

# Delhi Science Forum

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To

**Shri Birender Singh**  
**Minister of Rural Development, Panchayati Raj, Drinking Water & Sanitation**  
**Government of India**  
**C Wing, 4th floor Paryavaran Bhawan**  
**CGO Complex Lodhi Road**  
**New Delhi – 110003**

DSF/Flush Std/2015

6 April 2015

Subject: Petition for water-saving Water Closet (WC) Flushing Standards

Respected Shri Ch. Birender Singh ji,

You are of course intimately aware of the crisis India faces as regards water availability and the acute problem of drinking water. In this connection, we wish to draw your attention to a specific problem resulting in enormous wastage mostly of treated water, and one particular solution that is simple to implement, has low cost and would save a huge amount of water annually.

Water Closet (WC) Flushes in Indian cities and towns literally flush down the drain large quantities of mostly treated water daily. The relevant Indian Standard (IS:774 of 2004 amended in 2006) calls for maximum 10 litres/flush and 6 l/f for the low flush option. This may amount to around 20% of water supply in large cities, especially as we approach the goal of universal piped water supply and sewer connectivity. This reflects antiquated technology used in WC Flush systems made in India linked to the relevant Standard cited above.

In contrast, WC flushing standards in the EU, USA and many other countries mandate a maximum of just 6 litres/flush and the EU even has 4 litres/flush options in its regulations (please see the attached Note for details and additional information).

This Petition requests that, under your able leadership, your Ministry take necessary steps for India to adopt a revised water-saving WC flushing standard of maximum 6 litres/flush (and 3 l/f for low-flush option) and make it mandatory that all WC cistern and flush systems sold anywhere in India should conform to the new standard within, say, 3-5 years.

Shifting to the proposed water-saving WC flushing systems fits well with Government of India's Swachh Bharat Abhiyan initiated by Prime Minister Shri Narendra Modi and which seeks to promote better sanitation as well as greater public awareness and participation in making this happen.

Making such a revised water-saving flushing standard mandatory in India will not be a big burden on manufacturers, nor will it impact on India's development agenda except in a positive direction. Since the technology has been available for many years abroad, even decades in the US, manufacturers in India can easily make the transition, and industry associations and Government of India can play a facilitating role if necessary.

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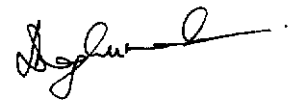
Rough estimates suggest that water-saving WC flushing systems could reduce water use in WCs by around 40% and total water use in cities by around 8%-10%, even allowing for moderate coverage of piped water supply to households and connection of household latrines to sewer systems (see attached Note). This measure would conserve scarce water resources and also reduce the burden on water treatment plants. It will also substantially reduce the volume of domestic sewage, thus also reducing the load on sewage treatment plants. Additionally, the new standards and government efforts to enforce it will inculcate greater public awareness of water conservation leading to additional water saving measures.

It is recognized that bringing about new standards and implementing them would likely involve several Ministries and Departments. Copy of this Letter is being sent to the Prime Minister's Office for coordination purposes and to the Ministry of Consumer Affairs under whose aegis the Bureau of Indian Standards functions. Ministries of Commerce & Industry, Urban Development, Water Resources and Environment may also play some role at the appropriate time, as may the Bureau of Energy Efficiency and the Niti Ayog. Government may choose how best to coordinate this effort.

Our team would be happy to meet with you and your officials for making a more detailed presentation or provide any clarifications that you may require.

In anticipation of your forward-looking vision and early positive action by your Ministry,

Respectfully yours



**D.Raghunandan**

cc:

- 1) Principal Secretary to Prime Minister  
Prime Minister's Office  
South Block, Rasina Hill, New Delhi
  
- 2) Hon'ble Minister for Consumer Affairs, Food & Public Distribution  
Krishi Bhavan  
New Delhi

**NOTE: Attachment to DSF Petition to Minister of Drinking Water & Sanitation**

**Towards New Water-saving Water Closet (WC) Flushing Standards in India**

1. It is well known that India is a borderline “water scarce” country as per international norms. Per capita availability of water has shrunk to less than one-third of what it was at the time of Independence. Delhi along with most metropolitan and other cities face water crises of varying proportions, particularly in summer months. Efforts at popularizing social messaging to save water continue, but there is little evidence of decrease in water use at household level. While energy saving has attracted much attention and many governmental steps have been taken, from regulation to incentives to mandatory measures, water-saving has not acquired similar importance as a national agenda.
2. This Note puts forward one effective water-saving measure that can be implemented without much difficulty and at relatively low cost, and which will result in substantial and demonstrable reduction of water use in a very short period of time, namely, introduction of a revised water-saving standard for water closet (WC) or toilet flushing systems allowing for maximum 6 litres/flush (or 3 l/f for low flush), and making such water-saving WC flushing systems mandatory in a given time-frame of, say, 3-5 years.
3. At present, the water closet (WC) flushing standard in India is 10 litres/6 litres per flush (full and low flush respectively) according to IS 774: 2004 (as amended in September 2006) “Flushing Cisterns for Water Closets and Urinals – Specification.”<sup>1</sup> To illustrate the enormous wastage of water involved (which is treated water in most Indian cities), in Delhi about 200 litres of water are literally flushed down the drain by each household daily amounting to a staggering 348 mld (million litres per day), or about 20% of total water distributed!<sup>2</sup>
4. This is very high and reflects the poor technology being used in Indian WC/urinal flushing systems, and the high applicable standards for maximum water used per flush.
5. Much lower maximum flushing volumes are mandated in the US, Europe and many other countries where stricter standards and technologies for water-saving flushing systems have been prevalent for several decades. The current European Commission (EC) maximum permissible full flush volume is 6 litres per flush (l/f).<sup>3</sup> In fact, the EC’s EcoLabel voluntary guidelines on certified eco-efficient goods (including water closets) has sought to inject additional efficiencies since 2010 seeking to improve water closet flushing standards to 4 l/f.<sup>4</sup>
6. In the USA, starting from 1970 due to aging water and wastewater utility infrastructure and shrinking water supply, utilities encouraged manufacturers to design and sell toilets that could flush less water than the 5-7 gallons per flush (19-26 l/f) common at that time<sup>5</sup>. By the late 1980s, all major toilet manufacturers produced WCs that flushed 1.6 gpf (6 l/f).<sup>6</sup> The US Congress enacted national efficiency standards for plumbing products in 1992 through the Energy Policy and Conservation Act,<sup>7</sup> which were codified in a 1998 final rule (Department of Energy, 1998),<sup>8</sup> based on the industry standards published by the American Society of Mechanical Engineers (ASME).



7. This Petition recommends that India too adopt revised/new standards allowing maximum permissible flush volume of 6 litres/flush (3 l/f for low flush). Manufacturers can be given, say, 3-5 years to completely switch over to new models conforming to the revised standards, after which period no WC using over 6 l/f should be permitted to be sold anywhere in the country. Industry should have no problem acquiring water-saving WC flush technologies, since the same has been available abroad for many years. Relevant industry associations and government departments could play a facilitating role if necessary.

8. Making such a standard mandatory in India will not be a big burden on industry, nor will it impact on India's development agenda except in a positive direction. The proposed mandate for water-saving WC flushing systems fits well into Government of India's Swachh Bharat Abhiyan which seeks to promote better sanitation as well as public awareness and participation in making this happen. Water-saving WC flushing systems will reduce water use in WCs by around 40% and total water use by around 8%-10%, thus not only conserving scarce water resources but also reducing the burden on water treatment plants. This will also substantially reduce the domestic sewage load, thus also reducing the load on sewage treatment facilities of states/municipal bodies. Additionally, the new standards and government efforts to enforce it will inculcate awareness of water conservation in the general public which can be leveraged for additional water saving measures.

9. It is recognized that bringing about new standards and implementing them will involve several Ministries and Departments. Government may choose how to coordinate this effort and which Ministry would take the Nodal responsibility. This Petition is being sent to the Ministry of Drinking Water & Sanitation because it seems best placed to initiate legislation, which Ministries of Industry, Urban Development, Water Resources and Environment may play requisite roles at the appropriate time. The Bureau of Energy Efficiency and the Niti Ayog may also be involved as relevant. Copy is being sent to the Prime Minister's Office for coordination purposes. Copy is also being sent to the Chief Minister of GNCT Delhi and Lt. Governor of Delhi for their information and action.

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<sup>1</sup> <https://law.resource.org/pub/in/bis/S03/is.774.2004.pdf>

<sup>2</sup> At an average 4 flushes per person per day amounting to 40 Litres/person/day or 200 litres/day for the average household of 5 persons, for, say, around 60% or 2 million out of 2.9 million households in Delhi with piped water and connected to the sewer system.

<sup>3</sup> [http://www.parlament.gv.at/PAKT/EU/XXIV/EU/12/22/EU\\_122275/imfname\\_10412305.pdf](http://www.parlament.gv.at/PAKT/EU/XXIV/EU/12/22/EU_122275/imfname_10412305.pdf)

<sup>4</sup> [http://susproc.jrc.ec.europa.eu/toilets/docs/Scoping%20document\\_draft.pdf](http://susproc.jrc.ec.europa.eu/toilets/docs/Scoping%20document_draft.pdf)

<sup>5</sup> Osann, E. R., & Young, J. E. (1998). Saving Water, Saving Dollars: Efficient Plumbing Products and the Protection of America's Waters.

<sup>6</sup> *Ibid.*

<sup>7</sup> Energy Policy Act of 1992 (42 U.S.C. § 13201); <http://www.usbr.gov/power/legislation/epa92.pdf>

<sup>8</sup> <http://www.ferc.gov/legal/maj-ord-reg/epa.pdf>