

Building a Composting Toilet

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Although sewers and septic systems served the U.S. well in the 20th century, there is a lot of [room for improvement](#) in the way we handle human waste. But opting out of traditional infrastructure is a big step that can seem overwhelming at first.

If you want to build instead of buy a waterless toilet for a cabin or new construction, here's how to get started.

A Toilet, Not a Bucket

DIY site-specific toilet designs can be cheaper and more efficient than commercial products. But you wouldn't know it from a quick Google search. The internet is filled with "composting toilet" designs involving a 5-gallon bucket under a seat collecting waste for composting, often in the same three-bin system used for yard waste. These are not composting toilets.

A real composting toilet does not just collect waste. A composting toilet is an in-vessel composting system attached to a toilet. A functioning composting toilet system does not require handling uncomposted waste. Although many people recommend a secondary composting process out of an abundance of caution, the product of a composting toilet is finished [compost](#).

Learn the Law

Before you lift a hammer or set your heart on a favorite design, consult your local permitting office. [Regulations](#) vary widely around the country.

In some places, only specific commercial systems are permitted. In others, the idea of composting toilets is so unfamiliar that codes don't mention them at all. Wherever you live, there is a good chance that you will have to seek an exemption to get approval, and you might have to go through the process of amending local regulations before you can start.

Plan for Maintenance

Even a successful composting toilet requires a more hands-on approach to managing human waste than the "flush it and forget it" system we're used to. And if something goes wrong with the system, getting it back in order could be a dirty business. It's important to know who in your household will be responsible for keeping the system working and how comfortable they are (ahem) getting their hands dirty. Not only could this affect your choice of design, but demonstrating your knowledge of and enthusiasm for long-term maintenance could help you at the permit office.

Another planning consideration is the bulking agent. The carbon-to-nitrogen ratio required for composting is roughly 30-to-1, but the [human waste ratio](#) is closer to 30-to-13.

Bulking agents like sawdust or straw will absorb liquid and bring the carbon to nitrogen ratio into compostable balance. Some designs will minimize the need for bulking agents. But others require nearly a 1-to-1 ratio of human waste to bulking agent. Make sure you have a reliable and affordable source for bulking agents before settling on a design.

Design

When it comes time to choose a design, a few key questions will help you decide what [type of system](#) you will build. How much space you have available will determine if you can use a self-contained or split system. The amount and configuration of space available will also influence the choice of continuous or batch design.

Access to electricity can inform the decision of passive versus powered, although some people have a philosophical preference for passive design. Whether or not you use electricity, venting and urine diversion can reduce the need for a bulking agent and minimize odor. Urine diversion can be accomplished with a seat attachment, but venting can be a trickier passive design issue.

Unless you're an engineer, designing a toilet system from scratch is probably not the best plan. Even if you are an engineer, you'll want to do plenty of research before drawing up your design. [The Composting Toilet System Book](#) is a classic resource with dozens of regulation-friendly designs.

[Essential Composting Toilets](#) is a more recent design guide. Although much of its information is specific to British Columbia, Canada, the B.C. government's [Manual of Composting Toilet and Greywater Practice](#) is a helpful technical guide for meeting functional design standards. If your area lacks precedent for your project, this manual could help you work with local regulators.

Build

Once local regulators approve your design, all that's left is the actual construction. If you aren't handy, or if your project is part of new construction, you may want to call in the experts.

Aside from simple wiring and masonry, most composting toilet designs are straightforward carpentry projects. Depending on your own skills, you may be able to construct the entire project yourself.

Have you built a composting toilet? Share your experience with the community on the [Earthing Forum](#).

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