C-Head Portable Composting Toilets

By Sandy Graves

How I came to love my composting toilet

I have been committed to cruising on a sailboat since I was in my early twenties. Little did I know, that I would be in my fifties before that dream would become a reality. Actually, I was sixty before my wife and I got to cast off on our own boat, in route to a "yet undetermined destination" for an "undetermined length of time". That was in Feb of 2008 and my wife Nancy and I had forsaken all: cars, houses, etc. We were finally on our way to see the world aboard Lily Pad our Gemini catamaran.

We would make many new discoveries over the next two years, sailing up and down the East Coast, and as all cruisers know, there is no end to the daily changing and tweaking and learning that goes with the cruising lifestyle. And like most other cruisers, we made decisions and changed things in ways that seemed to work for us and not necessarily for others. We got endless unsolicited advice and no doubt gave out a lot too. It takes a while, but slowly you learn that unsolicited advice is rarely appreciated or adopted, as all cruisers seem to consider themselves both educated and savvy. Ultimately, you get tired of hearing the same things over and over again, things that you read in some book or magazine in the recent or distant past.

There are endless discussions on anchors and anchoring, navigation equipment, water-makers, batteries, and the necessity or uselessness of each; what to see and when to see it; catamarans vs. monohulls, and on and on; all exciting the first fifty times you hear it but then it becomes something of a rehash as the years pass. But there is still always something new to discover and discuss, or someplace new that somebody can tell you something about before you get there.

One of those things took place one year at the St. Pete Sailboat show (something I attended religiously for years). I came upon a man selling "composting toilets for boats." I was really captivated by the idea of something really new and novel - a "composting" toilet. It seemed very clever, and what the man said made sense, but it was somewhat hard to believe. I remember at the time doubting his claims that the separated materials produced no real significant odor, but the point was academic anyway because, with a price tag of $800, it was well beyond my financial range, and my Hirondelle simply didn't have room for it.

It was, however, especially interesting to me because it was a novel approach to a problem that was complicated and nasty and seemed to have no real good alternatives. And it was, to a degree, a taboo subject or one that was approached gingerly and with people's sensibilities in mind. Seventeen years in the fire service as a frontline Firefighter/Paramedic in the geriatric state of Florida had thoroughly desensitized me to discussing pee and poop, so I was game to address, study and discover what exactly was going on. And that interest would do nothing but grow over the years.

Shipboard waste management has been a problem for us for about as far back as I can remember, with respect to both of my two cruising sailboats; my first, a 24-foot Hirondelle and the other a 34-foot Gemini, both catamarans. I had used a Porta-potty in the Hirondelle with relative success but the cruises were short and the limitations were obvious. It was also messy and smelly, particularly when trying to pour the contents of the holding tank into a toilet. Poop juice either splashed all over the place or else some would trickle out of the vent hole that you had to depress while inverting the container. And there was always the fear that someone would stop you and tell you, “Sorry, you cannot dump those here!” And when it was filled up, you could not use it anymore, unless you bought a second toilet for a hundred bucks, just to use the bottom container, which I did. It clearly was not suitable for serious cruising.

When we bought our Gemini, I was ecstatic. We had spent a lot of money for her and she had a real marine head with a holding tank that had a viewing window so that you could see if it was full or not, and you could switch a valve and the poop would go overboard, or you could dump the holding tank when you were offshore. Now, don’t get me wrong, I love our Gem, but the waste management system simply did not work as well as I had imagined it would.

The first problem made itself present very early on. After filling the holding tank a couple of times, the sight window soon became covered with sludge to the point where you could not see how much fluid it contained. I would eventually fix this by installing a back light that I could activate by pushing a button. This worked well but only after dark. The next problem arose from the first. Being unable to see the level of waste in the holding tank, we overfilled the tank on a couple of occasions and this had the effect of impacting the tank vent line with waste and clogging it. I discovered that it was full of solidified waste when I removed the entire system a couple of years later. And it was for all intents and purposes installed in a way that prevented removing and reinstalling a new one. The vent line was too small and was easily clogged. This led to the toilet belching back at us when we flushed it because the tank could not vent.

I tried to solve this by installing a newly routed larger diameter vent hose which lead to us being gassed out in the cockpit if you flushed the head when underway. Apparently the cockpit drafts the air that flows between the hulls. We tried every kind of holding tank chemical made by man and met with little success. If all that wasn’t bad enough, we began to develop a head odor inside that was just strong enough to be annoyingly present in the dining area. Not fun when you were trying to eat or read. On the advice that I should flush the system with muriatic acid, I did just that and it gave us temporary relief, but the acid vapors are very strong and the acid dangerous to use. I continued to up the volume and duration of the acid treatment in hopes of eliminating the problem permanently and it ultimately damaged one of the valves to the system which broke open and dumped acid into the bilge. By the time I realized what had happened, the vapors had corroded most of the metal fittings and fixtures in the port hull. That was the last straw and I decided to gut the system and after most of a very hot day, I had it all in the dumpster. And good riddance!

This last acid event happened while we were holed up in Beaufort, South Carolina for a couple of months while I was building a new dinghy. I had a lot of scrap material left

over from that project that I would have to discard, and the idea came to me to build my own composting toilet and see how it worked. It took me less than a week and we had our composting head. She was not pretty and looked rather utilitarian, but wonder of wonders, the damn thing worked. Not only worked, but worked like a charm! There was a learning curve of how much peat moss to use, and whether other substances like coconut husks were a better mixing material, and also how to store urine and adjust the venting, but it didn't take us long to figure things out and literally from day one, the head smell was GONE! The first-mate was happy, and when the first-mate is happy, the Captain is happy!

This is the original C-Head toilet that I build and it was being used for R&D purposes.

Now, when boaters buy a boat (sail boaters particularly) or add something to their boat, it tends to be a serious matter. They usually study alternatives endlessly and they commit to a choice believing that they have made a good and informed decision and spent their hard earned money wisely, knowing full well, that in the cruising community, they will soon be bombarded with implied and even blatant challenges to the wisdom of their decision. In effect, they see others as tacitly accusing them of being stupid. This is why many, if not most cruisers are not always open to the suggestions of others, and why they are slow to adopt what for many would be a clearly better idea.

Such was the case with catamarans. The sailing and powerboat communities had built themselves up around the European monohull model, and millions, even billions of dollars and hours of design and labor had gone into this school of thought. But ever so slowly over time, the merits of the catamaran (both power and sail) for many applications have become obvious as will be the case with composting toilets.

But composting toilets have some hurdles to clear. First, they play no role in current design on any production boat that I am aware of, and that is because they are a relatively unknown or misunderstood commodity. Secondly, most boat owners have already committed, at the time of purchase, to an established system that costs a lot of money. To change to a different system would require removing an already acceptable and functioning system. And thirdly, composting toilets deal in an area that people don't

really like to discuss in detail - human waste. Please allow me to take your hand and walk you into this dark land. Some sections of this discussion will be frank but informative. You are about to read and see “the straight poop”.

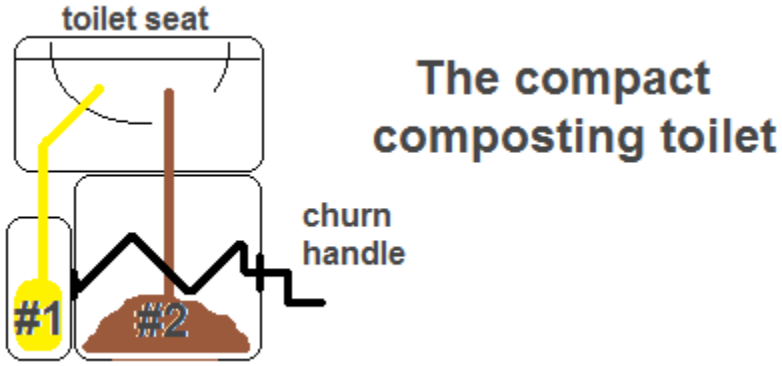
How a composting toilet really works

The word “composting”, when describing, what is essentially a compact, non-flushing, waterless, toilet, is a misnomer. In fact, the purpose of the toilet is not to create compost, but rather to conveniently store waste until it can be disposed of. But for convenience sake, I will refer to the C-Head as a “composting” toilet. Joseph Jenkins online book – “The Humnanure Handbook” is an excellent source of information on composting toilets and should be read by anybody who wants understand the principles involved in the process. Keep in mind while reading it that he is talking about land based composting toilets. Boats, RVs and campers, are presented with a slightly different set of problems that we will cover.

In principle, the marine composting toilet is very simple. Solid and liquid waste is divided at the onset by means of a channel that funnels the liquid waste forward into a container and also by a trap door that opens and lets you deposit the solid waste in a separate special container. The urine is collected in a small, usually a one to two gallon, container for transfer to a larger container such as a jerry jug, or for direct disposal overboard (where permitted) or disposal into a local toilet or else far into the woods.

The solid waste container has a churn that you operate manually, that mixes the solid waste with a fibrous material such as peat moss or ground coconut husks.

Land based composting systems may use saw dust or wood shavings or any number of other substances and usually do not divide the solid waste form the liquid waste, nor do they require mixing initially. This is fine for ashore but it creates too large an amount of composted material to store on board. I am sure that there are numerous materials that would be suitable, but we found that peat moss is cheap (dirt cheap!) and easy to store and work with. Coconut husks come in compressed blocks that to my way of thinking look too much like some controlled substances, and it is just more work to break it down for use. It does, however, use less space to store. I am considering using pine sawdust since I live in one of the largest pine forests in the USA. I’ll let you know how it turns out.



Anyway . . . after the “poop” enters the solid waste container and is mixed with the fibrous material, two things happen, it is dehydrated and broken down further by other organisms such as bacteria or fungi. If the container is actively ventilated using a fan or solar ventilator or a passive venturi system such as a dorade cowling, the moving air will draw the moisture out of the waste, causing it to dehydrate even more quickly. While the waste material remains moist, it is transformed from its original state. In the case of the C-Head’s competitors, it begins to resemble adobe mortar as more waste is added. The ventilation also removes the musty smell from the head area and vents it at the cowling, which with the competitors, is the primary purpose of ventilating. If you use the C-Head for only short periods before emptying, say over-night week-end cruises, no ventilation may be necessary. In fact, more often than not, no ventilation is needed at all.

The C-Head has a slightly different process than other compact composting toilets. They use tend to use a trap door to seal the collection container and that tends to keep the moisture in. This is necessary for the composting process and for the system to empty when inverted. If the waste mixture is allowed to dry out and cake up, then it will not fall freely out of the container. Examination of the collection container will reveal corners where the churn does not reach and these can become impacted if the waste is allowed to dry out. The C-Head doesn’t have this problem. It is emptied more often and has fewer obstructions when dumping the waste and the churning process forms the waste into spheres. This promotes the transfer from the collection container to the composting/discard bucket by allowing it to roll out.

Now, the truth be told, it takes anywhere from two to six months under ideal circumstances for human waste to compost completely and it requires a relatively controlled environment (temperature, contents, moisture, etc) to get the maximum effect. These conditions are seldom met using a compact composting toilet. Or put another way, if the purpose of the toilet was to really turn human waste into clean usable compost, then portable compact composting toilets are not very efficient including the C-Head. But the purpose of the compact composting toilet is not necessarily to create usable compost, but rather to collect solid waste in an effective manner until it can be properly disposed of. In reality, what the compact composting toilets produce is a “pre-composted” material that is partially digested by bacteria and fungi and which is stored in a relatively odorless state until it can get composted further at a remote location. What the compact composting toilets do deliver is an odor free, waterless, and relatively inexpensive and relatively easy-to-use system for storing human waste. And this is what most travelers are looking for. Most of us who use composting toilets on our boats or campers are not looking for a way to grow better tomatoes or roses.

So the next question is; how do you get the waste out of the toilet to where ever it is supposed to go? Good question! Some manufacturers of compact composting toilets instruct the owners to dump the contents into a plastic bag, a process that can be and usually is cumbersome. Now you are probably wondering; is a composting head difficult to use when actually using it? Well, at the great risk of seeming snide, let me ask, “Is there *any marine toilet* that is easy to use short one located on a cruise ship or mega yacht?” Like all marine toilets, there is a learning curve and you should not allow anyone

to use it without some instructions first. But there is no switching of valves or flooding concerns or worries about clogs or the overboard valve handle not being locked closed or any of the normal crap that goes with a flushing system. With a compact composting toilet system, there is only one prime directive; Keep the solid waste and the liquid waste separate. And doing this sometimes may take a little initial practice. My first-mate's greatest objection to ever getting a composting toilet was the fact that she could not do #2 without doing #1 at the same time. It seems, through talking to others, that this is not so rare an occurrence with women. Imagine that conversation. But after only a couple of times her aim got good and it has not been a problem at all.

The C-Head is simpler to use because there is no integrated trap door to open and close, it uses a standard household toilet seat that has been modified to aid the user in correct positioning. There is no need for using coffee filters to protect the bowl from contact and you crank the handle from the top instead of down on the side. And finally, the seat sits lower to the ground. Bending the legs and squatting as much as possible while having a bowel movement (as is done around the world) aids the body and helps prevent hemorrhoids. That's a fact.

Comparison of composting toilets to holding tank systems

Is a composting toilet better than a built-in holding tank system (HTS)? As with anything related to boating, it all depends. Nancy and I have been using our composting head for almost a year now. We have been dockside since Nov 2010 but I am still using our composting head for research purposes.

Here are my conclusions so far. From an operational standpoint, handling peat moss is a little messy at first until you get a technique down, but at least it is clean dirt you are dealing with. Simply rinsing any spilled peat moss off with water will usually suffice. The trick is to pre-package a month's worth (or more) of peat moss into smaller containers for easy and clean transfer into the head as needed. I describe my methods in the owner's manual.

If you are cruising as you read this you will have noticed that, more and more, the dock hands are handing off the pump equipment to the owners for liability reasons and because they don't want to do a dirty job. The dock hand will do the entire pump out at the more upscale marinas, and there you are expected to give him/her at minimum a $5 tip on top of the charge that can run from $7 to $25. If you have a huge holding tank or money is not an issue, then that may be cost effective. If you handle the equipment you are going to occasionally make a mess, some of you more often than others. If all this isn't bad enough, you get the privilege of having the entire marina watch to see if you get hosed in the process or if you accidently spill a quantity into their pristine waters so jealously guarded by the local eco-cops.

Let's crunch some numbers here. With a HTS, if you are cruising full time then you will on average need to get pumped out about once a week. For a minute, let's ignore the fact that you have to use time and fuel to seek out a facility that has a pump out capacity. These can be rare in sensitive areas like the St Johns River in Florida, a three

hundred mile long “National Historical” waterway. At once a week, you will expect to pay at the least $7 for each pump out. If you cruise for a year then you can expect to pay ($7 x 52 weeks) $364.00 at a minimum, just to pump out the system. Add to that the cost of chemicals to keep down odors ($50 using el cheapo brand of odor eliminator and house hold cleaners) you are up to over $400.00. If you cruise only seasonally, then you are more likely to be less cost conscious and will probably pay double this amount, divided by the amount of time you are cruising. And you also have the occasional repair or removal of hoses and valves which can be very expensive unless you volunteer to do it yourself. Talk about a messy and nasty job. The point is that within a short period of time, the operating costs of a HTS alone will eclipse the total cost of a portable composting toilet system.

But the C-Head composting toilet really shines in multiple areas. Let’s look at the advantages of the C-Head system.

1. **Cost** – Any composting toilet is going to cost a fraction of the money you would spend on a holding tank system. Toilet bowls, tanks, hoses, valves, macerators, thru-hull fittings, pump outs, chemicals, replacement parts, etc. are not cheap. Neither is maintenance. The C-Head has virtually no maintenance other than an occasional wipe down, and repairs are DIY (even DUI) simple.
2. **Looks** – The C-Head comes in a variety of wood, plastic and other custom finishes and can be built to compliment your boat. It can make using the toilet not only fun but also it can be a topic of conversation and a sign of you and your boat’s uniqueness.
3. **Head Odor** – I would say that on about half of the cruising boats that we have been aboard, you could smell the head. Sometimes it would make your eyes water. Many of the owners were simply resigned to the fact that they were going to have to live with “that smell” . . . wrong! Composting toilets are for all intents and purposes odorless. If installed and used as directed, there should be no smell at all except for a whiff of “basement smell” when you first lift the lid. This dissipates immediately unless certain odd conditions exist. If you are at anchor or in a slip and the wind over-powers your ventilation system (usually over 20 knots), you may get a slight basement smell in the boat. You can pull the vent and cap it off for the duration of the wind. At worst you may have to put up with a dank odor for a short time, far from the outright stink of sewage. In prolonged periods of no sunshine to charge a solar vent, you can replace it with a simple PVC elbow to vent it passively. The slightest breeze will draft the smell out of the head.
4. **Waterless** – No using water that you need, or contaminating your holding tank with lake or sea water, which we all know potentiates the bad smell of the effluent that is stored in the holding tank. No leaks into the bilge or clogged water lines or stinky sewage-filled hoses. No broken thru-hulls or guilt over watching your wake turn brown behind you as you dump your holding tank offshore.
5. **Cleaning** – In the case of the C-Head, cleaning the head is easy. No nooks or crannies to scrub out. Simply wipe down with Lysol or other household cleaners.

6. **Sanitation**. C-Head's secure storage system significantly reduces the possibility of anyone coming into contact with deadly pathogens including the users and local sanitation workers after it has been disposed of.
7. **Ease of installation** – With no tanks, valves, etc., installing a C-Head is very simple. Four brackets, two tie downs and a possibly a ventilation system.
8. **Freedom** - Portable toilets such as the C-Head and the portable flushing toilets commonly referred to as a porta-potty are legal virtually everywhere unless the local jurisdiction has outlawed them, which is very rare. This opens up a huge range of areas that can be travelled and explored for extended periods of time. Even blue water cruisers need to access sensitive areas regularly and are occasionally tempted to just gunk-hole and discover the local backwaters. With the advent of shoal draft catamarans and the proliferation of pocket cruisers, this becomes even more of a consideration. If you like to spend extended time cruising or anchoring in sensitive areas such as the Fabulous Florida Keys, the Chesapeake Bay, the Inner Banks of NC or on the inland bays, lakes and waterways of America, composting toilets give you great freedom because you can safely store waste easily. The C-Head system stores solid waste the longest since it takes about five to six weeks for two people to fill a five gallon bucket and you could store more than one five gallon buckets aboard if necessary.
9. **Flexibility** - It is not something people usually consider when thinking about a toilet. The idea of moving an HTS around from one place to another is pretty much out of the question. You just don't move it to your RV or cabin or to another room aboard the boat if needed. With a C-Head you have this convenient option.

People will sometimes ask if you can use the existing holding tank system with the composting toilet. Some offer instructions on how to install a pump that will move the urine from the collection bottle to the holding tank. There are some possible legal complications if you connect a "built-in" holding tank with a "portable" toilet. That may change the legal designation of the toilet from "portable" to "installed" and require an MSD rating. Whether or not it is a problem will lie in the hands of the inspecting official. Much like the tax code, it is open to interpretation by the man with the badge. Alternatively, pumping the liquid waste into a *portable container* such as a jerry jug should not be a problem from a legal standpoint, but this would increase the likelihood of overfilling it and spillage. Out of sight, out of mind. To avoid this problem and the problem of stinky hoses, I would not connect the composting head to a built-in holding tank or portable tank for the storage of urine but rather, manually pour it out into one of several alternatives. This is much less inconvenient that you would imagine. The fabric grocery bags that you see everywhere now-a-days, will hold two 1-gallon milk jugs and very conveniently conceal the contents. We use them to transport our filled jugs to the restroom where we empty them. Treat them first with an odor eliminator if you wish.

It is my understanding that, per the USCG, boats using portable toilets cannot have a separate working holding tank system on board or vice versa. One or the other must be inoperable. I am not sure how well that fact is known or enforced by local officials, just

FYI. Also it should be noted that in the state of Florida, the C-Head is not suitable for use on “stationary” houseboats which are not allowed to use a portable toilet system.

Okay, if there is a downside to composting toilets, it isn’t much:

It is imperative that you separate the waste completely or you will have a smelly, messy problem to clean up. For men this separation of waste is not so much a problem due to their anatomy. It only takes a little practice for the ladies though. If the solid waste does become mixed with a lot of liquid waste, then you will need to add more peat moss and churn the mixture until it thickens to a point where it can be dumped out. This is easier to do with the C-Head than it is with our competitors.

Because you have to visualize things at first when you use the toilet, and because you can see the composting material during the transfer of the waste from one container to another, you have a much more “up close and personal” relationship with your waste, with a composting system as opposed to a HTS, which is a real turn off for some people. I understand. In a perfect world, we would never have to go to the bathroom.

A comparison of compact composting toilets.

Nancy and I took every opportunity to visit boats that were installed with compact/portable composting toilets and while we never bought one, we learned a lot from the owners. There seemed to be a consensus on two things that I had doubted, one that there was no sewage real odor and two, they did in fact hold about a month’s worth of waste if used by only two people. None of them had a secondary holding/composting tank because, they said, of the additional cost and space requirement. That being the case, they were all disposing of untreated waste in plastic bags, since the previous few days “deposits” had no time to compost.

On examining the “composting” waste material in the tanks, it looked like dark sticky fibrous earth that could be used to pack into bricks, like adobe. It smelled musty like my grandparent’s old dug-out basement below their house in Tennessee where they stored potatoes and their self-canned food. The two most popular composting toilets, used on boats today, are for all intents and purposes, identical in design and function. They are also both somewhat tall and this was a common complaint since in some cases significant modification to the head area (including cutting out pedestal or floor) had to be done to accommodate the toilet.

The C-Head uses a treatment process (more correctly called: desiccating anabiotic fecal conglobation) that turns the waste into dry spherical clods (much like a dung beetle does) rather than a mash of waste and medium together. This has several advantages. First it reduces the surface area of the waste significantly and coats it with medium which desiccates the waste from the outside in. What this does is reduce odor emissions and is less conducive to fly infestation. This keeps the waste covered or buried in the medium and also allows it to pour easily and completely from one container to another.

This is a common disposable bucket. Notice the spherical form of the waste and that it is covered with white fungus. Within a week or two, you can break them apart and they appear to be solid dirt clods. The collection container can be emptied into a disposable bucket like this, five to six times before it is full and has to be sealed and dealt with. The ventilation lid has been removed from the disposable container so that you can see how the waste forms.

With other compact composting toilets you are instructed to add a small amount of water to the medium to maintain its moistness. That is also why it has a lid over the solid waste container opening to prevent dehydration. This is necessary for complete composting and as I said previously, in order to keep the mixture from hardening in the collection container and around the churn. With the C-Head, the mixture is *allowed to dry significantly* and in the spherical form it takes, it pours (rolls) easily from one container to another. This drying process continues in the disposable bucket, which helps keep insects away. A common problem with many composting toilets is fruit flies, sewer flies and house flies. All of these pests develop because they use moist fermenting waste to lay their eggs in. Once they become established, the source must be completely cleaned. This problem is avoided with the C-Head for several reasons.

1. The C-Head is emptied more often, removing any eggs and larvae before they can hatch.
2. The C-Head is a dehydrating system which removes the moisture needed to support the flies, and which facilitates the removal of almost all of the medium when emptied. The collection container is easy to rinse out if needed.
3. Should an infestation begin, the C-Head can be quickly and easily cleaned with a chlorine solution to destroy all the eggs and larvae. This problem is rare with the C-Head and easily remedied.

The leading compact composting toilets on the market today are fine products, but the primary flaw to their system is that in order to completely compost the solid waste to the point where it is unrecognizable as human waste, you have to purchase a second lower unit to allow the waste to compost completely before disposal. This is expensive and the unit takes up valuable space and since it is not required by the manufacturer, it seems that virtually nobody purchases the complete system. And the manufacturer's instructions to dispose of the waste in a plastic bag in the trash headed for trouble. This is creating a potential problem with local authorities because sooner or later, someone is going to get exposed to it and complain. The C-Head composting toilet prevents and pre-empts this problem by dehydrating and storing discarded waste in rigid plastic five gallon buckets which once sealed are almost impossible to reopen or breach accidently.

You could of course place the waste from any compact composting toilet in a five gallon bucket and seal it. I hope you do. But, as it stand now you would have to first pour it into a bag and then work the bag into the bucket. Why would you pay more for something that is more work when handling waste?

One of the real beauties of the C-Head is that you can use it on a runabout or a yacht. You can use it in a camper or an RV or with a horse trailer. If you can afford any of the other systems or composting toilets, you can afford more than one C-Head and you can put it almost anywhere or move it around or take it ashore. It may not require ventilation unless you are using it continuously. You can use it while building your cabin and then in your cabin when it is completed.

What it is like to use a C-Head?

I do not miss our holding tank system at all. And I really like our C-Head system so much that I decided to build and market them. The merits were obvious to me. There are many applications for the C-Head but examples of perfect situations are; a single person or couple, that lives on a cruising vessel, or owns a pontoon boat, an RV, a camping trailer or horse trailer and who travels regularly or continuously. It requires a slight change in habits, but I have found managing my own waste both interesting and personally satisfying. I have always prided myself as being very self-sufficient. I see our boat as our universe or castle or island surrounded by water.

I wouldn't consider myself a "tree-hugger", but I am a conservationist and I enjoy and respect nature (therefore I cruise!) I know that many laws respecting nature and its use are created for political purposes and have little or no positive effect (and sometimes a negative effect) on our lives and well-being, but I enjoy not burdening the world with my existence anymore than I have to. While packaging and sending my waste to the landfill is not free of cost, it is significantly cheaper and cleaner than flushing the toilet or processing waste from a pump out system.

We have used the C-Head daily with minimal work involved. I or Nancy empty the urine container about every day (usually after dinner) and that part has become a part of the daily routine. It takes a few minutes, but we go to bed knowing that we cannot overfill the toilet accidently during the night, something you will appreciate as you get older. The level of urine can be seen through the sight window at the front of the toilet housing and you will hear a distinct trickle if the gallon jug is not full. As it fills the sound will diminish and alert you to that fact. Urine is sterile and the jug has a handle, so I normally do not wear gloves. Many of us carry latex or nitrile gloves on board for checking the motor or doing other dirty jobs. I got used to wearing them routinely as a Paramedic but simply washing your hands or using hand sanitizer will suffice if you don't carry gloves.

After a week or so, I remove the solid waste collection container and pour the contents into the disposable composting container. It is always interesting to see how far the material has degraded and I am always amazed that there is no bad smell.

After about six weeks, I seal the disposable bucket and cut a small slit in the side near the top to allow the container to vent and I place it in a local dumpster ashore. I try to put it towards the back where it would be difficult to fish out and open. “Dumpster divers” do exist and even if they could open the container, it looks and smells like moldy dirt clods.

Let me make an observation here about five gallon buckets. I have a cruising philosophy that says that everything brought on board should float or be stored in a container so that it will float, if at all possible. With that in mind, we usually carry about 10-14 five gallon buckets aboard our 34 foot catamaran at any given time. They are great for keeping things dry and handy and positively buoyant. I have also used them for cleaning the boat and collecting rain water. The C-Head system employs two extra five-gallon buckets; one for the composting/disposal container and one for the peat moss. When the disposable container becomes full, I can usually replace it with one of the other buckets until I can get to Home Depot to buy more. There, a bucket and locking lid cost less than five dollars with tax. This also keeps me rotating the bucket stock.

So far, I have used about seven dollars in peat moss over a year’s period. I use square plastic nut jars to re-package the peat moss because the mouth is the same size as the opening in the toilet and it makes it easy to pour it in without making a mess. Initially I put one full jar in the empty collection container and then add about a half a jar every three days or so. You could just as easily use gallon plastic bags or any other suitable container but nut jars seem to be designed for the job. Fill five or six containers at one sitting using a plastic cup to transfer the peat moss from the bucket to the jars.

Over time, the compost mixture will become more difficult to churn. When the first mate complains that the handle is hard to turn, it is time for me to empty the collection container again. I usually get a few more uses out of it, if the first-mate is away and I am using it by myself. It’s all very simple. No looking for pump out stations, no audiences when pumping out, no tipping or charges, no chemicals, no smell, no repairs, no worrying if the valve is locked closed as law enforcement closes in, and overall, no sweat!

Is a composting toilet right for you?

Granted, my conversion to the composting head as the toilet of choice was due to a trial by fire. Your personal experience or disappointment with your system may be better…or worse. In any event, I would never try to sell someone on the idea of using a composting toilet if I thought it was not the right application for them. And this probably includes many people. There are a couple of reasons why you would not want to use one. Let's consider them.

As previously mentioned, if you live on a houseboat in Florida (check your state and local laws elsewhere) or have an inspected charter vessel that will require a lot of uses in a day, then this may not be the product for you. It is impractical to think that you can instruct a lot of people on how to be careful and besides the C-Head is not designed to receive a large load of waste in one given day.

If you are currently not having any problems with head odor and your holding tank system is working well, then it would be a waste of money to convert to a composting toilet. If, however, you are uncomfortable dumping your waste overboard. . . period, or enjoy a challenge or a novel idea and have the money with which to experiment, then the C-Head offers you a great way to store waste for long periods of time and then responsibly dispose of it at your convenience.

If you are averse to dealing with human waste and can afford to pay someone else to deal with it . . . well you are likely not reading this at all.

For more information about the C-Head design and availability, go to:

www.c-head.com

or call me at 407-592-1207.

Summary

Here is a matrix that will give you a quick overall view of the topic. I hope this has been useful and has helped you make an informed decision. Good luck and happy cruising, camping, traveling and/or riding.

	C-Head	Competitors	Holding Tank System
Cost	Least expensive	Not cheap	Very expensive
Cleaning	Very easy (flat surfaces)	Nooks and crannies	Leaks, nooks and crannies
Maintenance	Minimal	Minimal	Hoses, valves, pumps, etc
Solid waste holding capacity	One month per 5 gallon bucket for a couple	One month for a couple	One to two weeks
Ease of installation	Straightforward and simple	Straightforward and simple	Complex and expensive
Weight	Lightest	Lighter than an HTS	Heaviest
Size	Smallest	Small but usually tall	Depends
Odor control	Excellent	Excellent	Smells like Depends
Flexability	Self contained and portable	Usually fixed	Really fixed
Chemical use	Household cleaners	Household cleaners	Muriatic acid, formaldehyde, etc
Sanitary waste disposal management	Excellent	Poor	Fair to poor
Appearance	Beautiful/decorative	Machine like	Not as simple as it looks

Per USCG Regulations

Marine Sanitation Device

Systems Engineering Division (CG-5213)

Each Code of Federal Regulation (CFR) cited below is updated annually in a free searchable database available from GPO Access.

Portable toilets.

Vessels having no installed toilet are not subject to the provisions of Section 312 of the Act. Portable toilets or porta-potties that use no installed water, power, etc., are not considered installed toilets and therefore not subject to the requirements in 33 CFR Part 159. However, regulations still exist to prohibit disposal of raw sewage within U.S. territorial waters, the Great Lakes, and navigable rivers. Use of portable toilets in combination with a direct discharge toilet is not permitted. Vessel owners may elect to remove installed toilets and use instead portable toilets. For vessels having a portable toilet, all non-compliant fixed toilets should be removed unless impractical or unsafe in which case such devices should be rendered permanently inoperable. For inspected vessels using portable systems, use only devices manufactured of a durable material, such as molded plastic, aluminum, etc., to facilitate removal ashore, securely fastened to the vessel using straps, wooden framing, or similar materials, and maintained by the vessel operator following the manufacturers instructions as to waste disposal, chemical additives, etc.