



Chapter Fifteen

Bum Rap

A bad rap—otherwise known as a bum rap—is dishonor resulting from false accusations or trumped-up charges. Grammarist.com

You can't say "shit," at least not on TV. It's unacceptable to utter such a word on public airways because, according to the US Supreme Court, it's deemed "indecent," meaning it "portrays sexual or excretory organs or activities. . . ." So-called "indecent" content is prohibited on broadcast television and radio in the United States between 6 a.m. and 10 p.m. If the Federal Communications Commission finds a TV or radio station in violation of these rules, it has the authority to revoke the station's license, or to impose a fine.

Funny that you can't say "shit," but you *can* say feces, turd, poop, excrement, fecal material, dung, stool, and manure, all of which mean exactly the same thing. Manure is the inevitable by-product of every animal's digestive system. Everything we eat turns to shit. When the turds stop coming, it's because we're dead. Benjamin Franklin once said, "In this world nothing is certain except death and taxes." He forgot to mention shit.

Humanure is getting a "bum" rap. You can't say shit on TV or radio, but you can say "murder." You can say "rape." You can talk about chopping someone's head off and shoving a crowbar down his neck.

You can talk about killing someone and cooking her flesh on a barbecue. None of these are “indecent.” None are as objectionable as “shit.” You can watch people being murdered on TV day in and day out. Heck, you can stand in your living room with your hand over your heart waving a flag as a superpower bombs a small nation back to the Stone Age, broadcast live on TV for everyone’s enjoyment, while hundreds of thousands of real men, women, and children are slaughtered, in real time. There’s nothing indecent about *that*. In fact, it seems to happen on a regular basis, complete with commercial sponsors. But hell no, you can’t say *shit*. Shit is bad.

I was once interviewed on the Howard Stern radio show. You may have heard the segment about the “feces farmer.” I waited on my compost toilet for the phone interview early one morning, assuming I would be the first person to be interviewed live while taking a dump in a dry toilet. Alas, it was not to happen. After I waited much too long, they called and informed me that I had been bumped off the show for a walk-in transvestite. Then they rescheduled me for a week later.

When they did finally call, I was not on the loo. I took the interview standing up, with their fart noises interrupting in the background and their fake dairy farmer loudly excoriating me for engaging in such a disgusting practice as recycling human excrement. When I was finally able to get a word in edgewise, I uttered, “Your so-called ‘dairy farmer’ is full of *shit*!” A chorus of loud objections ensued from the entire staff. “You can’t say that!” they exclaimed. It was a public broadcast, so they censored out my comment. During the live interview, I also informed them that I had been composting humanure for about twenty years at that time and that I had used all the compost for growing food. They censored that out, too — it also was much too objectionable for the tender ears of their audience. After the interview, they segued into a nice, wholesome segment about anal intercourse with midgets. No more disgusting talk about recycling turds. Now on my resume I include “bumped from the Howard Stern show for a walk-in transvestite” and “censored twice on the Howard Stern show.” Not too many people have that in their curriculum vitae.

Americans, and perhaps humans in general, think of human excrement as “waste” teeming with pathogens. In fact, it is neither. Humanure is an organic resource teeming with beneficial microorganisms. That’s a fact.

“Waste” is first a verb. We *waste* something, then what we’ve wasted becomes the noun, “waste.” There’s no such thing as waste until something is wasted. Humans are a peculiar species in that they intentionally and continually create waste, as if it’s normal and expected. But where else in nature does waste exist? The word “humanure” means human excrement beneficially recycled by feeding it to microbes. There is no waste involved. Because this idea is so radical in today’s world, especially in water toilet cultures, there was no word for such an organic resource. I had to create one. *Humanure*.

The world is expected to be inhabited by ten billion people by 2050, projected to need 20,500 trillion calories derived from food. How will this food be produced? If we continue to produce food in the same manner as today, agricultural land would have to expand by more than eight billion acres by 2050, potentially destroying the world’s forests and savannas, which will have to be converted into farmland. According to a 2018 World Resources Institute report, “The world faces an unprecedented challenge. Crop and pasture yields must increase at rates even faster than those achieved between 1961 and 2010—a period that included the widespread use of synthetic fertilizer and scientifically bred seeds and a doubling of irrigated area—to fully meet expected food demand and to avoid massive additional clearing of forests and woody savannas.”¹

The recycling of organic materials for agricultural purposes is fundamental to sustainable agriculture. Yet spokespersons for sustainable agriculture remain silent about using humanure to make compost. Americans each waste about a thousand pounds of humanure every year, which we discard into sewers and septic systems throughout the land. Much of the discarded humanure finds its final resting place in a landfill, along with the other solid waste we Americans discard, which, coincidentally, also amounts to about a thousand pounds per

person per year. For a population of 330 million people, that adds up to roughly 330 million tons of solid waste individually discarded by us every year, much of which is valuable as an agricultural resource. In fact, over 60 percent of municipal solid waste is organic and compostable. But only a small percentage is actually composted.

This is not to suggest that *sewage* should be used to produce food crops. “Sewage farming,” using raw sewage for irrigation, is practiced in many countries throughout the world, but the practice is unfortunately characterized by soil contamination, toxic organic chemicals entering the food chain, bad odors, pathogenic microorganisms such as parasites, bacteria, fungi and viruses, livestock infections, leachate runoff, groundwater contamination, persistent organic contaminants, crop contamination, surface water contamination, heavy metal contamination, and the degradation of both public health and the natural environment.²

In the words of scientists, “Irrigation with untreated sewage effluent could represent a major threat to public health (of both humans, and livestock), food safety, and environmental quality. Soils are apt to contamination with pathogens as a result of irrigation with sewage effluent. Raw sewage effluent had been implicated as an important source of health risk for chronic, low-grade gastrointestinal disease as well as outbreaks of more acute diseases including cholera and typhoid. A primary exposure route for the urban population in general is the consumption of raw vegetables that had been irrigated with sewage effluent.”³

Humanure, on the other hand, when kept out of the sewers, collected as a resource material, and composted, is a valuable agricultural resource. When we combine our manure with other organic materials such as food scraps, paper products, wood products, and agricultural byproducts, we achieve a blend that is irresistible to beneficial microorganisms. Yet Americans, on average, each waste nearly a pound of food every day, requiring thirty million acres of farmland every year to produce food that is simply thrown out.⁴ Only a small percentage of our discarded food is being composted in the United States; the remainder

is incinerated or buried in landfills.⁵

Is it wise to rely on landfills to dispose of recyclable materials? Landfills fill up, and new ones need to be built to replace them. In fact, we may be lucky that landfills are closing so rapidly — they’re notorious polluters of water, soil, and air. Many closed landfills are now listed as hazardous contaminated Superfund sites. A report from the state of Florida revealed that groundwater contamination plumes from older, unlined landfills can be longer than 3.4 miles, and that 523 public water supplies in Florida are located within 1 mile of these landfills, while 2,700 lie within 3 miles.⁶ No doubt similar situations exist throughout the rest of the United States.

Organic material disposed of in landfills also creates large quantities of methane, a major global-warming gas. “Municipal solid waste landfills are the third-largest source of human-related methane emissions in the United States, accounting for approximately 14.1 percent of these emissions in 2016,” according to the US EPA. They add that, “Methane is a potent greenhouse gas twenty-eight to thirty-six times more effective than CO₂ at trapping heat in the atmosphere over a one hundred year period.”⁷ Slowly we’re catching on to the fact that this throw-away trend must be turned around. We can’t continue to throw “away” usable resources in a wasteful fashion by burying them in disappearing, polluting, increasingly expensive landfills.

If we had scraped up all the human excrement in the world and piled it on the world’s tillable land in 1950, we’d have applied nearly 220 tons per square mile at that time (which is roughly 690 pounds per acre). In the year 2020, we would be collecting three times that amount, and by 2050, four times that amount, because the global population is increasing, but the global land mass isn’t. In fact, the global area of agricultural land is steadily decreasing as the world loses, for farming and grazing, an area the size of Kansas each year.⁸ The world’s burgeoning human population is producing a ballooning amount of valuable organic material that could be used to grow food, but instead is discarded as waste.

Every time we flush a toilet, we launch 5 or 6 gallons of polluted

water out into the world.⁹ That would be like defecating into a five-gallon office water dispenser and then dumping it out before anyone could drink it. Then doing the same thing when urinating. Then doing it every day, over and over. Then multiplying that by about 330 million people in the United States alone. Even after the contaminated water is treated in wastewater treatment plants, it is still polluted with excessive levels of nitrates, chlorine, pharmaceutical drugs, industrial chemicals, detergents, and other pollutants. This “treated” water is discharged directly into the environment and ends up in our rivers, lakes, and coastal waters.

If you don’t want to get sick from the water you swim in, don’t submerge your head. Otherwise, you may end up like the swimmers in Santa Monica Bay. People who swam there within 400 yards (366 m or four football field lengths) of a storm sewer drain had a 66 percent greater chance of developing a “significant respiratory disease” within the following nine to fourteen days after swimming.¹⁰ Why not just chlorinate the water before discharging it? It usually *is* chlorinated beforehand, but research has shown that chlorine seems to increase bacterial resistance to some antibiotics.¹¹

Compost toilet systems are now becoming internationally recognized as constituting “proper sanitation,” and are becoming more attractive throughout the world because of their relatively low cost when compared to waterborne waste systems and centralized sewers. In fact, compost toilet systems yield a dividend: compost, which allows such a sanitation system to yield a net profit, rather than being a constant financial drain (no pun intended). The obsession with flush toilets throughout the world is causing the problems of international sanitation to remain unsolved. Many parts of the world cannot afford expensive and water consumptive waste disposal systems. Water for toilets is simply not available in many places.

Water use in America increased by a factor of ten between 1900 and 1990, from 40 billion gallons per day to 409 billion gallons per day.¹² The US Department of the Interior estimates that each American now uses 80 to 100 gallons of water every day for personal use, mostly for

flushing toilets,¹³ or 300 gallons per day for the average family, according to the EPA.¹⁴ That's six 50-gallon drums of water used *every day by every family* in the US just for household purposes. The amount of water we Americans require overall, used in the finished products each of us consumes, plus washing and drinking water, amounts to a staggering 1,565 gallons per person per day.¹⁵ This amount of water is equivalent to each of us flushing toilets 313 times every day, about once every minute and a half for eight hours straight.

By dumping soil fertility down the toilet, we increase our need for chemical fertilizers. Today pollution from agriculture caused by erosion and nutrient runoff due to excessive or incorrect use of fertilizers is now the “largest diffuse source of water pollution” in our rivers, lakes, and streams.¹⁶ Chemical fertilizers provide a quick fix of nitrogen, phosphorus, and potassium for impoverished soils. However, it's estimated that 25 to 85 percent of chemical nitrogen applied to soil and 15 to 20 percent of the phosphorus and potassium are lost to leaching, which pollutes groundwater.¹⁷ This pollution shows up in small ponds choked with algae as a result of the unnatural influx of nutrients.

From 1950 to 2018 the global consumption of artificial fertilizers rose from 14 million tons to 220 million tons.¹⁸ Nitrate pollution from excessive artificial fertilizer use is now one of the most serious water pollution problems in Europe and North America. Nitrate pollution in water can cause cancer and even brain damage or death in infants.¹⁹ All the while, hundreds of millions of tons of compostable organic materials are generated in the US each year and buried in landfills, incinerated, or discarded as waste.

Incidentally, all animal manures benefit from composting, as today's farmers are now discovering. Composted manures don't leach like raw manures do. Instead, compost helps hold nutrients in soil systems. Composted manures also reduce plant disease and insect damage and allow for better nutrient management on farms. In fact, 2 tons of compost will yield more benefits than 5 tons of manure.²⁰

It all adds up to the fact that the human species must inevitably evolve. Evolution means change, and change is resisted when old

habits die hard. Flush toilets and bulging garbage cans represent well-entrenched habits that must be rethought and reinvented. If we humans are half as intelligent as we think we are, we'll realize that nature holds many of the keys we need to unlock the doors to a sustainable, harmonious existence on this planet. Composting is one of those keys.

Don't worry, I've seen the fear in the eyes of the water flushers at the thought that they might have to actually *use* a compost toilet someday. No one is suggesting that you use one, only that you know about them and how they function. The knowledge may come in handy one of these days. For example, I got a phone call from a lawyer in Boston about ten years prior to writing this. He said that he wanted a simple compost toilet like the one I describe in this book but didn't have the time or the tools to build one. I don't know why he needed one, and I didn't ask. He asked me if I could make one for him. I gave him my standard brusque response, which is, "Hell no, make your own goddam toilet!" Or something to that effect. I don't have time to make toilets for people. Then he threw out some attractive dollar figures — what he would pay for one. That got me thinking.

So when my son was home from college for the winter holidays with about six weeks off, accompanied by one of his college buddies, both looking for work and wanting to earn a few bucks, I got an idea. I had a stack of air-dried lumber and they wanted work, so I got them busy building Loveable Loos, which we put up for sale on the internet. It turned out that some Americans actually do want a toilet designed to simply collect toilet material rather than dispose of it. After we sold the first thousand, I quit counting. Why would anyone in the US want such a toilet? Who was buying them? Well, people from all walks of life, such as the lawyer, needed them for one reason or another. Maybe they had a garage without a toilet, a hunting camp, or a barn, or maybe they just wanted to make compost. For whatever reason, there seemed to be a demand, a small one, but a demand, nevertheless.

Then I started visiting countries where water toilets are not available, from Mongolia to East Africa and in between. What it's like to have a hole in the ground for a toilet is a concept that is completely

alien to people who grew up with flush toilets. Yet cultures without water toilets are largely at a loss for alternatives. There are pit latrines, ventilated improved pit latrines, double vault dry toilets, and a host of other options, but none that you can put next to your bed and none that are odor-free. When I explain to these people about composting, how it works and how it can be adapted to a sanitation system, they are immediately interested. After they



heard my presentation on compost toilets, villagers in Tanzania told me that this was going to be the next revolution in their lives. An elderly man in Mongolia stood up in a crowd of people, all of whom were sitting on the floor, after my compost toilet presentation to his community, and excitedly suggested that their communities could have competitions to see who could make the best compost. A senior citizen in Nicaragua who put her Loveable Loo style toilet in her thatch hut described it as an “en suite toilet,” equivalent to one in a fancy hotel room. One of her neighbors, a bachelor octogenarian, stopped digging a pit latrine hole behind his hut when he realized he could simply put a compost toilet right next to his bed. He abandoned the hole, half dug, and put up a compost bin outside instead. People who are bedridden, crippled, elderly, missing limbs, or even just with little kids all appreciate having an indoor toilet. It was experiences such as these that made me understand that the fart noises on the Stern show and the other ridicule that Americans direct at the compost toilet concept were perhaps unfortunate but completely irrelevant.

On one radio interview I did, the interviewer asked how I got the

turds out of the toilet. Did I use a fish net? I said no, I trained my kids to bob for them like bobbing for apples, with their hands behind their backs. Then I praised their radio station for having similar characteristics to my own endeavors. “Oh, how’s that?” they asked. “Well, we both deal with crap,” I replied. “I compost mine, and you broadcast yours.” They hung up on me.

The people around the world who don’t have toilets take the idea of composting very seriously. Nobody in these places smirks or squirms at my presentations; if anything, they are riveted. They tell me they’ve never heard of anything like this and they didn’t know such a thing as compost existed, nor that it was possible to compost their toilet material. It helps when I tell them that I personally use a compost toilet in my home and have done so continuously for the past forty plus years and the entire time I have grown my food with the compost. It also helps when I tell them that I’ve made the long trip to their village or town as a volunteer; that I’m not paid to go there; that I’m not associated with any government, university, or business; that I’m not selling anything; nor am I making any money for my efforts. Granted, I am paid once in a while for doing compost teaching or training, or for setting up compost toilet projects, but mostly I use whatever revenues I’m able to generate from book sales to finance my efforts.

I’ll never forget the day I met with a group of tribal leaders in the mountains of Tanzania, men and women, about 150 of them, gathered on a mountainside under a giant community candelabra tree to hear my compost toilet presentation. Some walked a mile through pouring rain to attend. After explaining to them how the toilet system worked, one of the men stood up and said (through an interpreter, of course), “We want them, how do we get them, and how much do they cost?” One thought immediately came to my mind: “[*Insert name of billionaire*], you friggin a--hole.” A handful of people have hoarded wealth equivalent to that owned by half the human race, and 2.3 billion people can’t afford a toilet. That’s the unfortunate world we live in.

A number of media groups have shown an interest in humanure, some out of a warped curiosity, some for scientific reasons, and some

environmental. Many have made the trek to my humble cottage in the woods, including public TV and radio, four separate Korean film crews for documentaries aired in South Korea, the BBC filming an ecological series for “The Ethical Man,” Treehouse Masters looking for a toilet that would work in a treehouse, and Larry the Cable Guy shooting some bizarre episodes for the History Channel. Unlike the Stern show, the Cable Guy was very personable, funny as hell, and respectful. I cooked him a venison roast with garden potatoes and a tomato salad and we ate it on my side deck that beautiful fall day while his crew filmed the episode. Somehow, before the lunch was over, those potatoes became “pooptaters” and the tomatoes became “turdmaters.” Now I can’t get those words out of my head. A curse? Perhaps. I do like fresh sliced turdmaters on toast, I must admit.

Bacteria can be bizarre, but they can also have a profound effect on our lives, for good or ill, but mostly, I believe, for good. For example, a lady several hundred years ago was walking through the mountains of Greece carrying a small bag of iron nails for shoe making. She was delivering them from her father to a man in a nearby village. Walking over the rugged, rocky terrain, she tripped and dropped the bag. Several of the nails fell out. Then she noticed something perplexing, something she could not understand. One of the nails was stuck to a rock. When she lifted the rock, the nail stayed adhered to it. She couldn’t shake it off. The rock was *magnetite*. She had discovered *magnetism*.

Some bacteria are *magnetotactic*. They have organelles called *magnetosomes* that contain magnetic crystals, fixed magnets that cause the bacteria to orient themselves to Earth’s magnetic field. Magnetotactic bacteria were only discovered in 1963. No one is quite sure why the bacteria orient to the Earth’s magnetic field, but they do. Billions of years of such bacteria thriving on the Earth, dying, settling into sediment, collecting in layers, becoming compressed into mud and then rock, and ultimately transforming into magnetite, finally caught the attention of a human being.

The young lady took the rock back to her father to show him the unusual phenomenon. Interest spread quickly. Magnetic rocks were

collected and disseminated around the world. Leading scientists experimented with magnetism. Needles were magnetized using the rocks, creating the first compasses. Eventually, humans figured out that magnetism doesn't exist without electricity. It's *electromagnetism*. The study of electromagnetism yielded radio waves, TV, everything electric that dominates the world as we know it today: our computers, cell phones, the list is endless.

The lady is fictional, but facts are facts. We theoretically owe the world as we know it today to lowly bacteria. An accidental blunder discovered the geological remains of trillions of bacteria and the magnetic organelles they somehow created inside themselves.²¹ Our entire lives rotate around electromagnetism today.

What if magnetism hadn't been discovered? Where would we be now, the human race? The bigger question is what *else* are we walking past every day and not seeing? What natural marvels lie right in front of our eyes that we are blind to? Can we peel our faces away from our TVs, cell phones, and computer screens long enough to see the world around us? If we look hard enough, we may find that microbes just might have more tricks up their trillions of sleeves.



