RV HOLDING TANK ODORS

*Oftentimes questions are received and published that certainly spark additional interest among readers, such as the case when addressing questions about foul odors emanating from the waste water system. Your e-mails to the "**RV Doctor**" column are greatly appreciated.*

***Dear RV** (**R**ecreational **V**ehicle) **Doctor**. **Is there anything we can do**?*

***We have a severe sewage odor** in our 2001 Layton travel trailer. I think the vent is clear of any obstruction plus we've dumped and flushed the holding tank numerous times and used holding tank deodorizer, yet the odor remains. There is no leakage around the toilet.*

***We just bought a coach and there seems to be a smell** that comes from the toilet, probably the holding tank that my wife finds very annoying. It seems like it's there even when the holding tank is supposedly empty. Please help otherwise I'm afraid my wife will quit riding in the RV before we even take our first trip.*

***We have a 1981 C2000 and while we are driving the smell** from the toilet is sickening. We have to open the bunk bed window a little so the kids sitting at the table for traveling don't get sick from the smell. We dump it, clean it out, then add liquid deodorizer and yet it still smells terrible.*

***I am relatively new to RVing and one of my developing "pet-peeves" so far is the odor** that seems to be coming from our bathroom area. We are using a high-quality black tank deodorizer solution, but when sleeping in the back area at night the odor is sometimes distracting. I keep the vent open at night.*

***I own a 1989 Pathfinder and for about two years now when we drive down the road you can smell** the holding tank, but when parked you cannot.*

***We are in an older model 1981 and experiencing a strong odor** inside and outside of the trailer. Either the black water holding tank, or the gray smell of with strong odor.*

***I can't get rid of the nasty odor** from my black holding tank while traveling, unless I have taken the time and effort to rinse it out numerous times to ensure it is totally clean before I leave from the campground.*

***On our last RV trip**, **I noticed a foul odor** coming from the bathroom sink. I never noticed it on any previous trips. Peering down into the sink I saw four or so inches down what appeared to be standing water as though the sink had a slight obstruction. No obstruction seemed apparent so what gives? Did we encounter bad water along the way or is the grey water tank contaminated?*

***Sometimes we can smell sewer odor** in our lavatory and shower drains after setting all night, regardless if we are hooked up to sewer, with the grey water going straight through, or if the valve is closed and we are holding the grey water. Normally we are fully hooked-up with grey and galley water draining through and the black tank valve closed.*

***I have 1998, Class C motor home. My problem is that there is a terrible holding tank odor** when driving and only when driving. The black water tank is emptied and flushed on a regular basis and the gray water is left open while parked. I have changed to an organic cleaner or deodorizer, but nothing seems to help. Some relief is had if the roof vent is left slightly open and the fan is on.*

***The RV Doctor responds:** Well readers, can you in any way relate to any of the above posts recently received at the **RV Doctor** Column? These are but a sampling of those I receive each and every season. Holding tank odors are a definite problem experienced by the vast majority or **RV**ers. But there is good news; relief is available! By following correct waste management practices, checking for proper venting and by using a few aftermarket products I recommend you can all but eliminate and certainly minimize those dreadful odors that seemingly plague us all. First, fully realize that odors can originate in either the black water or the gray water holding tank. Foul odor is not limited to the toilet tank only! That said; let's take a look at a few areas within the **RV** waste system.*

ADDITIVES

This leads into fine product I've tested and recommended for years, Bio-Tank-Care (www.tri-bio.com)

Bio-Tank-Care was at the forefront of the development of the, now very popular, enzyme-based, bacteria-infused holding tank additives. Please note I said "additives," and not chemicals. Their special blend has been proven to actually digest the odor causing molecules at their source inside the waste tanks, thereby eliminating them rather than masking them. We've all smelled so-called additives that were almost as obnoxious as the tank odor itself. Bio-Tank-Care breaks down other organic compounds like oils; greases and detergents as well so feel free to use it in both holding tanks. I even recommend periodically pouring a ¼-cup of Bio-Tank-Care down each "P" trap to address odors that can originate there.

Some holding tank products consist of harmful chemicals such as formaldehyde (and its derivatives), quaternary-based and phenol-based compounds. The issue of chemical products has prompted many state parks, campgrounds; dump stations and local municipalities to ban the evacuation of RV holding tanks if such chemicals are used.

There are certainly other makers of enzyme-based holding tank additives out there now, but Bio-Tank-Care was one of the first; and it was the first additive I had success with so I see no reason to change horses in mid-stream.

VENTING

One important aspect of proper RV waste management is understanding the dynamics of holding tank venting. Each holding tank must be vented from the holding tank up and through the roof to the outside atmosphere; the typical vent consists of 1-1/2" ABS plastic piping. Here's an issue – Oftentimes coach manufacturers cut a very large hole in the ceiling and roof for this vent pipe to pass through; it makes the installation a little easier. Sometimes this vent opening may not be sealed properly all the way around the pipe. In other cases the vent pipe itself may not extend far enough above the roof line. According to the NFPA 1192 Standards on Recreational Vehicles, "each vent pipe shall pass through the roof and teRVinate vertically, undiminished in size, not less than 2-inces above the roof."

But if you have a short vent pipe (less than 2-inches above the roof), and the area around the pipe is not sealed and an oversized hole exists, then it is entirely possible for tank odors to pass up the vent pipe, hit the roof of the sewer vent cap and bounce back down beside the pipe into the ceiling area where it makes its way to the living area and you inhale the results. Not all tank odors are lighter than air!

So, from the roof, pop off the top of each sewer vent on the rig and be sure the area around the vent pipe is sealed properly (no gaps anywhere around the full circumference of the pipe) and that the pipe itself stands at least two inches above the roof. Extend it by using an ABS coupling and a short piece of pipe if necessary.

In some cases, depending on the method used to connect the vent to the top of the holding tank, vent pipes have fallen down inside the tank, nullifying any venting action whatsoever and allowing tank odors to exhaust well below the roof line, virtually within the ceiling void or even inside an interior wall pocket trapping odors inside the living sections of the RV. By inspecting the vent regularly, this can be avoided.

I actually recommend replacing stock sewer vents with one of my favorite afteRVarket, add-on products; the Xtreme Vent produced by Coil n' Wrap,
This unique roof vent operates around the Venturi Effect which, in simple terms, states that as air is passed through the vent, it decreases the static atmospheric pressure inside the holding tank and literally draws vapors and subsequent odors out of the tank through the vent pipe.

The vent rotates 360-degrees and is made of heavy duty metal as opposed to plastic. This vent is indeed durable. The pivoting action is very smooth and it captures even the slightest wind. A 1-MPH breeze entering the vent opening creates 4-MPH air movement inside the vent pipe. Just imagine the effectiveness of ram air while driving down the road! The air moving through the vent actually sucks odors and vapors out of each holding tank. The faster the incoming air, the quicker vapors are drawn out of the holding tank. Installation is very simple; any handyman can replace an existing sewer vent with an Xtreme Vent.

Another added benefit, although I have not yet personally substantiated it, is that the lowered static pressure creates on oxygen rich environment inside the holding tank, thereby maximizing the efforts of the natural (or added) enzymes breaking down the solids and tissues faster and purportedly more completely. ***WASTE SYSTEM COMPONENTS***

We've all experienced the negative aspects of evacuating the holding tanks. We've all had to contend with the nasty job of attaching the sewer hose, connecting it to the dump station (somehow), and then dumping each holding tank by yanking on a cable or T-handle (both of which have the propensity to break or wear out eventually – (typically at the most inopportune moment, right?). And then to somehow flush out the hose without getting waste on the ground and then try to find a location to store it well away from anything else, yuck!

Isn't there an easier way? Yes!

Phase Four Industries, is one of those leading edge companies that is always searching for a better method of coping with what most RVers believe to be the least enjoyable aspect of RVing, dumping the tanks.

One of their first products was an electric gate valve called the Drain Master.

With the push of a button from inside the comforts of the RV, holding tank evacuation can now be a clean and sanitary act. The full-way, 3-inch Drain Master electric valve easily replaces all standard four-bolt termination valves found on any RV. It is powered by 12-volts DC and installation is easy. Adapters are available for the smaller 1-1/4" or 1-1/2" gray water termination valves. Though these smaller valves are legal, I feel they actually contribute to the proliferation of gray tank odors and false monitor panel readings. It is my opinion it would benefit every segment of the RV industry if manufacturers choose instead to use only 3-inch outlets on both gray and black holding tanks. RVers would benefit by realizing a quicker exit flow rate during evacuations. Tests have proven that faster dumping sequences will increase the flushing action resulting in all waste being quickly washed away rather than having them slowly recede down the tank walls and trickle through a smaller opening. Thankfully many RV manufacturers have now adopted this as common practice.

By the way, each Drain Master valve is equipped with a manual override in case battery power is lost. And to top it off, it's warranted for two years!

Another fine product I highly recommend from Phase Four is the Sewer Master.

This state of the art sewer hose is like no other on the market. It is made from 20-mil polypropylene, not vinyl! How many pinholes have you seen in a relatively new vinyl hose? No other hose is as strong or as durable. And it's repairable too. This one won't get tossed out the second week into your trip.
One unique feature is its inherent memory; no need to struggle with a floppy, accordion-like vinyl hose. This one can be extended only as far as need be. Bend graceful turns and it stays in place. If you only need eight feet to reach the sewer inlet, just extend it that far. Sewer Master is available in 12-foot or 20-foot lengths. And they're guaranteed for one year.

Here's another product I really like from Phase Four, the Waste Master.
I've long felt RV manufacturers have given us the "short end of the stick" by not supplying a safe, clean, positive shut- off method of connecting the RV sewer hose to the sewer inlet in the campground. Well, the Waster Master system takes care of that dilemma.

The Waste Master hose (available up to 25-feet in length) is permanently attached to the termination assembly (retro-fit bayonet adapters are available). This eliminates the need to waste copious amounts of fresh water rinsing out the hose after dumping. With a positive shut-off at the nozzle and a positive shut-off at each termination valve, there is never a mess to contend with, or odors emanating from a filthy, open-ended hose jammed into a storage compartment. A compartment oftentimes not even sealed from the interior of the coach. Every little bit helps!
My recommended set-up includes Drain Master electric valves on each tank coupled with the Waste Master 1, Part #5525, which contains the Sewer Master hose and the permanently attached nozzle. The Waste Master system is adaptable to any coach with a large enough water bay to store the hose and nozzle. And remember, because it is a closed system, there is no odor potential. Other, more elaborate systems are also available as well.

HOLDING TANK BLOCKAGES

Many experts recommend frequent flushing of the holding tanks with vast amounts of fresh water to help rid them of odors. I usually agree with this tact, except for the fact it quite often wastes precious water; a commodity that must be conserved, especially when dry camping.
The main reason for frequent rinsings is obviously to eliminate (or minimize) those pesky holding tank blockages, predominantly in the black, toilet tank. That's why we all know to leave the black tank valve shut until ready for evacuation (more on this later).

But to totally eliminate holding tank blockages and to rid the tank itself of most odors.

All Pro Water-Flow uses a patented, rotating high pressure delivery nozzle that forces water onto virtually every square inch inside the holding tank, including all in-tank monitor panel sensors; (ever have inaccurate readings on your monitor panel?). Only with extremely high water pressure provided by this hydro-cleaning process can all sludge be completely removed. Fiber optic camera shots below show the interior of

a holding tank before and after an All Pro treatment.

Before

After

Performed annually, all holding tank blockages can now be eliminated. And remember, the cleaner the tank, the less likely odors will proliferate.

If you consider yourself a serious RVer or you are a full-timer, you owe it to yourself to check out these products and services.

Okay, now that you've been introduced to some of my favorite products and services regarding RV waste systems, let's take a look at the actual procedures for dumping those tanks.

CORRECT EVACUATION PROCEDURES

1. Always wear disposable protective gloves. *When handling any waste system component, always wear throwaway latex or rubber gloves and be sure to wash your hands thoroughly afterwards. No need to take undue risks.*

2. Connect the sewer hose to the termination outlet and the sewer inlet. *Unless you are equipped with Phase Four's Waste Master system with its permanently installed hose and nozzle, you'll need to remove the sewer cap and attach the sewer hose adapter. Make sure the seals are in good shape. Inspect the seal on the cap and the adapter periodically. Seals are easily replaced so there is no excuse for having dripping hose connections.*

I recommend using a clear sewer adapter at the hose connection or a clear fitting at the sewer inlet in order to check the cleanliness of the water as you flush each tank after evacuation.

Be sure you have the correct elbow adapters on hand to securely affix the bitter end (open end) of the hose into the park's sewer inlet. No leaks allowed here either! Keep in mind there is no standard size sewer inlet mandated for RV parks or dump sites; you'll find everything from 3-inch to 4-inch to even 5-inch or larger inlets. Be prepared! Do not just simply stick the open end of the hose down the sewer inlet allowing tank odors and park septic odors to escape.

Also, use the shortest sewer hose as possible. Do not use that 20-footer for a 6-foot run and have it snake back and forth between the coach and the sewer inlet. (This is why I recommend the Sewer Master hose….extend it only as far as you need!) And be sure to maintain the proper slope of the drain hose. Remember water and waste cannot flow uphill!

3. Only evacuate a holding tank (black or gray) when it is over ¾ full. *Yes, this means* ***not*** *leaving the gray valve open while in the campground – the total opposite of what we've been taught for years. Filling each tank above the ¾ mark before evacuating will ensure you'll have enough volume (and velocity) to thoroughly drain that tank and flush the hose at the same time. A slow flow of a small amount of water will not gather much steam or be able to rinse away any stubborn deposits in either holding tank.*

Here's another reason for keeping the gray holding tank valve completely closed except while evacuating – ever walk through a beautiful, scenic campground and catch a whiff of sewer odor wafting through the park? Kinda ruins the moment, huh? All those coaches with the gray tank valve in the open position (sewer hoses obviously connected), are simply acting as a direct conduit to the park's sewer system. Each coach becomes a mini-vent system for the septic system of that campground. No wonder sewer odors still abound in the nicest of destination locations!

Follow the logic; a large septic tank or waste management system in a campground will have intrinsic venting designed into it for sure, but with numerous motorhomes and travel trailers connected to that system with their gray tank valves open, odors rise up through the septic system, through the sewer hoses of those RVs, through the empty gray holding tanks and up the vents of those holding tanks. Remember, it may be your gray tank, but it's the campground's black and gray odors coming up and through! The only problem

with this scenario is that the gray tank vents on the RVs are a lot closer to the ground than the park's own sewer vent so odors are more noticeable. But by keeping the gray tank valve closed until the tank is almost full you will eliminate the localized (at your site) venting of the park's sewer gasses. The more people who follow suit, the less likely we'll have to endure septic odors in and around the campsite..

4. Evacuate the black tank first. *This is pretty much standard procedure now and something most all RVers are aware of, but it's worthy to mention it again.*

After the black tank empties flush it out with a large amount of fresh water if you are connected to city water. Simply keep flushing the toilet. Monitor the cleanliness of the water through the clear hose adapter. When the draining water is relatively clear, stop flushing, close the gate valve and cover the bottom of the tank completely with fresh water.
Permanently installed holding tank spray kits are available that attach to each holding tank thereby allowing fresh water to be directly induced into the tank after dumping, but I'm hesitant to drill mounting holes into holding tanks. Plus I like to flush all components of the waste system including the toilet, sink drains, etc., so I prefer to simply flush the toilet and run water in the sinks.

Treat that tank with RM Tank Care at this time.

5. Evacuate the gray tank last. *After the black tank has completely emptied and the termination valve is closed, open the gray water valve and empty that holding tank. Be sure to rinse this tank as well and cover the complete bottom of the tank with fresh water afterward. Dumping the gray tank last utilizes its liquid contents as well as the fresh water added after dumping to help clean any solid waste that may remain in the sewer hose. Add the RM Tank Care to the gray water holding tank as well.*

6. Drain the sewer hose. *After both tanks have been emptied for the last time at that location, take the time to "milk the hose." Raise the hose at the closest point near the termination outlet on the RV and walk it towards the sewer inlet. Keep raising the hose as you walk, thereby "milking" the hose and emptying it completely of water and waste. Even a properly sloped flexible sewer hose will have residual water and waste particles left inside. These particles will become an odor generator over time, so it's imperative in an open system, (one without a positive shut-off valve at the sewer inlet), to completely remove as much moisture as possible.*

7. Check the "P" traps. *Every month or so, look down each sink drain and the tub/shower drain to ensure the water seal is still there. You'll probably have to use a flashlight, but it is imperative that a water lock remains at all times. This is the principle method of preventing gray holding tank odors from entering the interior of the RV. In some waste system designs, a quickly draining tank can cause that water lock to be siphoned out of the trap. Remember, a dry "P" trap is nothing more than a shortcut for odors to gain entry into your RV.*

8. Be sure the toilet bowl contains water at all times. *If water eventually seeps past the seal and the toilet bowl empties, it's time to make an appointment at your local service center. An empty toilet bowl will allow black tank odors into the RV. If water can leak past the seal, vapors can also!*

FINAL THOUGHTS

Realize that these are simply my recommendations based on my evaluation and testing of these products and services. I strongly encourage you to perform your own due diligence. Contact these suppliers (or competing suppliers, for that matter), and have them convince you as to why you should be using their products and services.

I have found, however, that the implementation of the above products coupled with the correct evacuation procedures, holding tank odors can be effectively eliminated…forever!

Remember, RVing is more than a hobby, it's a lifestyle!

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