



Jim Dulley

Thank you for your interest in writing to me about selecting the best new toilet for your home. The maximum allowable water usage by law, is 1.6 gallons per flush (gpf).

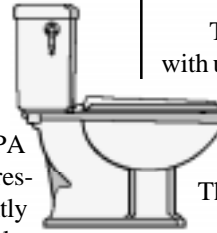
Older toilets typically used from 3.5 to 7 gpf and many house still have these old models.

The lowest-cost new toilets use the same gravity flush action as the older higher-volume toilets. With the lower water usage, these do not always flush as well as the older toilets do. They may also



One-piece Toilet

not self clean the bowl sides as well. Some of the better flushing models are Eljer Berkeley and the Mansfield Elderly. Pressure-assist toilets provide a more effective flush, but they are somewhat noisier than a gravity toilet so you may not want to install one in a master bathroom or near bathrooms. The Gerber Ultra Flush, Crane Economiser and the American Standard Cadet PA are excellent models. Pressure-assist models are slightly more expensive in general than gravity models. The new FloWise models by American Standard use only 1.28 gpf. These use just slightly more water than some of the dual flush



Two-piece Toilet

Standard use only 1.28 gpf. These use just slightly more water than some of the dual flush

models from Kohler which use only 1.1 gpf on the low-flow flush. The prices of standard 1.6 gpf toilet range from under \$100 to more than \$900 for the fancy one-piece models.

There are very low-water usage toilets with unique flushing and non-flushing designs. These are described on the following pages. These are often used in areas with limited water. These toilets are generally more expensive than standard type of toilets. Some of the composting toilets

retail for more than \$1,000. The incinerating toilets, which use heat to destroy the wastes can cost more than \$1,500.

*Jim*

**Toilet Water Usage Costs\***

Combined Water and Sewage Rates		Annual Water & Sewer Cost for Toilets — \$			
\$/100 cu. ft.	\$/1,000 gal.	1.6 gpf	3.5 gpf	5.5 gpf	7.0 gpf
1.00	1.34	11.72	27.40	43.08	54.79
1.75	2.34	20.46	47.84	75.23	95.67
2.50	3.34	29.20	68.28	107.38	136.56
3.25	4.34	37.94	88.72	139.52	177.45
4.00	5.34	46.76	109.38	172.00	218.76
4.75	6.34	55.50	129.82	204.15	259.64
5.50	7.35	64.23	150.27	236.30	300.53
6.25	8.35	73.07	170.92	286.76	314.84
7.00	9.35	81.81	191.36	300.90	382.73

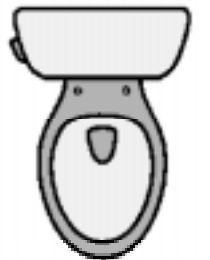
\* Based on a family of four, four flushes per person per day.

**Shapes of Toilets**

Round Front



Elongated Bowl



Toilet bowls are generally offered in two shapes. Round-front bowls require less space and are less expensive than elongated bowl models. When space permits, a toilet with an elongated bowl is recommended. The extended rim length is designed for comfortable use by adults.

**Selected Manufacturers of of Low Water Usage Toilets**

**AMERICAN STANDARD**, PO Box 6820, Piscataway, NJ 08855 - (800) 442-1902 www.americanstandard-us.com

type - gravity flush • pressure assist

water usage - 1.28 gpm • 1.6 gpf

styles - one-piece • two-piece

shapes - round front • elongated bowl

colors - black • bone • candlelight • daydream • fawn beige • light mink • linen • loganberry • rain forest • rhapsody blue • silver • shell • spring • warm white • white • custom blend • details can be handpainted on toilets • can be glazed in almost any color with a sample (fabric swatch, a tile or paint sample)

features - The FloWise models use only 1.28 gpf. Several of the toilets have a liner to reduce tank sweating. Some of the toilets have the "Rise -and-Shine" toilet seat with a hinge that allows for quick removal and reattachment of the seat and cover. This allows for easy cleaning. Some of the toilets have a concealed trapway with smooth sides. The smooth sides make cleaning a toilet a lot easier. There are sleek low-profile designs and also extra height toilets that meet handicap requirements. The "Repertoire" has a decorative, sculpted backsplash on the tank lid. An optional polished brass trip lever is available for several of the toilets. The "Lexington" has color-matched side push-button actuators to match the contemporary design of these toilets.

**BIOLET**, PO Box 548, Newcomerstown, Ohio 43832 - (800) 524-6538 www.biolet.com

type - composting

water usage - 0.0 gpf

colors - white

shapes - round front

features - The "Biolet" is a self-contained composting toilet system where waste is collected, excess liquid is evaporated and solid materials decomposed to a soil-like, hygienically safe product without producing any unpleasant odor. Uses the process of aerobic decomposition. Designed to maintain a warm and humid environment inside the unit, encouraging biological breakdown of the waste through scavenging action of the aerobes. Models are available with or without an automatically operated mixing system and a patented aeration system. The toilet reduces the volume of the waste entering the system by 90 percent leaving only 10 percent of an end-product of compost, which can be recycled back into the soil without polluting the environment. The toilets are equipped with a compost cover that hides the waste from view and opens automatically by sitting on the toilet. There is also a non-electric model available for use in locations where electrical power is not an option. Toilets come with a limited lifetime warranty on body and a three year limited warranty on parts.



The compost in the tray is easy to remove and empty

**BRIGGS**, 4350 W. Cypress St., Tampa, FL 33607 - (800) 888-4458 www.briggspumbing.com

type - gravity flush • vacuum assist

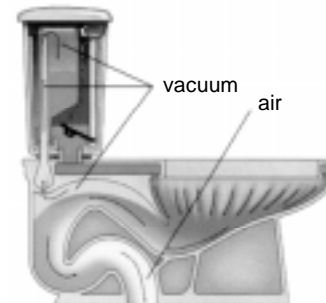
styles - one-piece • two-piece

colors - biscuit • elegant black • blush • bone • royal silver • shell • soft blue • spring mist • white

features - The "Vacuity" is a vacuum-assisted toilet and it comes with instructions for adjusting the flush volume. See page four for description of how vacuum assisted toilets work. Full five-year performance warranty on toilets. It has a uniquely made swan neck trapway with two loops. The second loop is not an actual trap, it opens to the drain and vent when the flushing cycle is completed. Available in extra height to meet ADA handicap requirements.

water usage - 1.6 gpf

shapes - round • elongated bowl



**The Vacuity by Briggs**

**CLIVUS MULTRUM, INC.**, 15 Union St., Lawrence, MA 01840 - (800) 425-4887 (978) 725-5591

www.clivusmultrum.com

type - composting

shapes - round front

features - Uses natural biological decomposition to convert toilet wastes into a small amount of safe, stabilized end-product. Near the top of the waste mass, oxygen-using soil organisms, including bacteria and molds, rapidly break down the substances that are readily biodegradable, releasing heat, CO<sub>2</sub>, and water vapor. You can assist it by adding a little high-carbon material such as coarse sawdust, woodshavings or dry shredded leaves. The process is enhanced by the red compost worm *Eisenia Foetida*, which is added a few months into the process. It is a no-discharge system — the end products stay in the tank until they are taken out — there is no seepage of effluents that can cause pollution. The composter has a sloping floor — everything slides slowly toward the compost removal chamber. A small fan draws air through the system. This air flow promotes the decomposition process and keeps the bathroom odor-free. The waterless toilet has a constant draft down the toilet, whenever the lid is open it functions as a ventilator for the bathroom also keeping the bathroom odor-free. You can also use an ultra-low flush toilet or urinal. Several models available. See page four for descriptions of composting systems and tanks.

water usage - 0.0 gpf

colors - bone • white

**CRANE PLUMBING**, 1235 Hartrey Ave., Evanston, IL 60202 - (800) 877-6678 www.cranepumbing.com

type - gravity flush • pressure assist • vacuum assist

styles - one-piece • two-piece

colors - almond • biscuit • blush • bone • skylight blue • seafoam green • sterling silver • tender grey • white • wild rose • teal • red • raspberry • navy blue • black • cultured marble colors available on some products

features - Some tanks available with an optional insulated tank liner to prevent sweating of the tank. There are low-profile models and tall heights for physically handicapped people. Some models have smooth-sided trapways for a finished appearance — makes cleaning easier. There are many designs of toilets to choose from, classic, country, art-deco, contemporary, traditional, etc.

water usage - 1.4 gpf • 1.6 gpf

shapes - round front • elongated bowl

**ELJER PLUMBINGWARE**, 14801 Quorum, Dallas, TX 75254 - (800) 423-5537 (972) 560-2000 www.eljer.com

type - gravity flush • pressure assist

styles - one-piece • two-piece

colors - dusty rose • glacier blue • island sea • natural • onyx • peach bisque • platinum • ruby • sage • sandalwood • oxford blue • verde • white • zinfandel • silk • almond

features - The "Savoy" is available with an insulated tank that is used in colder climates to keep the tank from sweating. The "Triangle Emblem" with a unique triangular-shaped tank fits into the corner to conserve space. Flush actuators are available in polished chrome, polished gold, antique brass or polished brass. There are many designs to choose from — traditional, contemporary and European designs. There are low-profile models or tall models that are ADA compliant. The "Complete Toilet in a Box" is easy to install and comes with all necessary components.

water usage - 1.6 gpf

shapes - round front • elongated bowl

**GERBER PLUMBING**, 4600 W. Touhy Ave., Lincolnwood, IL 60712 - (847) 675-6570 www.gerberonline.com

type - gravity flush • pressure assist

styles - one-piece • two-piece

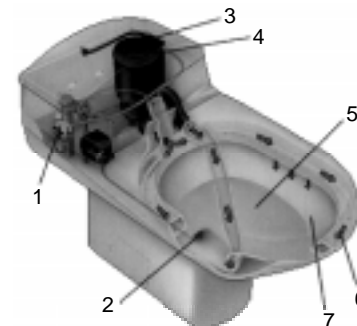
colors - almond • avocado • Bahama pink • bone • British biscuit • citron yellow • dawn blue • English rose • golden yellow • Jamaican beige • powder blue • regal blue • Sahara gold • blush • seashell • silver • silverado • Spanish gold • soft gray • wheat

features - The "Ultra Flush 21-302" pressure assisted model creates a very effective flush. There are also several handicapped/elderly toilets to choose from.

water usage - 1.6 gpf

shapes - round front • elongated bowl

**Power Lite by Kohler**



**KOHLER CO.**, 444 Highland Rd., Kohler, WI 53044 - (800) 456-4537 www.us.kohler.com

type - gravity flush • pump assist

styles - one-piece • two-piece

colors - almond • biscuit • black • desert bloom • ice grey • innocent blush • Mexican sand • navy • seafoam green • skylight • sunlight • thunder grey • timberline • white • wild rose • sandbar • tea green • earthen white

features - The "Ingenium" siphon jet flushing system offers sustained rinsing action that cleans the bowl with a quiet, controlled flush. Trapways, valves and gravity-fed siphon jet are designed to maximize flushing power and efficient water usage. The pump-assisted models, "Power Lite" have twin touch actuators on the toilet tank. Press the small point for a 1.1 gallon flush for liquid waste and the large point for a full 1.6 gallon flush for solid waste. The Pressure Lite model uses 1.4 gpf. The "Peacekeeper" toilets use a magnetic sensor that operates on two alkaline D-cell batteries. When you lift the toilet lid, a magnetic signal is created between the magnet in the lid and a sensor in the tank. When you close the toilet lid, the magnetic signal is broken and the toilet flushes. A factory-installed foam lining is optional on many models to help minimize sweating.

water usage - 1.1 • 1.4 • 1.6 gpf

shapes - round front • elongated bowl

- 1) Dual flush actuator — 1.1 gallon or 1.6 gallon flush
- 2) 2 1/8", 100% glazed trapway
- 3) .2 hp pump and motor
- 4) Double seal on pump system
- 5) 8 1/2" x 11" water surface
- 6) Individually punched rim holes
- 7) Seamless bowl interior

**MANSFIELD PLUMBING**, 150 First St., Perrysville, OH 44864 - (419) 938-5211 [www.mansfieldplumbing.com](http://www.mansfieldplumbing.com)

type - gravity flush • pressure assist

styles - one-piece • two-piece

colors - almond • antique lace • black • classic bone • Caribbean shell • classic silver • dawn blush • harbor gray • heritage blue • raspberry • white

features - The "700" series is available with a chrome, polished brass or antique flush button on the side of the tank. The "Quantum" series is available in an elderly/handicap height. It is available in left-hand or right-hand flush actuation.

water usage - 1.5 gpf • 1.6 gpf

shapes - round front • elongated bowl

**MICROPHOR**, 452 E. Hill Rd., Willits, CA 95490 - (800) 358-8280 (707) 459-5563 [www.microphor.com](http://www.microphor.com)

type - compressed air-assist

styles - one-piece

colors - bone • grey • stainless • white • need to contact factory for special colors

features - The "Microflush" units use only two quarts of water per flush and operates on compressed air. Easy to operate — simply push the flush button or lever, which can be mounted on the toilet or in the wall. Reduce odors by using fresh water and a flapper seal between the toilet and your holding tank. See page four for an illustration and a description on how the toilet operates.

water usage - 0.5 gpf

shapes - round front • elongated

**RESEARCH PRODUCTS/BLANKENSHIP**, 2639 Andjion, Dallas, TX 75220 - (800) 527-5551 [www.incinolet.com](http://www.incinolet.com)

type - electric incinerating toilet system

colors - stainless with optional lid colors — blue • rose • sand • white • yellow

features - The "Incinolet" uses electric heat to reduce human waste to a clean, non-polluting ash — about one tablespoon. Ash is germ-free and can be thrown out with the garbage. It uses no water and drains nothing out. The incineration cycle starts by pushing the button. Both the heater and the blower come on when the button is pushed. The heater alternates off and on for a preset period of time, then the blower continues on until the unit has cooled. Outside surfaces remain cool to touch even when operating. Simple installation with vent line and power hookup. Most models draw 15 amps @ 120VAC. See page four for illustrations.

water usage - 0.0 gpf

**SUN-MAR CORP.**, 600 Main St., Tonawanda, NY 14150 (888) 341-0782 [www.sun-mar.com](http://www.sun-mar.com)

type - composting

shapes - round front

features - Waste entering the toilets is over 90% water content, it is evaporated, and carried back to the atmosphere through the vent system. The small amount of remaining material is converted to a useful fertilizing soil by natural decomposition. How the system works — oxygen, moisture, heat and organic material are needed to allow minute natural organisms to transform the waste to fertilizing soil. Oxygen is provided by drum rotation and by the ventilation system. Moisture is obtained directly from human waste. Organic material in the form of peat moss is added manually, since this organic carbon is absorbent, holds oxygen, and is cheap and readily available. Heat is generated by the compost itself, assisted by the heating element (on electric models). Microbes are contained in the rich top soil which is added to the compost. Central composting toilet systems and self-contained toilet systems are available.

water usage - 0.0 gpf • one pint per flush

colors - bone • white

**TOTO**, 1155 Southern Rd., Morrow, GA 30260 - (888) 295-8134 [www.totousa.com](http://www.totousa.com)

type - gravity flush • pressure assist

styles - one-piece • two-piece

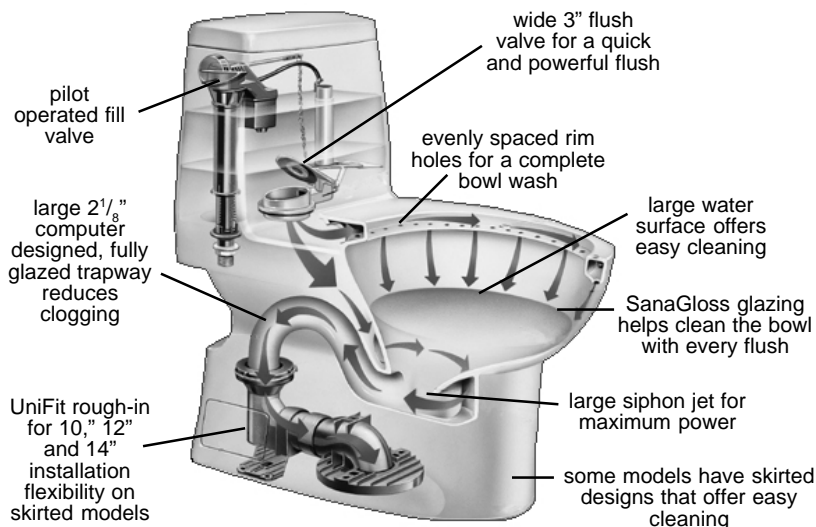
colors - bone • cotton • ebony • gray • Sedona beige • colonial white

features - Some models feature the "Power Gravity" flushing systems that have 3" flushing valves for high volume flushing. Also have 2<sup>1</sup>/<sub>8</sub>" glazed trapway and a siphon jet system that assists performance. Comes with a five year warranty. Many styles to choose from — contemporary low profile or sleek high profile designs. The "SoftClose" toilet seat is made of high-impact plastic that is designed to reduce child injury and toilet seat slam. The seat and lid uses a built-in hinge system, which lowers the seat down to the bowl quietly and gently. The "Jasmin" multifunctional seat features front and rear warm water cleansing with a massage option. It also includes a SoftClose seat and an automatic air deodorizer. These features are all controlled by a convenient remote control. Toto also offers a portable washlet with two different wash modes, regular and soft.

water usage - 1.6 gpf

shapes - round front • elongated bowl

### Toto Toilet System



### Compact Composting Toilet by Sun-Mar

The Compact is a low profile unit that is designed with a "Bio-drum." The drum is small at the front and larger at the back. The "Bio-drum" handle which is recessed into the body of the unit, allows you to mix and aerate the compost.

The Compact differs from Sun-Mar's Excel model in that all three drum chambers are smaller. This makes the Compact well suited for light residential or light to medium cottage use.

A 2" vent stack attaches to the rear of the unit. A 1/2" emergency drain offers protection against heavy use.



**Composting Toilets and Tanks by Clivus Multrum**

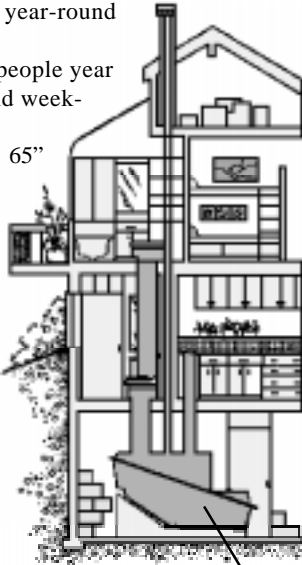
- Made from 100 percent recycled polyethylene
- Can be installed in a basement or on a floor below the bathroom. If the house doesn't have a basement, the composter tank can be installed in an underground enclosure adjacent to the house.

**M1 Composting Tank**

- M1 is designed for vacation houses or year-round dwellings.
- 15 uses per day, 6000 uses per year, 3 people year round or 6 to 8 people for vacation and weekend use.
- Dimensions — 56" high x 33" wide x 65" long
- Liquid storage — 40 gallons
- Can be installed with one dry toilet and one ultra low flush toilet.

**M2 Composting Tank**

- M2 is designed for year-round dwellings.
- 25 uses per day, 9000 uses per year, 5 people year round or up to 10 people for vacation and weekend use.
- Dimensions — 66" high x 33" wide x 65" long
- Liquid storage — 40 gallons
- Can be installed with one dry toilet and two ultra low flush toilets.



sloped composting tank

**Types of Toilets**

**Composting toilet** — They are basically a large, warm, externally vented container with aerobic microbes that live inside and break down the waste materials. At the end of the process, a dry, fluffy odorless compost is left which doesn't smell. All models connect the unit to a ventilation pipe leading outside the home to exhaust odor. After about two to six months it can be returned to the soil as fertilizer. See details of Bioilet composting toilet system on page three.

**Compressed air-assisted** — See illustration and description to the right and below.

**Gravity-flush** — The water in the tank is released, creating a siphon in the bowl. Water is forced quickly to the trapway by rim jets positioned at the front of the bowl for thorough flushing and drainline carry. See illustration above.

**Incinerating** — See illustration and description to the right.

**Liquefier** — A unique system called "hydraulic attrition" liquefies solid human waste and toilet paper. This and a powerful velocity jet rinse enables the toilet to clean the bowl and carry the waste through the waste pipes to the sewer with only 2.3 quarts of water. Requires electricity to run.

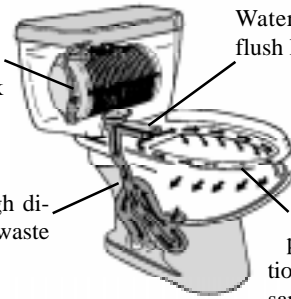
**Pressure-assisted** — A tank within the tank. Incoming water compresses the air. When released, it creates a pushing action, complete in about four seconds. See illustration above.

**Pump-assisted** — Uses a .2 hp factory-installed pump under the tank to blast water into the bowl. Provides a strong and uniform flush, regardless of incoming water pressure. Requires electricity to run. Requires electricity to run. See diagram on page two of the "Power Lite" by Kohler.

**Vacuum-assisted** — When the flush lever is depressed to activate the flush the falling water in the inverted plastic container pulls a vacuum in the area above it. The vacuum force is transmitted through the interconnecting tube to the first loop of the trapway. The initial surge of water moving into the toilet bowl blocks the air passage of the lower or second trapway loop to ensure containment of the vacuum. See "Vacuity" diagram on page two.

**Pressure-assisted Toilet**

Water enters tank under normal household pressure compressing air in tank and charging it.



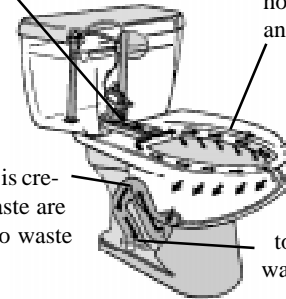
Water is discharged when flush lever is pushed.

Water surges through direct feed jet to push waste through trapway.

Water entering bowl under pressure through rim provides power with washing action to leave bowl clean and sanitary.

**Gravity-flush Toilet**

Water is released into bowl when lever is pushed.

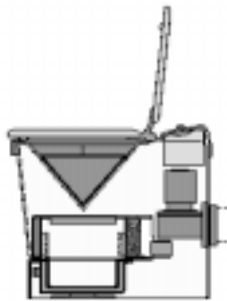


Water enters bowl through rim and rim holes creating water rise and washing bowl.

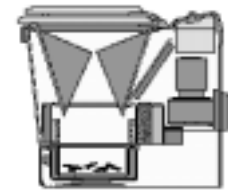
When water moves over trapway, a syphon is created, and water and waste are carried out of bowl into waste line.

Weight of water and gravity create a syphonic action to withdraw waste and water from bowl.

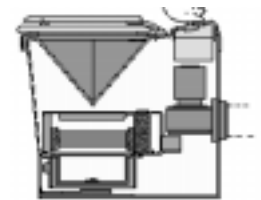
**How The Incinolet Works by Research Products**



Drop bowl liner into toilet bowl. Bowl liner catches and contains all waste plus paper.



Flush bowl by stepping on foot pedal. Insulated cover swings to the side allowing hinged bowl to open and drop waste to lower holding area.



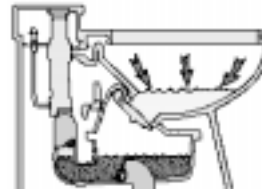
Push start button to incinerate waste automatically. Uses electric heat to reduce waste to just a small pile of ash.

**Incinerating Toilet**

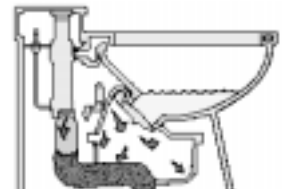
**How The Microflush Toilet Operates by Microphor**



When the flush handle is pressed the flapper opens, allowing wastewater to flow into the hopper. Clean water enters the bowl from the rim to thoroughly wash the bowl.



After four to seven seconds, the flapper closes. Clean water continues to flow into the bowl, where it remains until the next flush.



When the flapper has closed, compressed air enters the hopper, pushing the waste over the trap and into the wasteline

**Compressed Air-assisted Toilet**