

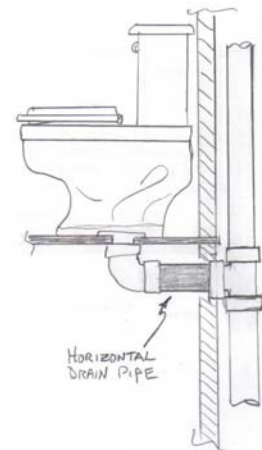
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Are Water Efficient Toilets Leading to Blocked Residential Drains?

It seems like we are asked this question every month or so. Some people are concerned that the lower flush volumes associated with high-efficiency toilets¹ (HETs) might lead to blocked drains in their home.

The quick answer is “No, the use of HETs will not lead to blocked residential drains” – and here is why...

1. All certified toilet models – **including all 6-, 4.8-, and 3-litre models (1.6, 1.28, and 0.8 gallon models)** – must pass the exact same set of tests to become certified, including the drainline carry test (these tests are not made easier for toilets that flush with less water). These tests are conducted by nationally accredited labs such as IAPMO (International Association of Plumbing & Mechanical Officials) or CSA (Canadian Standards Association).
2. Testing was completed in 2005 to specifically evaluate how well water-efficient toilets could transport waste (*Evaluation of Water-Efficient Toilet Technologies to Carry Waste in Drainlines*, B. Gauley & J. Koeller for Canada Mortgage and Housing Corporation or CMHC). This study projected that a 3-L flush volume (the least flush volume of any certified toilet model currently sold in North America) would be able to transport waste a distance of approximately 8m (26 feet) with a single flush. A waste transport distance of 8m is more than sufficient for residential applications, since most toilets are installed next to a wall and less than half a metre (20-inches) from a vertical drain pipe or stack (see sketch to right).
3. Residential drain pipes typically include significant volumes of supplemental flows from showers, baths, and clothes washers to augment the transport of waste flushed in the toilet.



And, finally, the most important piece of evidence – there have been hundreds of thousands of HETs installed in North American homes over the past 10 years (including models flushing with as little as 3 litres or 0.8 gallons) and we have yet to hear of cases where the low flush volume resulted in blocked drain piping. However, the physical condition of a drain pipe may result in stoppages unrelated to the flush volume of the toilet fixture. As such, caution should be taken before installing HETs in locations with degraded, aging, or poorly installed drainline systems, e.g., insufficient drainline slope, dips and sags, pre-existing buildup of solids, root infestation, etc.

As water efficiency advocates, we fully support the use of water-efficient toilets with flush volumes of as little as 3 litres (0.8 gallons) in “residential-type” installation, such as in homes, apartments, hotels, motels, etc.

Until further studies are completed of drain systems in larger buildings, however, we recommend caution in the use of HETs in “non-residential-type” installations such as factories, schools, warehouses, etc., because these sites typically have 4-inch diameter pipes (vs. 3-inch in residential installations) with a flatter slope (1% vs. 2% in residential installations), and often little in the way of supplemental water flows.

We would be happy to answer any questions you may have on the above.

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¹ High-efficiency toilet (HET): a toilet with an effective flush volume of 4.8 Litres (1.28 gallons) or less.