A Toxin-Free Home For $7000

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I live in a tiny house on wheels out of necessity, not fashionable choice. I have environmental sensitivities as part of my autoimmune illness. After I custom-designed a trailer to address this, my health slowly but invariably and without question started improving. Since then, I've gotten at least an email a week asking for more details about how I built it.

If you're someone that believes your current living situation simply won't do and you're considering switching to a universally-tolerated home, the timing is ripe for you. When I started out, the perception by many outsiders was that I'd become trailer [somethingunpalatable]. You howeverget to say you're joining the*tiny house movement*,thanks to the hipsters. Here are my design recommendations:

Rock Out To Metal

Many of us have heard about "green" homes. They focus on low VOCs and other inert materials. I've read all about these too, and they run into two huge problems:

1. Green homes are all the rage right now, and a super tiny one will easily run 5 digits
2. They're geared mostly toward chemical sensitivity, without much regard for mycotoxin sensitivity. Wood is often still part of the foundation.

I'm not an expert in materials. I actually think cement and cob (similar to adobe) are great materials for our purposes, but can you find an out-of-the-box home made with any of those? If so, can you afford it? After talking to a bunch of "green" experts and vendors and getting quotes that made my jaw dislocate, I found out there's a solution all around us:**metal and foam. Pros:** Affordable? Check. MCS-friendly? Check. Mycotoxin-friendly? Check. **Cons:** Temperature insulation. Metal conducts heat and cold better than non-metals so it gets hotter in the summer, colder in the winter. The foam buffers this somewhat, but not too much. More on how to get around this problem later. Aluminum and steel are both good and it comes down to a weight-vs-strength tradeoff. The best foam would be low-VOC, mechanically-mixed styrofoam, but plain white styrofoam worked fine for me. "Metal? But I have EMF sensitivity!" you say.

Metal and EMFs

The research on metal and EMFs is very raw, but metal may actually have both an accentuating and buffering effect. EMFSensitivity.org, a non-profit of individuals with EMF sensitivity, wrote the following:

> "If you choose to install a metal roof, we strongly recommend using ***thick foam board insulation*** under the roof....**metal is one of the strongest shields against higher frequency fields such as microwave, satellite, radar, and directed energy fields.**" -http://www.emfsensitivity.org/FindHouseMaterial.html

So foam may buffer the the outer metal's accentuation of EMFs (+1 for foam!), while the metal may actually shield against other dangerous frequency fields. I actually used to have severe EMF sensitivity, but after moving into metal, I could actually use WiFi inside it without issue. Perhaps this is another factor:

> "Mold, as with other microorganisms, can also react in high EMF environments. One study shows mold produces 600 times more neuro- toxins in a high electromagnetic environment." -http://articles.mercola.com/sites/articles/archive/2010/02/09/new-study-confirms-electrical-pollution-from-cell-phones-and-wifi-is-hazardous.aspx

Can You Roll With This?

Converting a cargo trailer into a home on wheels is advantageous for a few reasons:

1. **Legal**. Much easier to park it on a driveway than getting the zoning requirements to put a small home, regardless of size, on a lot.
2. **Plumbing**. If you want a shower and/or bathroom in your small home, this will require a very expensive septic tank, since many housing zones no longer allow graywater systems. Although I suggest not getting plumbing in your trailer either, if you do, the cost is minimal compared to septic. Plumbing any kind of home is just cost prohibitive, unless you do it illegally or look for zoning loopholes.
3. **Portability**. You can move whenever the heck you want. Some of you are saying you're not even able to drive now, but what if that changes? A trailer gives you the option, just in case.
4. **Cost.** It's much cheaper to convert a cargo trailer than buy a home with the same specifications unless you build the home yourself, because some great cargo trailer companies will do most of the conversion on delivery without charging extra labor costs.

Green Homes? You Mean Green Benjamins

Let's look at a few of the prefab green homes being advertised as "low-cost":

1. http://www.leedcabins.com/Home.html. A market leader in prefab metal shipping container (ISO) homes, which are very much in vogue right now, charges $17k for its most basic model.
2. http://www.tumbleweedhouses.com/. A market leader in the tiny home movement which even designs tiny homes on wheels. An appealing idea, until you realize the smallest 65 sq ft homes they make are around $40k to buy ready-made and $20k to build yourself.

How About A Home For $7000?

Now I will be honest about what I spent on my home on wheels. I bought a 6x12x6 trailer shell for $3000 (entirely enclosed, has plywood insulation, and only has a back door which you can't open from the inside)and paid around $10,000 for the conversion. This was partly because the contractor added things that ended up being unnecessary, like a rooftop A/C that can blow Dorothy away, and plumbing. The other reason was that **half the cost went to paying labor**. My learning pain is your gain. You see, I had no idea thatthere are cargo trailer companies (Carson Trailer, Wells Cargo) that add many options for you out-of-the-box without charging extra for labor. You'll pay top dollar for the parts of course, but it'll still come out to way less than hiring a contractor to install the cheapest parts on the market. If I could do it all over again, I would get both the cargo trailer shell and the following conversion done by the manufacturer:

- electric brakes - only if you expect to tow it; you can always add these on later ($200)
- side door ($300)
- large window ($250)

- rooftop vent ($90)
- Electricity: 30 amp panel ($200-$450), 120v outlets inside ($65-$120 each)
- dome light ($66)
- Two 6v batteries - alternatively, if you plan on staying plugged in all the time, you can use one 12v battery ($245)
- replace the plywood with foam (very cheap)
- Cost may vary for:
    - inner aluminum panels on floor and ceiling
    - .125 gauge aluminum floor, making sure to attach them directly to a steel frame with with crossmembers on 12" centers

Avoid Plumbing:I wouldn't get plumbing for several reasons. I don't think it's worth the cost (plumbing lines, freshwater tank, graywater tank for shower, blackwater tank for toilet), and maintenance. The integrity of your water tanks is a function of the water they store, and if you're hooking up to stagnant city water, that may lead to contamination. My goal here is lower immune assault plus lower maintenance. Sort of like the ideal girlfriend, except more box-like and sedentary.
You might have access to a bathroom wherever you're camping. If not, there are many affordable portable toilets on the market. Even better, many off-the-grid homes are now usingcompost toilets. As for showers, there's an elegant solution in the Eccotemp Tankless Water Heater and Outdoor Shower for a whopping $120 plus the cost of propane. Just attach a garden hose and you have a hot shower within seconds. Seriously. Very hot. If it gets cold and windy where you are, then have a contractor build a simple wooden outdoor shower like this:https://a0.muscache.com/pictures/6841442/large.jpgand just add a several-inch thick dirt basin overlaid with stones.
Finally, I would round out the interior with about $1000 worth of modular pieces:

- camping cotfor a bed (ridiculously comfortable)
- 43 qt refridgerator/freezer you can plug into any outlet
- radiating heater
- portable A/C that just requires a window or hole for the exhaust
- cheap 750watt microwave
- portable propane stove
- a table and plastic cabinets for storage and counter space.

Bottom line: If you're willing to sacrifice a little convention, you can have a fully functioning, toxin-free home for $5-$6k, plus whatever it costs to build a cheap outdoor shower. Let's be conservative and say $7k, and you're still at less than half of the cheapest prefab green home which is probably more toxic. Don't worry, if you feel bad for the green home developer, you can paypal me the difference.

Mother Nature: Jekyll & Hyde

Everything I described above doesn't really take the elements into account. There are a few ways to reduce heating and cooling costs, including the passÃƒÂ© mention of solar panels, and also mother nature's whims that you need to be weary of. **No Solar Panels**: Despite lowering costs, I *wouldn't recommend*depending on these as a sole source of electricity because they're not gonna power the most crucial sources of energy for a patient: heating and cooling. They'll power your laptop and maybe a few minutes of your microwave, but that's about all. Depending on a generator to fill in the gaps will create air and noise pollution that might really bother the chemical-sensitive, not to mention a lightweight generator is around 30 lbs. **Yes Shore Power and Propane:**Instead, I recommend relying on plugged-in electricity (15 amps is sufficient for a small trailer, so

you can even use a long-extension cord plugged into your house power) and using an indoor-safe propane heateras emergency heat. Propane is cheap for everything besides heating you all night long. One conventional propane tank will give you 18 hours of hot showers with the Eccotemp Water Heater. If you're in a really dry area and plan on staying there, you can install a swamp cooler, which uses far less electricity than a normal A/C. **Don't Underestimate Heat, Don't Underutilize Shade.**If heat, not cold, is the dominant extreme where you are and you're heat sensitive, mark these words:*run or shade*. This is especially important with the metal conducting heat like an oven and becoming dreadfully uncomfortable once it hits 80 on the outside. Building proper shade with a layer of air flow between the shade and your ceiling can mean the difference between not being able to breathe when the foam overheats and being able to stay inside comfortably. Luckily, there are a few ready-made options for this, including very affordable shelters from ShelterLogicand more expensive steel carport-like shelters from Versatubemeant for permanent installation and better suited for strong wind.

Final Thoughts

The above is by no means easy, but definitely doable since most of the work can be done for you. Don't hesitate to hire a contractor to do what's left over: you saved a ton of money by having the manufacturer do the heavy lifting. No doubt, $7k is a lot of money, but there's a good chance you've already spent that on a treatment that didn't do squat. It's an all-too-common rite of passage for chronic illness these days. Even if this new home does nothing for your health, it'll always be worth something as either a house that you can live in or resell on the robust EI shelter market. And then there's the mush. Trying something uncomfortable and different teaches us a lot about ourselves. In my case, what started out as the discomfort of being scrunched up in a tiny space is now pride in living with only as much as I need. The more friends and family implore me to move to a **real home** for perception's sake, the more I feel perfectly adequate in 72 sq ft of living space. My home is a constant reminder that my work, not my possessions, should leave the biggest footprint. Plus it's always fun togrin with mischief when I hear what my peers are paying in rent! **So what will $7000 buy you? Better health, a new home, a new perspective, all of the above?**