….a dialogue for California's water conservation community

January 2003 **Volume 2, No. 3**

Developed with funding and support from U.S. Bureau of Reclamation

Sponsored by the California Urban Water Conservation Council

Executive Director: Mary Ann Dickinson

Newsletter Editor: John Koeller

A special message from the editor-

The water conservation community lost an important friend last month with the passing of Professor Thomas Konen of the Stevens Institute of Technology, Hoboken, NJ. Tom was a very well-respected Research Professor for the Stevens Department of Civil, Environmental, and Ocean Engineering where, over the years, he and his team conducted numerous studies and tests of plumbing fixtures, devices, systems and equipment on behalf of both the plumbing industry and the water conservation community. Inventors, entrepreneurs, manufacturers and others often looked to Tom Konen and the Stevens Institute to evaluate their new products and ideas in an unbiased and professional manner.

In the most recent years, he was the Team Leader for the A112.19.2/19.6 standards team's efforts to update and improve the national standards for toilets and urinals. He was dedicated to his work on this committee and was an effective leader of this very difficult task. It is indeed unfortunate that Tom will not witness the final consideration and adoption of his work on this standard in 2003.

John Koeller

This issue…….

toilet fixtures were performance tested, 50 different fixture models. A side-by-side comparison of the NAHBRC results with the work of Consumers Union that was reported in the October 2002 issue of Consumer Reports® magazine!

- **An International Study: Follow-on testing about to begin…**
  More performance testing of the toilet fixtures may give consumers additional information for their purchase decisions.
- **Update to the Los Angeles SPS coming in January**
  The Los Angeles Department of Water and Power will soon release its updated list of approved toilet fixtures and flappers as well as some important changes to the specification.
- **Toto USA introduces a new electronic faucet design**
  Toto USA introduces the very unique EcoPower Electronic Faucet in eight different models. This product generates its own energy to recharge its internal battery. Requires neither hard wiring to building power, nor periodic battery replacement!
- **Vacuity bowl redesign**
  Briggs make needed changes to the bowl design of the Vacuity
- **Pre-Rinse Spray Valve Replacement Program…on track and saving water!**
  An early start and some excellent fieldwork by the CUWCC's installation contractor (Honeywell DMC Services, Inc.) yield greater-than-predicted water savings.
- **Pre-Rinse Spray Valve Specification**
  Minor corrections are made to the specification developed by the Food Service Technology Center and the CUWCC. One manufacturer (Fisher Manufacturing) has stepped up with a design that meets the stringent requirements of this specification.
- **Pravda reports on toilet wars!**

---

1. NAHBRC Testing of Toilet Fixtures is Complete

The work of the National Association of Home Builders Research Center (NAHBRC) is completed…and the report is published and available (see where below!). The question that some are asking is: How do the results of these tests compare with those published by Consumer Reports magazine in their October 2002 issue?

Before we make that comparison, however, it is important to understand that the two test programs were directed at different targets. While the NAHBRC testing focused primarily upon flush performance, the CR work involved fewer fixtures but was much broader in scope, covering such areas as clearing waste (flush performance), bowl cleaning, water exchange, noise, and drainline carry. A summary of the CR findings may be found in the last issue of the WaterLogue (Vol. 2, No. 2). Consult the October 2002 issue of the magazine for the complete report.

The fixtures studied at the two laboratories were as follows:

	Consumer Reports	NAHBRC
Total number of fixture models tested	28	50*
Number of manufacturers represented	8	16
Number of gravity-fed fixture models tested (includes vacuum-assist)	21	42

*-of the total of 50 fixtures, all but seven were locally purchased at retail establishments.

The 16 "best" gravity-fed performers (out of the total of 42 gravity-fed fixtures) in the NAHBRC study were as follows (in alphabetical order):

Amer Std Compact 2149.012
Briggs/Pro-Flo Abingdon III 4229
Briggs/Pro-Flo Altima III 4232
Briggs/Pro-Flo Vacuity 4200 (vacuum-assist)
Corona Orchid 8510
Crane/Universal-Rundle Atlas 4490/4295
Kohler Memoirs 4454-0/4254-0
Kohler Wellworth 3423, 3432
Mansfield Alto 130-160
Niagara Flapperless N2216
Niagara Turbo N2220
Sanitarios Azteca Lamosa Sahara 411
Toto CST703
Toto Drake CST744S
Toto Ultramax MS854114S, Ultimate Elong MS854114, Ultimate Round MS853113
Western Pottery Aris 822

Of these 16 superior fixtures, only five were included in CR's test program. On the other hand, six of the top seven gravity-fed fixtures in the CR test program were included in the NAHBRC testing. Three of the six ranked in NAHBRC's top 16.

For a side-by-side summary of the results of the two test programs, go to

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

A careful examination of this comparison shows that most of the toilet fixtures that NAHBRC found to be among the superior performers were never included in the CR test program.

To download a copy of the entire NAHBRC report, please visit any one of the following sites:

http://www.cuwcc.org/products_tech.lasso

http://www.savingwater.org/toilettest.htm

http://www.tampabaywater.org/Conservation/Conservation/conserv-bath.htm

In conclusion, BOTH test programs provide valuable information to the consumer and to water agencies looking to purchase product.

2. And there is more! Follow-on Testing About to Begin…

Approximately two-thirds of the fixtures tested by the NAHBRC have been packed up and delivered to the laboratory of Veritec Consulting, Inc. in Mississauga, Ontario, Canada, for further testing. A new testing protocol, developed by Veritec in consultation with other water-efficiency and plumbing fixture specialists, includes the use of soybean paste as a test media. Because it more closely replicates the "real-world" demand upon a toilet fixture, soy bean paste may provide test results that are more meaningful to water agencies and the consumer.

The primary element of the test program in Canada calls for "loading" the candidate fixtures with the test media (soybean paste and toilet paper) until they reach a point at which they no longer perform. Since this point will differ for each fixture in the program, it will enable comparison and ranking of the fixtures as to their "maximum" flush performance. This was not measured in the NAHBRC testing program.

A second element of the program is to determine the specific "dial-in" setting for the Fluidmaster 502 Bull's Eye® Adjust-a-Flush™ after-market replacement flapper that will maintain the original 1.6-gallons per flush (gpf) on each of these toilet fixtures. This particular flapper allows the consumer to select one of nine different settings governing flush volume. The Adjust-a-Flush™ and the other Fluidmaster products command a significant percentage of the replacement market, yet the current packaging by the manufacturer includes no guidance to the consumer as to which of the nine settings will produce 1.6-gpf.

Finally, the water exchange (or water change-out) that results from flushing each fixture will be measured using a brine mixture and conductivity meter. Current standards call for a 100 to 1 dilution of the water in the bowl (50 to 1 on the short flush of a dual-flush fixture in the U.S.). This test will assess the performance of fixtures in this important area.

For a more complete description of the test program and the a list of the 30 different fixtures to be tested, go to:

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

The current underwriters of this expanded testing effort are as follows:

- Canadian Water and Wastewater Association
- Canada Mortgage and Housing Corporation
- Region of Durham, Ontario
- Greater Vancouver Regional District, B.C.
- Calgary, Alberta
- Edmonton, Alberta
- Toronto, Ontario
- Seattle Public Utilities (providing fixtures)
- East Bay Municipal Utility District (providing fixtures)

  Note: additional sponsors are being sought – if interested in participating in this international effort, contact John Koeller – koeller@earthlink.net

3. Los Angeles Supplementary Purchase Specification (SPS) Update Coming

In January, the Los Angeles Department of Water and Power will be updating its list of 34 toilet fixture models tested and certified to its SPS. More are in process. In addition, the Department will announce some very important changes to the specification that may qualify even more fixtures. Stay tuned….

4. Toto® Introduces its EcoPower Self-Powered Electronic Faucet

According to Toto®, their new EcoPower electronic faucet is the "first sensor faucet that powers itself using just water." When the faucet is operated, water flows through an inline hydropower micro-turbine. As the turbine spins, energy is captured and stored in a rechargeable battery located within the fixture. The battery, in turn, provides the necessary energy to the electronic sensor.

Although the faucet is probably not a significant energy-saver, it does enable the easy retrofit of an existing conventional faucet with a sensor-operated fixture in a commercial setting.

For further information on this very unique product, contact Gunnar Baldwin, Toto USA:

Tel 800-726-0882
gbaldwin@totousa.com

5. Briggs Vacuity Bowl Redesign

The bowl for the Vacuity® vacuum-assisted toilet has been redesigned by Briggs to provide for improved bowl hydraulics with a more efficiently jetted rimwash. This overdue change should help to rid the Vacuity of its previous reputation for incomplete removal of waste (see Consumers Reports, May 1998).

Of particular note from the NAHBRC study is that, except for the two dual-flush fixtures with their European wash-down bowl design, the Briggs Vacuity had the largest diameter trapway of any of the fixtures tested at slightly more than two inches. It also ranked near the top in water surface area (water spot) at 75 square inches.

6. Pre-Rinse Spray Valve Replacement Program – 2500+ installs in 2002!

The California Public Utilities Commission (CPUC)-authorized and CUWCC-operated statewide pre-rinse spray valve replacement program is off to an excellent start! Thanks to Honeywell DMC Services, Inc. and the CUWCC's program implementation manager, Maureen Erbeznik, the goal of 2,500 installs in 2002 will be met! Nearly all of these installs are within the service area of the Metropolitan Water District, a co-funder of the program at $50 per valve. (The CPUC has authorized the funding of another $130

per valve from the investor-owned utilities' public goods charges.) Field technicians are just now beginning their northern California outreach to the food service industry.

For those of you who thrive on statistics, here are a few: 52 percent of those food service operations visited by an HDMC technician opted for a spray valve replacement. Those not participating in the program either don't use a pre-rinse spray valve (22 percent) or already have a low-flow valve installed (1 percent).

On the technical side, water and energy savings estimates are exceeding the original expectations, as we find that the old (removed) valves were operating at significantly greater than the assumed 2.65 gallons per minute (gpm) flow rate. In addition, the Fisher 2949 valve is functioning at something less than the specified maximum of 1.6-gpm. Testing of both the old and new valves at the FSTC will continue throughout 2003.

For further program implementation information, contact Maureen Erbeznik at: moerbeznik@attbi.com

For technical information, contact John Koeller at: koeller@earthlink.net

7. Pre-Rinse Spray Valve Specification

The pre-rinse spray valve specification employed to qualify low-flow valves for the statewide replacement program has been updated to incorporate some minor corrections (thank you, Simon Eching!). The corrected specification is posted for download at:

http://www.cuwcc.org/products_tech.lasso

To date, only one manufacturer has elected to submit their low-flow valve for qualification to the specification. That valve is the Fisher Manufacturing Model 2949, which is being used exclusively in the statewide program. Other manufacturers are welcome to submit their products for qualification to the Food Service Technology Center (FSTC) in San Ramon, CA.

8. And finally, Pravda looks at the "toilet wars"

Check this out - http://english.pravda.ru/fun/2002/10/10/38021.html

And more - http://loper.org/~george/trends/2002/Oct/82.html

To discuss any of the above or submit material for this newsletter, contact John Koeller at koeller@earthlink.net