Chapter Two

Before we start:

Five more preliminary items

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Hazards

Pets like rabbits, gerbils and hamsters are herbivores, so disposing of their poo is easy. Recycle it as you would food scraps or yard waste. Or bury it in the garden. Raw waste from dogs, cats and other meat-eating animals is too harsh for tender plants and more likely to carry pathogens.

But this stuff is not nuclear waste. Do you refuse a kiss from your pooch because you wonder where his loving snout has been? No. Do we have ongoing human epidemics due to our close contacts with pets? No. Do you know anyone who became violently ill because they share quarters with pets? Probably not. Widespread problems associated with dog and cat waste are more likely to be caused by pollution than health issues.

So, short of an impending natural disaster or a disaster in full swing or the aftermath of said disaster, there is never, ever an excuse for not picking up after your dog. Trashing poop is always better than leaving it where it lands.

Recent studies show that dogs are third or fourth on the list of "nonpoint source" (i.e., diffuse; point sources are things like factories and sewage treatment plants) contributors to bacteria in contaminated waters, increasing the potential for serious diseases, including cholera and dysentery. According to the EPA, two days' worth of raw

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dog waste runoff from about a hundred dogs can create enough pollution to close a bay and all the watersheds within 20 miles (36 km).

Waste left on the ground — no matter how far away from a storm drain or stream — can eventually end up polluting a waterway. In addition to threatening health, bacteria that feed on dog waste deplete oxygen in water, killing native aquatic life. The bacteria also produce algae blooms that block sunlight and suffocate fish.

In arid locations with little drainage, dog waste left intact can take more than a year to break down. Left along trails it can morph into fertile patches that invite invasive weeds, crowding out fragile native plants. If you are a serious hiker who takes your dog roaming far from trash cans, invest in one of the many odor-proof packs or containers designed to help you "pack it out."

Health experts point to the potential microbes in infected raw dog waste such as coccidia, giardia, hookworms, parvovirus, Toxocara canis roundworms (ascarids) and whipworms. An average dog dropping also contains three billion fecal coliform bacteria. When dogs infected with roundworms leave their droppings on the ground, viable eggs can linger in the soil for years.

Cats are the primary hosts of feline-specific parasites, including T. gondii, which can cause toxoplasmosis, a

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serious and occasionally fatal illness to infants, pregnant women and people with compromised immune systems. Like roundworms, these oocysts are extremely difficult to kill, but like roundworms, they can be destroyed at a sustained temperature of 122°F (50°C) — a heat achieved via successful composting.[14]

Outdoor cats that dine on mice are most likely to be carriers,[15] but don't give your indoor cat a free pass. Our indoor cat Max does a kitty crab walk when an outside door opens, but I once found a mangled mouse behind my computer tower.

So there is a chance that your pet might carry pathogens. Always give raw dog and cat waste its props. Give the poo its due. But understand that the dangerous microorganisms it might contain will only give you health issues if you ingest it or rub it into your eyes or open skin.

Handle pet waste in a respectful way, whether or not your goal is cycling it back to nature. Wash your hands if there is any possibility of contact. Keep equipment used to recycle pet waste separate from equipment used to recycle material for edible gardens. This will eliminate cross-contamination. Do not process dog or cat waste in open areas where it can be accessed by children, pets or wildlife.

Never use raw pet waste to topdress soil where fruits (including berries) or vegetables may drop and later be

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harvested from the ground. Plant roots do not uptake pathogens and transport them to other portions of the plant. But the pathogens can easily survive on the surface of edibles.

Although some proponents maintain that bokashi and vermiculture practices eliminate pet waste pathogens, there is no guarantee that do-it-yourself (DIY) practitioners will be able to fully destroy enough harmful parasites to make the product safe for edible gardens. One sure way to kill these pathogens without outside chemical intervention is to fully compost them.

Dr. T. Gibson, head of the Department of Agricultural Biology at the Edinburgh and East of Scotland College of Agriculture, is the authority often quoted as the final word on destroying pathogens through composting. He stated, "All the evidence shows that a few hours at 120 degrees Fahrenheit (49°C) would eliminate them completely. There should be a wide margin of safety if that temperature were maintained for 24 hours."

Large-scale sewage treatment and recovery, which sometimes later includes composting, can process sewer biosolids (read: human waste and industrial/chemical runoffs) so that the material meets EPA standards for commercial sales and agricultural usage. The resulting material must be tested and meet agency requirements for pathogen densities.[16]

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Flushing or burial gets you off the hook in terms of reusing the end product. So does biodigestion using a septic tank if you do not harvest residue. But if you casually recycle pet waste using bokashi, composting, moldering or vermiculture, there is no guarantee that your end product will be safe. Sooo …

Do not use DIY pet-waste recycling compost, vermicompost (worm poop), digested sludge or leachates/teas on or near edible crops. No matter how carefully you handle the process, unfinished material might be mingled with the finished product. If you drop your fruits or vegetables onto your recycled fertilizer while harvesting or if bits of soil cling to tubers, you might be exposed to harmful pathogens.

That said, your finished DIY soil amendment can be green dynamite for outdoor or indoor ornamental plants. You will have nutrition-packed soil at no cost and divert your household pet waste from the local landfill: Smaller Carbon Paw Prints.

Are you afraid that health department agents are lurking, waiting to send in a SWAT team if you recycle your pet's waste? Frankly, they have much bigger fish to fry. Unless you pollute a stream, defile a public recreation spot, create unhealthy conditions resulting in sickness, disturb your neighbors or leave a mess for someone else to clean

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up, you are a free agent. Only if your activities qualify you as a bona fide nuisance will your local health department act and be commended for a job well done.

Start with healthy dogs and cats

Feed your pets with care. Garbage in, garbage out. The type of food you give your pets will affect not just their health, but also the quality and quantity of waste you must deal with. The easier food is to digest, the more completely it will be digested, resulting in smaller stools that will decompose faster.

Foods based on meat and rice are easiest to digest. Soy- and wheat-based foods aren't bad, but corn-based food doesn't break down well. If a food isn't easy to digest, the resulting waste will not break down easily either. Read pet food labels carefully and consult with your vet about the nutritional value of specific diets.

Regular visits to the vet ensure that parasites are not hitching a ride with your pets, compromising their health and contaminating feces. Follow a worming schedule developed by a veterinarian familiar with local conditions. Puppies and kittens that have not been dewormed are almost always carriers.

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There is no way that most of us can absolutely monitor what our pets eat. Dogs will chomp down irresistible but iffy stuff as they explore. Cats kept indoors will occasionally snag an unlucky intruder. But chances are good that a healthy pet's waste will not contain dangerous bacteria and parasites that can easily transmit disease.

Location, location, location

Does your dog do his business on your property or offsite? If you are going to recycle waste using any of these practices, it will be much easier for you to scoop up the poo immediately and start the process. Your dog will generally defecate within a quarter mile (400 meters) of the start of a walk, so it might save time in the long run to

Herbivores vs. carnivores

The Denver Zoo has a long history of sustainable practices. For years the zoo transported its tons of animal waste to a regional composting yard. But the composters only accepted herbivore poop because of the complications involved in safely processing the waste of meat-eaters. The carnivore and omnivore waste was routinely trashed.

The zoo now operates a biomass gasification system that uses high heat to convert all of its solid waste into renewable energy. The poo even powers a maintenance vehicle! This program saves the zoo thousands of dollars annually and provides a model project for public facilities.[17]

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get him or her in the habit of using your yard or another appropriate nearby site for toilet purposes and then moving on for walkies.

That doesn't give your canine buddy free rein to turn your bluegrass into Swiss cheese. If you have some out-of-the way space in your yard, you can set aside a "pooch patch" and train your dog to only transact serious business at that spot.

Dogs are attracted to pooping places with longer grass. A restricted "wild" area with grass four or more inches (ten or more centimeters) tall works best and has the added advantage of reduced mowing. The most dog-tolerant grasses tend to be perennial ryegrasses and fescues. Pick up the poo right away and douse the grass with water if possible.

Dog waste vs. plutonium

Dog day care owners, poop scoopers, pet sitters and shelters are the multi-dog stewards who contact us most with questions about keeping waste out of dumpsters. Many say that they do not have the time, space or resources to recycle the waste. I always ask if there is a large waste treatment plant or biodigester nearby that might accept the waste. A woman in charge of a rescue group in North Carolina replied, "Nothing like that ... but we do have a nuclear power plant down the road." We shared some laughs about the favorable cost-benefit analysis of nuclear energy that produces toxic waste versus the dimmer prospects of a biodigester fueled by toxic waste.

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Your pet will usually want to urinate before deciding to dump the whole enchilada. Repeatedly urinating on a single spot will kill any type of grass or other ground cover, so you might want to add a slightly modified area at or near your pooch patch for this purpose.

Some European dog parks use a pee pole setup to confine urination, but for some reason the practice has not been adopted in the United States. Simply install a pole in the center of a designated area and surround it with a scattering of sand or pea gravel (get it?). Female dogs may be just as comfy squatting on a nice sandy place without the pole.

Introduce your dog to the patch right away and continue to accompany him to the spot for "visits." Sing his praises or give him a treat for performing like a champ. Your pet will get the idea and return to use the patch for its intended purpose on his own. You might need to reinforce this behavior if your dog has a contrary nature or simply wants to piss you off (pun intended).

If cajoling and commands fail to work, try banging a pot or simply clapping just as your pet begins settling down to business on forbidden turf. The peace and quiet of the pooch patch will look much more attractive. The American Society for the Prevention of Cruelty to Animals (ASPCA) provides excellent training instructions, under the title "Teaching Your Dog to Eliminate in a

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Specific Place," in the Pet Care section of its website.

Be sure to place your patch close to a trench, bin, tank or other outdoor recycling system so that cleanup will be easy. If you pick up waste offsite, hauling it back for recycling will add another step to the process. You might decide it's too much trouble or just too darn far to transport your pet's waste and simply trash it in the nearest bin. Or you might think it's worth the effort. In either case, you will need a bag.

The great pickup bag charade

You've seen the claims about dog bags that:

- compost like autumn leaves
- degrade in landfills
- leave no trace

I talked to a woman so sure of this packaging hype that she left her full doo bags right out in the middle of a dog park field. "When I come back, the bags are always gone because they're biodegradable," she said. She was convinced that they had morphed into dirt overnight.

Some well-meaning Dog People believe that, contrary to the laws of nature, biodegradable bags will disintegrate in a landfill and the contents will push up daisies right through tons of trash. Many manufacturers are shameless when it comes to justifying overcharging for

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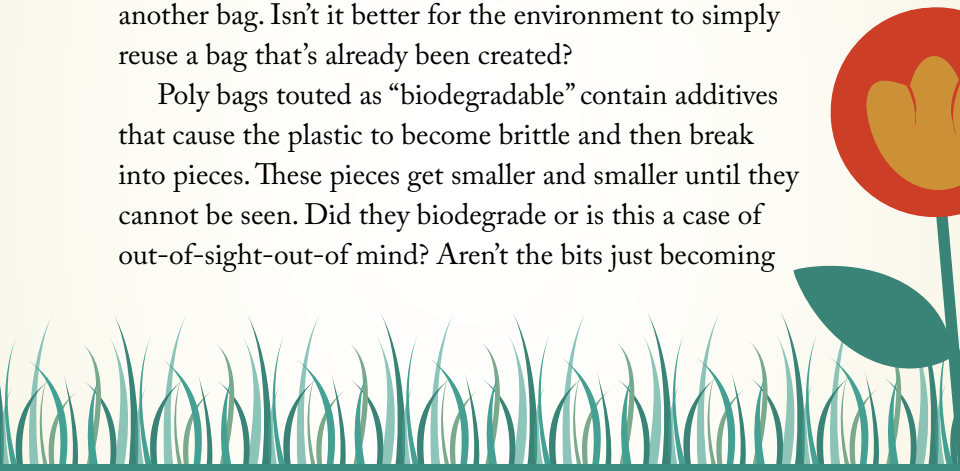
biodegradable dog bags. Here's the scoop.

For starters, when you throw your dog poo into the trash, who cares how it's wrapped? It's going to be sealed in a landfill where it will go into suspended animation. When you purchase a commercial dog-bag product — whether it is ordinary plastic, "biodegradable" or even "certified compostable"— you are responsible for creating another bag. Isn't it better for the environment to simply reuse a bag that's already been created?

Poly bags touted as "biodegradable" contain additives that cause the plastic to become brittle and then break into pieces. These pieces get smaller and smaller until they cannot be seen. Did they biodegrade or is this a case of out-of-sight-out-of mind? Aren't the bits just becoming



Plastic or paper?

FEDOG of Prague, Czech Republic, has a solution that is both smart and gracious. The company manufactures an "environmentally-friendly bag for dog excrement." Their bags are made of recycled paper. Each bag contains a strip of cardboard that Dog People easily fold into a scooper. Both scooper and waste can be slipped back into the bag and folded up for on-the-spot disposal.

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plastic dust, waiting for an opportunity to enter the food chain at a microbial level?

Compostable bags are primarily made of biodegradable polyesters and renewable resources such as starch. It's complicated, but suffice to say that that bag made from corn is not all corn or it would not "hold together" as a film. And even if it is primarily corn or potatoes or beets, aren't those things we should be eating … or distilling? You're probably thinking that there's no way around the plastics dilemma. But wait, what's this? (See "Plastic or Paper" below.)

Now back to better living through polymers. There is no good–better–best when it comes to dog bags made with plastic film. But here are some tips:

- If you trash pet waste, simply use shopping or newspaper bags.

FEDOG launched the product in 1994 and was granted a patent for the EU in 2004. Physically handicapped workers in protected workshops help in the final production. Each year this company distributes many thousands of these bags, steel dispensers and stands to parks all over Europe and Asia.

(Never stop believing that people with insight, good intensions and determination can be agents for positive change.)

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- If you trash pet waste and need additional bags, buy pickup bags made of recycled plastic.
- If you send poo back to nature using burial or composting, you can use a certified compostable bag (American Society for Testing and Materials — ASTM 6400), tearing open the film if possible. Or use a paper bag. Or tear pickup sheets out of the Yellow Pages … as in, improvise! Breaking open the bags before burial or composting is helpful. Some compostable bags take a long time to degrade.
- If you send poo back to nature using biodigestion (pet septic system), bokashi, moldering, vermiculture or bokashi, use no bags. Flushable bags are an option for flushing.

California law trashes "biodegradable" bag claims

On October 8, 2012, California Governor Jerry Brown signed a bill that prohibits the sale of plastic bags labeled "'biodegradable,' 'degradable,' or 'decomposable,' or any form of those terms." Furthermore, "... while scientific technical standards exist to verify that a product is 'compostable,' there are no such standards to verify if a product is 'biodegradable' because the conditions and timeframe inherent in the claim of 'biodegradability' are too vague."[18]

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Heavy metals and pharmas

"The heavy metals when linked to organic matter have a behavior in the soil that is still little known."[19] Manure commonly contains cadmium, copper, zinc or other compounds at various levels depending on the amount of heavy metals in the diet and the environment. Yet commercial farmers commonly use treated sewage biosolids (read: human feces) to fertilize their crops. They also apply manure from cows, pigs and chickens.

The EPA has set limits for specific metals before processed sludge can be used for agricultural processes. But a wide variety of heavy metals remains at certain levels, so the heavy metal cycle continues, biosolids to foods to fertilizers to biosolids.

Yin and yang of plastic

I have used the word "plastic" 54 times in this book — not just to criticize its environmental impact, but also to suggest solutions. Plastic is cheap and everywhere. Pet waste recycling should be easy, so I will be suggesting readers use plastic storage bins for wormeries, plastic compost tumblers, plastic bokashi buckets, plastic garbage cans for pet-waste septic tanks, plastic moldering containers and more. Nothing works quite as well as plastic to keep water in or out. But use it judiciously. Create less new plastic — reuse, reuse and reuse again before recycling.

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Ditto residual pharmaceuticals and hormones from meds that are routinely prescribed for animals and humans alike. We know that these contaminants move through the food chain, often unaltered. Regulations limit some of them, but this stuff is building up faster than kudzu in monsoon season. There are enough data and opinions on this subject to fill many volumes. We could spend our lives trying to keep track.

Should you be paranoid about this? Only if you're paying attention. I'm not an expert on the subject, but when

Humble solution for heavy metals

Researchers from the Pondicherry University in India discovered that earthworms can significantly decrease levels of heavy metals such as cadmium, copper, lead, manganese and zinc from municipal solid waste. Microorganisms in the worms' digestive systems pull heavy metal ions from material passing through. The metals then become locked in the worms' tissue. When the worms are removed, the vermicompost is safe for agricultural use. [20]

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Time and *Consumer Reports* start exploring it with lead articles, I get antsy.

So please, don't talk to me about heavy metals or meds as they relate to pet poop recycling. Don't go off the deep end about immortal miniscule vinyl polymer strands in dog bags that might make their way into doggie compost. Insidious soil contamination is an issue that needs to be addressed in high-level scientific and policy circles, not *The Pet Poo Pocket Guide*.

Humble mission

Our goals here are cutting down on volume, pollution and landfill fodder, and repurposing perfectly useful organic material. Taking care of our own pet's business is a first step and something each of us can do. You might say it's (oh, no and duh!) "doo-able."

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