. In 2001, the manufacturers of the bowl cleaning tablets and the chemicals used in those tablets joined with the manufacturers of toilet fixtures and flappers on this project. Over the ensuing period, the members of the Committee have been developing a test protocol as a foundation for creating a viable durability standard. Industry members of the Committee have been applying the protocol within their own laboratories, analyzing the results, and developing recommendations. The ultimate goal is to set an "envelope of boundaries" on the composition of the bowl cleaning products and the durability of the flappers.

Whether or not the chemical and tablet manufacturers will ultimately agree to set boundaries on the physical characteristics of their products is yet unknown. (Their products

are outside the scope of the plumbing standards.) However, work proceeds toward a solution to the problem of flapper failure.

A second area of investigation was initiated on August 1, 2002, when a request from the CUWCC was approved for consideration by the A112.19.5 standards team. That request centered on the development of a parts numbering system that would enable consumers to more easily locate and install the correct after-market replacement flapper in their toilet fixture. The team will take up this task once the flapper durability task is complete.

That CUWCC request may be found within:

http://www.cuwcc.org/Uploads/product/ASME_Proj_Initiation_Request.pdf

Dual Flush Toilet Fixtures

This particular standard, A112.19.14, supplements the provisions of A112.19.2 and 19.6 standards discussed above by adding requirements dealing with the “half flush” or “short flush” on a dual-flush fixture. It has been under development for several years, was approved as an ANSI standard earlier this year, and was published by the ASME in August 2002. Unfortunately, one of the provisions of this standard is nearly impossible to meet with current gravity-fed dual-flush fixtures. If this new standard is adopted into the plumbing codes of the U.S., it is possible that the most promising dual-flush technology could be removed from the U.S. marketplace and manufacturers will be reluctant to even attempt to develop a U.S. market for dual-flush fixtures. A full discussion of the problem with the standard is contained within the Standards Status:

http://www.cuwcc.org/Uploads/product/Standards_Status_9_02.pdf

The problem with the existing standard rests with what is termed the dilution ratio (or water exchange) for the “half flush.” The standard calls for a 50:1 dilution ratio, or a 98 percent exchange of water in the bowl. While this may be an admirable aesthetic goal, there has been no evidence presented to date that indicates it is necessary to protect the public health and safety. At the same time, the European, United Kingdom, and Philippines standards require only a 17:1 dilution ratio, an achievable water exchange with gravity-fed non-siphonic fixtures.

Since one of the main purposes of the standards processes is to protect the health and safety of the public, the issue regarding water exchange and dilution ratios centers around the question: Is the requirement for water exchange on a liquid-only flush related to the consumer’s health and safety *OR* is it merely a cosmetic or aesthetic consideration? Therefore, it is likely that the A112.19.14 process that will consider changing the dilution ratio will focus on medical considerations and the sterility of urine.

It is very important that the water utilities and water conservation professionals weigh in on this issue if they believe that dual-flush toilet fixtures are a proven water-efficient technology that needs to remain available in the U.S. Please contact

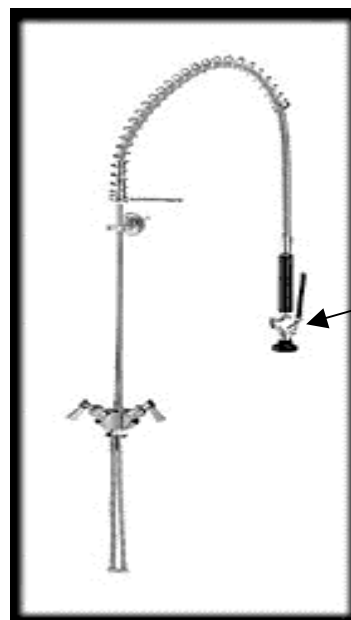
the following individuals to express your support for a change to the standard that will permit the continued sale of dual-flush fixtures:

Mr. David Viola, Chair
ASME A112 Plumbing Standards Committee
Email: dviola@pmihome.org

Mr. Calvin Gomez, Secretary
ASME A112 Plumbing Standards Committee
Email: gomezC@asme.org

5. Pre-Rinse Spray Valve Specification Completed

The CUWCC, working in cooperation with the Food Service Technology Center (FSTC), San Ramon, CA, has completed its purchase specification for the valves to be installed on the CUWCC's Pre-Rinse Spray Valve Replacement Program now underway.



Pre-rinse Spray Valve

Pre-rinse Unit

This specification provides for (1) limits on the valve's flow rate and (2) minimum performance requirements. Each valve model to be installed on the Program must be qualified by the FSTC as to meeting the specified requirements. Download the specification at: http://www.cuwcc.org/Uploads/product/Pre_Rinse_Valve_Spec.pdf

The Program is managed by the CUWCC and funded by the California Public Utilities Commission (CPUC) through funds collected by the Public Goods Charge made on gas customers' bills. It provides for the direct installation of 16,903 water- and energy-efficient pre-rinse spray valves in food service establishments throughout California at no cost to the business or property owner. The duration of the Program is targeted for 18 months,

starting in August 2002, with all installations to be completed by December 31, 2003, followed by one month of program wind-down.

6. Three new products from Fluidmaster---

This new bowl gasket for toilet fixture installations eliminates the messy wax ring!

http://www.fluidmaster.com/connect_products_7500.html

And, best of all, Fluidmaster releases two consumer products that could lead the way to the end of flapper failure due to those very damaging bowl cleaners! These “cleaning systems” eliminate the use of in-tank bowl cleaning tablets by dispensing the cleaners (8100) or the septic tank enzymes (8200) directly to the bowl through the toilet’s

overflow tube...the chemicals never touch the tank water or the flapper! Check them out at:

http://www.fluidmaster.com/care_products_8100.html

http://www.fluidmaster.com/care_products_8200.html

7. More on flappers - from Contractor Magazine-----

Read this piece describing the current problems with toilet flappers:

<http://www.contractormag.com/articles/newsarticle.cfm?newsid=105>

8. Water conservation and waterless urinals – also from Contractor Magazine---

A plumbing contractor speaks favorably about conservation and the role of waterless urinals:

<http://www.contractormag.com/articles/column.cfm?columnid=34>

Upcoming issues: Look for.....

- The results of the NAHB Research Center study of toilet fixtures....AND a comparison with the findings within Consumer Reports®
- The very latest on the Los Angeles SPS....big improvements on the horizon for 2003!
- First reports on water and energy savings from the Pre-rinse Spray Valve Replacement Program.

- And more.....

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