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The Naturally Clean Home

121 Safe and Easy Herbal Formulas for Nontoxic Cleansers

Karyn Siegel-Maier



The mission of Storey Communications is to serve our customers by publishing practical information that encourages personal independence in harmony with the environment.

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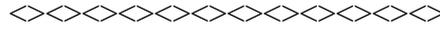
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Dedication

This book is dedicated to you, the reader, whose commitment to better living is my inspiration and reward for writing.



Acknowledgments

Many thanks go to my loving husband, Andy, whose faith in me never falterseven when mine does. To Aaron, Michael, and Andy Jr. I offer my heart and hugs for your cooperation and understanding during this project, aside from giving me yet another excellent reason for undertaking it.

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Finally, I thank the forces that gently direct me in spirit each day, for giving me the opportunity to return the favor.

1

Clean and Let Live

If your household is anything like mine, your Sunday mornings probably include the typical array of housekeeping activities, including washing, mopping, and polishing. There are probably a half-dozen things you'd rather be doing, but in the end it feels great to know the house is sparkling clean and a good space to be in. But is it? The grime and germs may have been whisked away, but something more ominous may have been left in their place: hazardous wastes. As you will soon learn, herbs can provide you with cleaning products that are just as effective, safer, and considerably less expensive than the products you may be using now.

Household Hazards

You're probably not very comfortable with thinking of your home as akin to a toxic dump site. But if you consider how hazardous wastes are defined, you'll get a different picture of the nature of the "ordinary" substances used every day in your home.

Basically, any substance that is poisonous, carcinogenic, corrosive, reactive, flammable, or in some other way injurious to animals or humans is considered hazardous. Just like industrial hazardous materials, household chemicals possess one or more of these characteristics and require special handling. The difference is that too often the health risks of common household products are inadequately communicated or expressed in vague terms.

What Are the Dangers?

While only one in five of the four million household chemicals created since 1915 have actually been tested for their adverse health effects on humans, there is a surprising amount of alarming information that underscores their negative impact. Consider the following statistics:

- Ninety percent of all accidental poisonings occur in the home. According to the Columbia College of Physicians and Surgeons, more than seven million cases of poisonings are reported each year. That equates to 14,000 each day! Young children are the primary victims, with the elderly being the next most affected.
- According to a five-year EPA study, the air in an average American home has chemical contamination levels 70 times greater than outdoor air. The EPA maintains that half of all illnesses occurring in the United States can be attributed to chemical contamination of indoor air. In fact, a 1985 EPA report states that household cleaners are three times more likely to cause cancer than outdoor air pollution.

- A study by the Toronto Indoor Air Commission concluded that, due to increased exposure to household carcinogens, women who work at home have a 55 percent greater chance of developing cancer than women who spend the majority of their time outside the home.
- The National Academy of Science estimates that 15 percent of all Americans are multi-chemically sensitive due to chronic exposure to household and cosmetic products.
- In 1990 alone, more than 4,000 children under the age of four were given emergency treatment for poisoning by consumption of a household cleaner. In the same year, nearly 18,000 pesticide-related incidents were reported in which 74 percent of the victims were younger than 14 years of age.
- The Consumer Product Safety Commission has determined that more than 150 chemicals found in ordinary household products are directly responsible for producing cancer, allergies, birth defects, and numerous psychological disorders.
- Dr. Russell Jaffe of Serammune Physicians Lab in Reston, Virginia, studied the long-term effects of pesticides on humans. He believes that as many as 16 million people in the United States evidence some degree of adverse reaction due to constant exposure. Of this number, Dr. Jaffe estimates that for five million people the results are ultimately fatal, 11 million are plagued with muscle and joint pain, and 500,000 are afflicted with migraines, asthma, bronchitis, and eczema.

- In December 1984, the *Los Angeles Times* reported that "adverse effects from [household] chemicals include reduced male sperm count, testicle atrophy and infertility." Several European studies in the early 1990s not only found that the sperm count of the human male has dropped by half since 1938, but that future generations are threatened as well. Prior to the boom of chemical industrialization, a healthy adult male produced millions of sperm per milliliter of semen, but this number is steadily declining. In 1975, the typical 30-year-old man measured an average of only 102 million sperm per milliliter. And in 1992? You guessed it the average 30-year-old produced a mere 51 million sperm per milliliter. This trend is expected to continue.
- For children under ten years of age living where home or garden pesticides are frequently used, the risk of leukemia increases by four to seven times. Childhood brain cancer is also associated with the use of flea collars, herbicides, pesticides that target termites, and pesticide "bombs" used indoors.

Environmental Impact

Are those seemingly harmless and gaily packaged cleaners stored under your kitchen sink starting to sound scary? If they can be so harmful to you and your family, it should be fairly obvious that their impact upon vegetation and wildlife is equally negative. Therefore, please refrain from the temptation to flush or toss them away; you'll be doing more harm than good in an attempt to "set things right."

You may rationalize that the small amount you'll be dumping has little effect on the "big picture." This kind of faulty thinking has created pollution on a global scale; in an average city, nearly 168 tons of household cleaners are released into kitchen and bathroom drains every year. In fact, the EPA characterizes the typical American household as "the number one violator of chemical waste per capita." Aside from the direct impact the chemicals have when introduced into the environment, there are other complications to consider when disposing of their containers.

The average person contributes 3.5 pounds of waste product per day to the whole garbage pie, a sobering increase of 90 percent from only 30 years ago, before the dawn of commercial manufacturing of household products. Many products are packaged in nonrecyclable containers. If all those containers aren't being collected with the recycling, where do they wind up? The answer, of course, is the landfill. During the last 20 years, more than 75 percent of our landfills have reached maximum capacity, and the EPA estimates that more than half of those remaining will be filled up over the next 20 years. Furthermore, a considerable portion of this waste is laden with residual chemicals that eventually seep into the soil, contaminating groundwater and surface runoff leading to lakes and streams.

The use and disposal of such products have very clear, far-reaching ramifications on both the earth and its inhabitants. We are slowly destroying our environment. We have also been manipulated into destroying ourselves in the process, just a little quicker.

Hidden Dangers

The dangers of some household products, such as bleach and caustic drain cleaners, are obvious and well known. But others may be seemingly harmless, and yet they contain ingredients that are just as deadly. The following is a sampling of some common household cleaning products and the typical constituents that threaten harm. This list barely skims the surface of the toxin pool, but it gives you an idea of what you and your family are being exposed to every day.

Furniture Polish

These commonly used cleaners contain petroleum distillates, naphthas, nitrobenzene, phenol (carbolic acid), mineral spirits, diglycol laurate, amyl acetate, and petroleum-based waxes. Petroleum distillates are highly flammable and can damage skin and lung tissue. Mineral spirits, naphtha, diglycol laurate, and amyl acetate depress the central nervous system. Nitrobenzene is extremely toxic and readily absorbed through the skin. Phenol is also absorbed through the skin and can cause convulsions, coma, respiratory arrest, or possibly death. It is also a nerve-deadening agent that can inhibit your sense of smell. Diglycol laurate can cause damage to the liver and kidneys. Phenol, nitrobenzene, naphthas, and other petroleum distillates are classified as hazardous wastes.

Dishwashing Liquids

Would you believe that the bottle of dishwashing soap you probably keep on the corner of your sink contains harmful chemicals such as naphtha, phosphates, sodium nitrates, petroleum-based surfactants, diethanolamine, and chloro-ortho-phenylphenol? Naphtha is a neurotoxin and chloro-ortho-phenylphenol is highly toxic. Both are classified as hazardous wastes. In the environment, chloro-ortho-phenylphenol can form other compounds that are absorbed and retained in the fatty tissue of living organisms, a process known as bioconcentration. Diethanolamine is a caustic substance, suspected of being a liver poison. Petroleum products are nonrenewable resources that break down slowly in the environment and remain long-term pollutants, and phosphates promote the overgrowth of algae. Dishwashing liquid is a leading cause of accidental poisonings in small children.

Automatic Dishwasher Detergents

Phosphates, sodium silicates, and highly concentrated dry chlorine are all found in these frequently used products. Automatic dishwasher detergents are highly alkaline and can burn the mouth and hands of a curious toddler, or the esophagus if accidentally swallowed. Dishwasher detergent is a leading cause of fatal poisonings in small children.

Drain Cleaner

Not surprisingly, these super-strong cleaners are made up of sodium hydroxide (lye), sulfuric acid, hydrochloric acid, and trichloroethane. Lye is caustic and can seriously burn the skin and eyes, as well as the stomach and esophagus if swallowed. Hydrochloric acid is corrosive and can damage the kidneys and liver. Trichloroethane is an eye and skin irritant, a neurotoxin, and can also damage the kidneys and liver. Many drain crystals contain highly concentrated forms of lye, bleach, and ammonia.

Oven Cleaners

Lye, methylene chloride, 2-butoxyethanol, chlorine, potassium hydroxide, ammonia, and petroleum distillates are the toxic culprits in oven cleaners. Most of these ingredients are recognized as hazardous wastes. Methylene chloride can damage the liver and kidneys and is stored in the fatty tissue of living organisms. With the exception of lye, all of these agents suppress the central nervous system when inhaled and can precipitate respiratory failure. The dangers are compounded for those who suffer from asthma.

Disinfectants

These aggressively marketed liquids and powders have quite a list of harmful ingredients, including naphtha, 2-butoxyethanol, triclosan,

phenol, formaldehyde, benzalkonium chloride, ethanol, and sodium sulfites. With an impressively toxic list such as this, one wonders which is less offensive a few invading germs, or the solution that seeks to destroy them. "Destroy" is right on the mark, because that's what benzalkonium chloride does to mucous membranes. Phenols can cause liver and kidney damage and are also nerve-deadening agents. Sodium sulfites can be fatal to asthmatics. Triclosan is readily absorbed through the skin and is associated with liver damage.

Laundry Detergent

Prepare yourself for quite a list here, including ammonium compounds, tetrapotassium pyrophosphate, sodium toluene, sodium alkylbenzene sulfonate, fluosilicate, benzethonium chloride, optical brighteners, sodium tripolyphosphate, sodium or calcium hypochlorite, and ethylenediaminetetraacetic acid (EDTA). Alkylbenzene sulfonate is easily absorbed through the skin and is known to damage the liver. Tetrapotassium pyrophosphate is very toxic, and fluosilicate is actually a pesticide. Sodium hypochlorite (bleach) and calcium hypochlorite are both highly corrosive and can burn eyes, skin, and lungs. EDTA binds with heavy metals in waterways, creating an overload of toxic metals. Optical brighteners (additives that reflect light to make clothes appear cleaner and brighter) can trigger severe allergic reactions and facilitate mutation of certain bacteria.

Toilet Bowl Cleaners

In our efforts to keep the commode clean, we are exposing ourselves to hydrochloric acid, hypochlorite bleach, phenols, oxalic acid, paradichlorobenzene (PDB), naphtha, o-Dichlorobenze, p-Dichlorobenze. Hydrochloric acid is highly corrosive. Hypochlorite bleach is also corrosive and can cause pulmonary edema or coma if ingested. Inhalation of dichlorobenze can damage the liver and kidneys. Most of these ingredients can be stored in fatty tissue of living organisms and are classified as hazardous wastes.

Mold & Mildew Cleaners

Are you taking a bath with sodium hypochlorite (bleach), sodium hydroxide (lye), ethanol, and formaldehyde? Then you should know that sodium hypochlorite and sodium hydroxide are corrosive and can burn the eyes, throat, skin, and lungs. Formaldehyde is highly toxic and considered a carcinogen. Ethanol can destroy mucous membranes.

Air Fresheners

These fresh-smelling sprays actually poison the environment with formaldehyde, naphthalene, p-Dichlorobenzene, phenol, sodium bisulfate, methoxychlor, piperonyl butoxide, and o-phenylphenol. Naphthalene and p-Dichlorobenzene suppress the central nervous system, while formaldehyde and piperonyl butoxide are known carcinogens. Meth-

oxychlor is a pesticide and readily stored in the fatty tissue of living organisms. Even more frightening is the fact that many air fresheners are chemically engineered to coat the nasal passages with an oily film and/or a nerve-deadening agent to interfere with the sense of smell.

Carpet and Upholstery Shampoo

Trichloroethylene, naphthalene, ammonium hydroxide, and perchlorethylene (dry cleaning fluid) are the main toxins found in carpet and upholstery cleaners. Ammonium hydroxide is corrosive and damaging to skin, eyes, and lungs. Trichloroethylene can cause cardiac arrhythmia or respiratory arrest. Perchlorethylene is a known carcinogen and impairs the liver, kidneys, and nervous system. Both trichloroethylene and perchlorethylene enter the body through inhalation and are stored in fatty tissue.

Pesticides Harm More Than Pests

Exposure to pesticides deserves a discussion on its own due to their widespread use in homes and offices as well as in agriculture. Their toll on human (and animal) health is very frightening.

What Makes a Pesticide Harmful?

Dichlorobenzene, tetramethrin, diazinon, organophosphates, chlorinated hydrocarbons, copper naphthenatethis is only a small sampling of the

potential ingredients of any given pesticide, and all are highly toxic. For instance, diazinon is extremely toxic and affects the central nervous system, while chlorinated hydrocarbons are suspected of being carcinogens and mutagens.

It is estimated that nearly three million pesticide-related accidents occur each year worldwide and result in the loss of approximately 220,000 lives. Statistics show that, after death or injury due to contact with household cleaning products, pesticides are the next most common cause of poisoning in young children.

But you don't have to ingest a pesticide or fall victim to a factory spill to be put in harm's way. If you live among the general population, you are exposed to constant low levels of pesticide constituents via residential and commercial spraying, garden insecticides, and residual amounts found in the environment. These agents are stored in the fatty tissue of humans and animals and are linked to a variety of cancers, diseases of the blood, mental and behavioral disorders, learning disabilities (such as attention deficit disorder), and chemical sensitivity. Even if all pesticides were done away with today, the genetic dispositions of successive generations would still continue to evidence their effects.

The Devastating Effects On Children

A nine-year study published in *Chemosphere* in 1998 analyzed the breast milk of 139 nursing women with infants suffering from a variety of disorders requiring hospitalization. High levels of

PCBs were found in all of the samples. For those mothers whose infants had neurological disorders, the samples revealed even higher levels. Recent German studies have also revealed an association between pesticide exposure (including flea collars) and a greater incidence of childhood leukemia and brain cancer.

Another study published the same year in *Environmental Health Perspectives* examined the effect of pesticides on children who live in the Yaqui Valley of northwestern Mexico. Since the late 1940s, pesticides have been used heavily in this agricultural region. In 1990 researchers discovered significant levels of several pesticides in breast milk and in the cord blood of newborns. In the 1998 study, it was found that when compared to children residing in the foothills of the valley, which is pesticide free, the exposed children demonstrated a lack of energy, limited gross and fine eye-hand coordination, short-term memory loss, and the inability to draw a human figure.

Children are especially susceptible to the risks of pesticides. Since their bodies and defense systems are underdeveloped, it takes less exposure to cause harm. Another factor to consider is that young children spend a good deal of time crawling around on the floor during play and have a particular talent for finding nooks and crevices an adult would never think of inspecting. But that's just the kind of place where residue from pesticide spraying is likely to be found. Imagine a toddler's small, curious fingers exploring such an area and then finding their way to eyes, nose, and mouth.

Taking Risks

According to a paper published in *Environmental Health Perspectives* in June 1998, "Recent findings of indoor exposure studies of chlorpyrifos indicate that young children are at higher risks to the semivolatile pesticide than had been previously estimated." The study revealed that after a single application of the pesticide in an apartment building, the toxin in question continued to build up on indoor surfaces, including toys, for two weeks after spraying. The researchers further assert that, "the estimated chlorpyrifos exposure levels from indoor spraying for children are approximately 21 to 119 times above the current recommended reference dose of 3 micrograms per kilogram per day from all sources."

Pesticides and Prescription Drugs: Tom Latimer's Story

We are also in the dark about the dangers of being exposed to the combinations of chemicals found in pesticides and their potential to react with other agents, such as pharmaceutical medications. For Tom Latimer, two seemingly innocent and unrelated eventstaking Tagamet to control excessive stomach acid and mowing his lawn combined to change his life forever.

Tom's incredible and tragic story unfolded in a 1991 article published in the *Wall Street Journal*. In the weeks prior to the incident, Tom had made an application of an organophosphate to his lawn in order rid it of ants. One morning, he and his wife decided to do some yard work. After an hour, Tom was complaining of nausea and dizziness.

A week later he was afflicted with chronic headaches and involuntary jerking of his eye muscles. Upon extensive examination and interview, it was discovered that Tom had been taking Tagamet, which, like aspirin and other anti-inflammatory drugs, interferes with the liver's function of eliminating toxins from the body. Unable to adequately defend himself against the toxins in the pesticide, his nervous system fell under attack. Even though he was treated, Tom still suffers today; he has trouble walking and is forced to take an anti-epileptic medication to help control his movements.

The Good News

So what's the good news in all of this? You can take steps to help prevent you and your children from becoming victims. You may not be able to avoid PCBs and organophosphates entirely, but you can significantly reduce your exposure by not using or storing pesticides around the house and garden. If you notice signs posted in your neighborhood indicating that any grass or lawn has been sprayed with pesticides, don't walk on it, and keep children and pets away from such areas.

Try to buy organic produce whenever possible, since their surfaces are free of pesticide and wax residue. (Be warned, however, that even organic produce can hold contaminants because much of our soil yields plants that are systemic; that is, contaminated groundwater invades the surrounding soil and the vegetation absorbs the chemicals.) All produce should be washed with a vegetable brush and vegetable-based soap.

No one likes to share a home with insects or rodents. But you must remember that pesticides are designed to kill living things *all* living things. There are alternatives to using these poisons that not only harm the environment, but can lead to tragedy for those you love. The formulas on page 50 will help you safely keep pests at bay.

Where Are the Chemical Cowboys?

By now you're probably thinking that if the products we buy and use every day are really that harmful, they wouldn't be on the market in the first place, right? Sadly, this belief is wrong. While watchdog agencies do exist, the truth is that a household product is only scrutinized in response to numerous complaints, possibly long after a product has been placed on the market.

There are certain criteria to be met of course, but the Consumer Product Safety Commission (an advocate agency formed under the Federal Hazardous Substances Act), as well as the EPA, are sometimes misled into accepting a chemical, or chemicals, as safe by being presented with falsified research. Both Industrial Bio-Test and Craven labs were found guilty of this maneuver in 1983 and 1992, respectively.

Furthermore, we live in a world that is literally saturated with synthetic and hazardous chemicals, too many to keep track of. Government agencies also must contend with chemical lobbyists who push for safe registration of chemicals in an "inno-

cent until proven guilty" tactic. When it comes down to it, the chemical manufacturing industry is all about the business of money.

What Should We Do?

To be fair, government agencies do try to protect us from harm, even though the loopholes for misinformation and secrecy on the part of manufacturers seem wide open. Unfortunately, these agencies also operate with limited time, money, and manpower. Evaluating a particular chemical prior to marketing can cost in excess of \$300,000. It should also be said that some manufacturers have responded to the grassroots population and share a concern about the safety of their products. According to *Chemical Engineering News*, manufacturers spend an approximate average of \$150 million on studies and public relations to persuade consumers that their products are safe.

If you're feeling at all guilty that you may have been exposing yourself and your loved ones to any number of potential health risks for years, let me just say that it isn't your fault. You haven't been lazy, irresponsible, or morally and socially negligent. You have, however, been manipulated, misinformed, and, in some cases, blatantly lied to. Our friends at the EPA have also been fooled, since more than 300 chemicals used in a variety of products have been registered as safe due to fraudulent, even fictitious test data since the 1980s. But now that you have been empowered with the facts, you can take command with your buying power.

Learn to Decipher Labels

Exactly what chemical agents are being added to cleaning products remains a mystery to most of us, partly because many formulas are treated as closely guarded trade secrets, and partly because of inadequate labeling standards.

You might be shocked to learn that manufacturers are not required to list specific ingredients on the labels of their products. To make matters worse, a study done by the New York Poison Control Center revealed that 85 percent of product labels carried insufficient warnings regarding immediate and long-term health risks. Manufacturers are also not required to list inert ingredients, even though they could comprise up to 99 percent of the product's composition. This means that you, the consumer, are left out of the loop, without access to reliable information that would help you make an informed decision about a product.

There are labeling standards in effect of course, but they are a bit tricky, at least for the consumer. Suppose you were to come across a product at your grocery store with a label containing the word "nontoxic." You could feel pretty good about tossing that one in your cart because it must be safe, right? Not necessarily. There is no federal regulatory definition of nontoxic. In reality, it is merely an advertising word.

There are other terms used on product labels that are vague or designed to misinform, such as "biodegradable." What exactly does the manufacturer mean when it claims the product to be biodegradable? A better question to ask is how long

will it take to biodegrade? Plutonium, for instance, is definitely biodegradable, but in a span of a thousand years. Once again, the well-meaning shopper ends up comparing apples to oranges when it comes to understanding cleaning product labels.

The key to buying cleaning products off the shelf is to strive to find those with labels that state the product is *readily* biodegradable and made from natural, renewable sources such as plant extracts and oil-based soaps.

Take It Step by Step

You will soon discover that switching from buying commercial toxic cleaners to buying or preparing nontoxic formulas may take an adjustment, and a bit of time. First of all, there is the array of products already in your home that you must confront. The least helpful thing would be to dump the hazardous cleaners you have down the drain or to throw them in the trash. Instead, contact your local agencies such as your town or city hall and find out if there is a hazardous waste collection program in place.

Of course, you could also use up what products you have and stand firm not to replace them with more of the same. Depending on the product type and its degree of toxicity, it's your judgment call. With the all-natural cleaners you'll learn to make, eventually your supply of cleaning products will diminish in number from dozens down to a mere handful and they will be perfectly safe for you, your family, and the environment.

2

Why Clean with Herbs?

IN THIS CHAPTER

The Benefits Creative Packaging
Essential Oils Herbs & Their Properties
Preparing & Using Herbs Common Cleaning
Toxins Basic Supplies & Equipment

Nearly everyone has heard about the virtues of common items such as baking soda and vinegar for cleaning jobs like scouring and absorbing grease. The addition of herbal materials, especially essential oils, to the formula serves to enhance its cleaning value with the added benefit of leaving behind a soothing, natural scent. In effect, the principles of sanitary hygiene and aromatherapy become partners. It's not by advertising gimmick that many commercial products contain citrus oils, such as lemon or lime; they are natural degreasers and have antimicrobial properties. In fact, citrus oils are the "workhorses" of the kitchen and bathroom. Many other herbs possess antibacterial and antifungal

qualities as well. The chart on pages 2627 gives more information on the beneficial cleaning properties of specific herbs.

The Benefits of Natural Cleaning

You can believe me when I tell you that using a natural herbal product instead of a chemical-laden commercial one makes household tasks almost a pleasure to tackle. I know it's hard to get excited about cleaning a bathroom, but when you realize that the surfaces are germ and toxin free, and the soothing aroma of cedar or lavender lingers, you won't be able to suppress a smile of satisfaction. And the enthusiasm is contagious even the kids will want to pitch in!

Save Time and Money

Making your own herbal cleaning products is not a time-consuming or expensive endeavor. In fact, quite the opposite is true. It only takes a minute or two to fill a spray bottle with vinegar and water and add a few drops of essential oil. Bingo instant glass and appliance cleaner! Having done that, there's one less aisle to visit in the supermarket.

The majority of commercial cleaners are quite expensive. A typical spray or foam cleanser for the bathroom, for instance, can deprive you of \$4.00 or more. An herbal alternative, on the other hand, will cost mere pennies to make. I buy pure essen-

