

RESEARCH AND  
STRATEGY  
FOR THE DESIGN OF A

**DOMESTIC TOILET BRUSH**

INCLUDING IMAGES  
REFERENCES AND SOURCES

Since the 1970's studies have shown that bacteria from our faeces is all over our bathrooms,. It is not contained within the toilet, but spreads to every other surface, mostly because micro-organisms become aerolised in tiny water droplets when we flush the toilet, which then coat the rest of the bathroom. Now in a domestic environment, and as long a you use clean water for flushing, this is not such a problem because they are micro-organisms from yourself and your immediate family. And unless there is an infection present, not harmful.

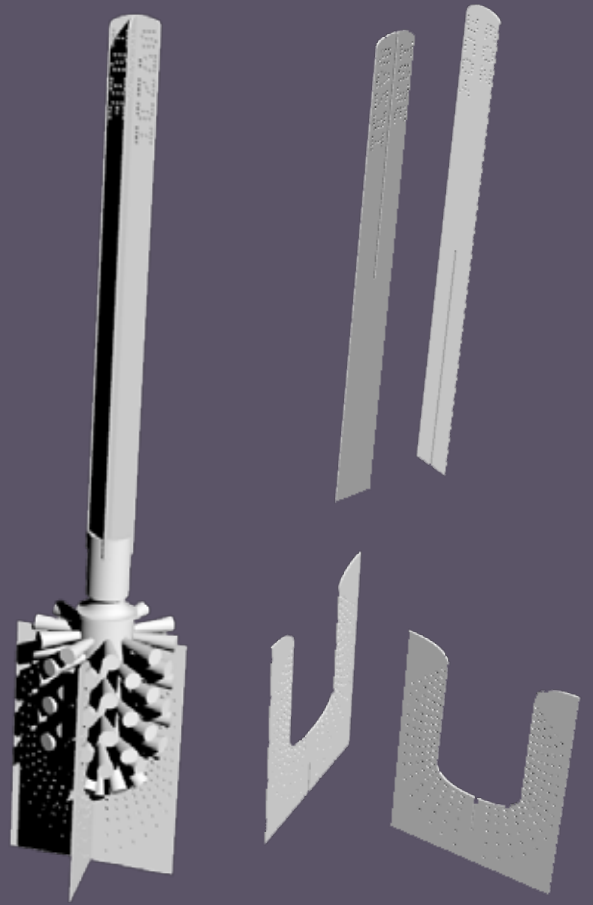
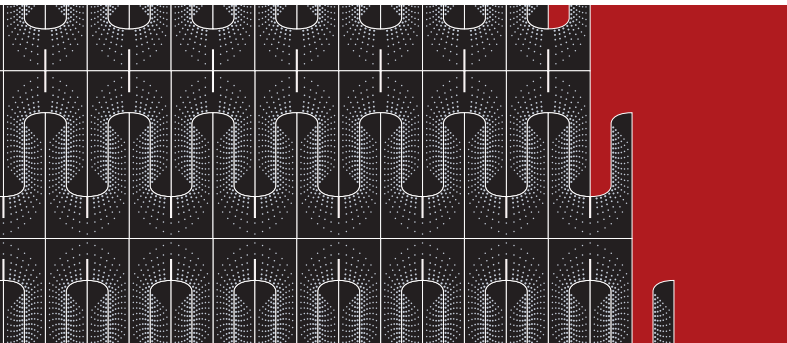
But it does help to reduce the levels of potentially harmful bacteria in the bathroom, and the best way to do this to to create dry surface. Because bacteria cannot live without water.

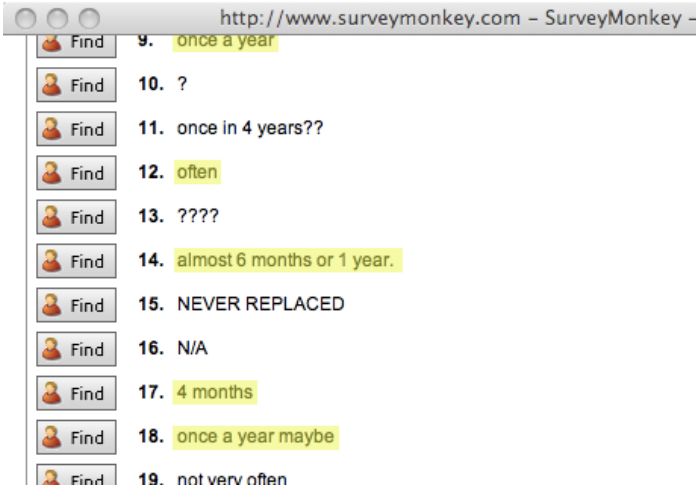




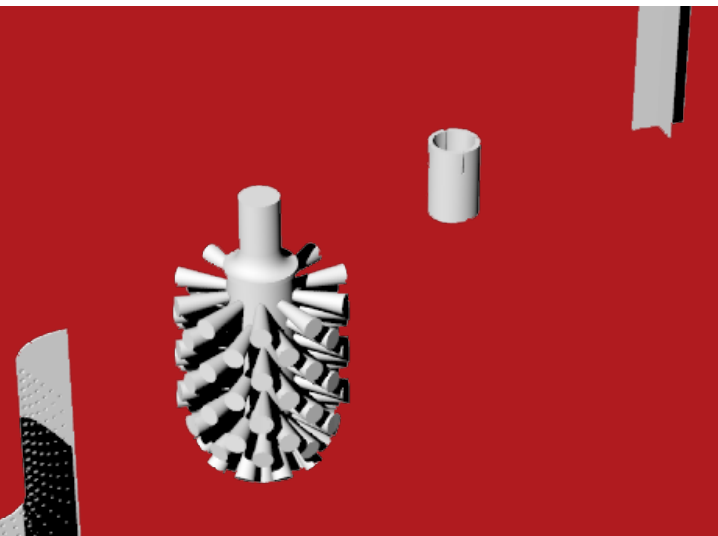
However, it is important that bathroom surface are regularly cleaned, without the use of disinfectant to prevent the buildup of bio-films, and with the use of disinfectant in the case of household infection. So this design has the ability to be dismantled and scrubbed clean. Nothing is hidden, everything is flat and this discourages the “squirt a bit of bleach” method of cleaning. Improved cleanliness through increased interaction.

The use of a sheet metal design means it can tessellate as space-filling pattern - reducing material waste during manufacture.

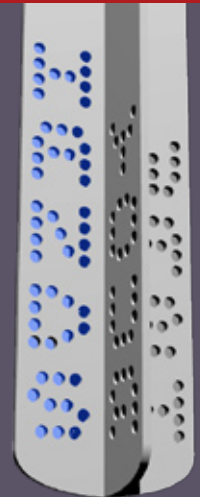
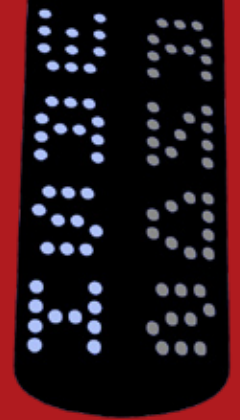
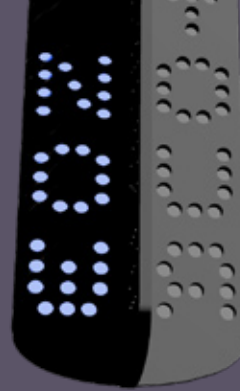




One of the biggest sustainability problems with toilet brushes is that they are highly disposable. An online survey that indicates many people replace their brush once a year and as often as once every six months. They are difficult to visually clean and because of pre-conceptions about hygiene they go straight into the bin, even though some can be recycled or cleaned. To minimize this problem, a replaceable brush head was chosen, and long-lasting, cleanable and ultimately recyclable metals were chosen for the handle and holder. Through the use of adaptors, one can attach different cleaning heads to suit toilet bowl design, individual preference (black or white) and changes in brush technology in the future.



We perceive the handle of a toilet brush is possibly the most important part. Because its the part we touch. We therefore somehow hope that this is cleaner and more hygienic than other toilet surfaces, even though this is not really possible. Making contact area of the handle as small as possible plays with this pre-conception. But this is a trick to send a message on what's really important - the act of hand-washing. Hand-washing is a critically important method to prevent the transfer of bathroom germs to other people or to the food chain. So while users are becoming curious about that form and feeling of the brush handle, they may also come to notice the message hidden within: **NOW WASH YOUR HANDS**. It may take them a while to order the word and figure it out, but thats great because the whole time they have been standing in a bathroom holding a toilet brush ;)



## SELECTED PRIMARY RESEARCH:

Phone conversation with Professor Francois Clemens, Sanitation Engineer, TU Delft  
TOPIC: Evaporation and its effects on bacteria and other pathogens. Most modern large scale human waste processing include evaporative techniques.

Meeting and interview with Professor Frans van Knappen, Microbiologist, Utrecht University, The Netherlands, 14/03/2008, recorded on digital video. TOPIC: Methods, materials for hygienic design.

Online survey written by the author and conducted from February 2nd, via SurveyMonkey.com and ThePoopReport.com.

## SELECTED REFERENCES.

Survival of Salmonella in bathrooms and toilets in domestic homes following salmonellosis.  
Barker J, Bloomfield SF.  
Pharmaceutical Sciences Institute, School of Life and Health Sciences, Aston University, Birmingham, UK.

Think before you flush or brush  
Sarah Tan  
<http://serendip.brynmawr.edu/exchange/node/1839>

4. J Deacon et al., "The Microbial World: Biofilms," [online] (Edinburgh, Scotland: Institute of Cell and Molecular Biology, 2003) [cited July 2005]; available from Internet: <http://helios.bto.ed.ac.uk/bto/microbes/biofilm.htm>.

